

# Pattern of utilisation of telepsychiatry services for geriatric consumers residing in rural and remote South Australia

Pallavi Dham<sup>1</sup>, Elaine Skinner<sup>1</sup>, Neeraj Gupta<sup>1</sup>, Jacob Alexander<sup>1</sup>

<sup>1</sup>Rural and Remote Mental Health Service, SA

## Abstract

**Aim:** Since the establishment of an independent Older Persons Mental Health Service (OPMHS) in 2010 within the Country Mental Health Services in South Australia, there has been a surge in the demand for telepsychiatry consultations. This study looks closely at the changes in patterns of utilisation over the years to better inform service growth and optimise delivery.

## Objective:

- Describe utilisation patterns of telepsychiatry use by people above the age of 65 years over a two year period from January 2010 to December 2011
- Describe demographic details, co-morbid medical conditions, diagnosis and treatment recommendations of these patient cohorts
- Postulate reasons for changes in utilisation with recommendations for the future development of a nascent service.

**Methods and results:** A retrospective chart review was done for all consecutive geriatric patients resident in rural and remote South Australia assessed via telepsychiatry by OPMHS, Country Health SA during 2010 and 2011. In 2010, 44 consumers were seen via telepsychiatry increasing to 120 in 2011. Data was available for 41 consumers in 2010 and 103 consumers in 2011. The mean age of consumers was 76.94 years (SD 7.67) in 2010 and 74.83 years (SD 7.43) in 2011. Majority were females (58.53% in 2010 vs 63.11% in 2011). The largest proportion lived in independent community settings (69.05% in 2010 vs 74.76% in 2011). Although the consumers seen through telepsychiatry had few physical disabilities and were cognitively astute (mean MMSE score of 25), however, they had multiple medical comorbidities, thus highlighting the need for specialist services. Major Depressive Disorder was the most common diagnosis (36.59% in 2010, 40.77% in 2011) followed by Bipolar Disorder (14.63% in 2010, 16.50% in 2011) and Dementia (12.2% in 2010, 16.5% in 2011). There was increasing community involvement over the two years.

**Discussion and conclusions:** Interesting differences were observed in the profile of consumers referred to the OPMHS for telepsychiatry assessments with the evolution of the service over the years. We hypothesise that these changes reflect the demand for such services in hitherto under serviced areas. This has important implications for resource allocation, and clinical outcomes for the elderly in rural areas. We discuss other hypotheses that might contribute to these changes. Studies such as this have important relevance to services looking at either expanding existing resources or setting up new services for the elderly.

## Introduction

South Australia is a large state, covering an area of more than 984,000 square kilometres, occupying one eighth the total area of the Australian continent. It has a total population of around 1.6 million (Australian Bureau of Statistics 2011). Of this, about 0.4 million live in the rural and remote region that has an area of 982,173 square kilometres. The population in the rural and remote regions of South Australia is thus spread out over a large area. This has hampered the accessibility to medical care including mental health care.

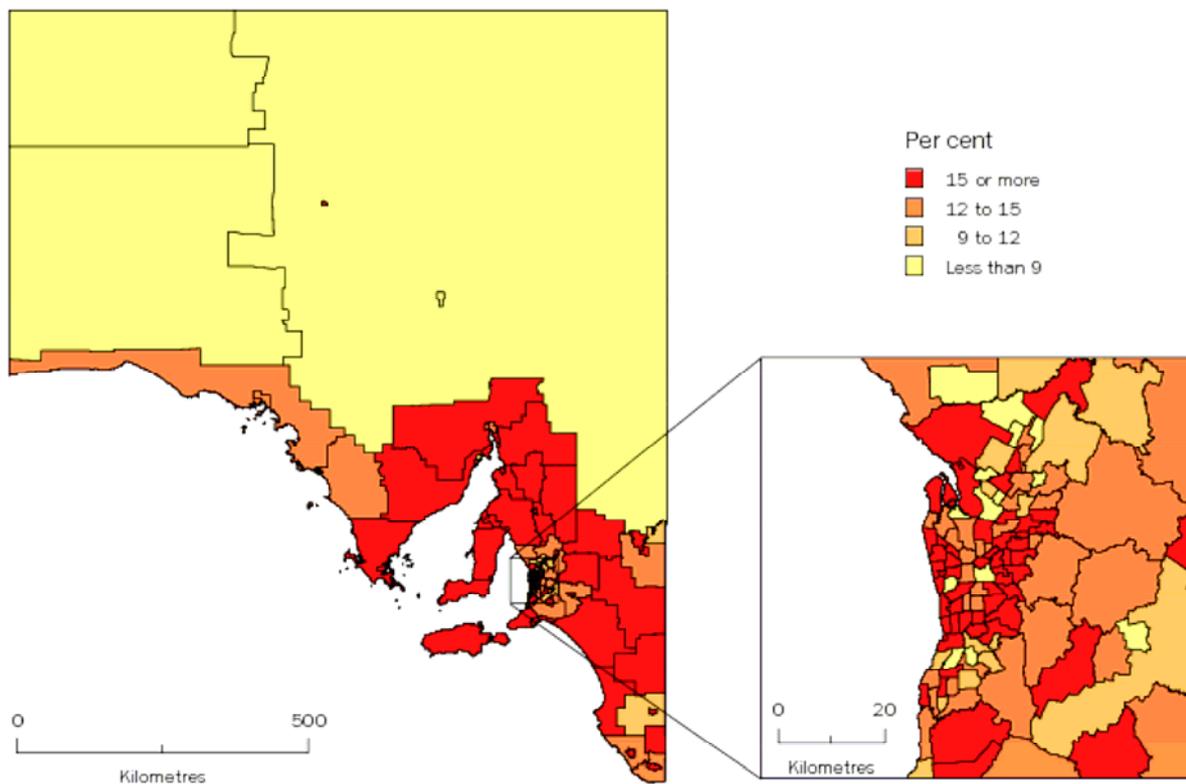
South Australia had 260,600 people aged 65 years or over in June 2011, representing 16% of the state's population. Between 2001 and 2011, the proportion of the population aged 65 and above in Greater

Adelaide remained at around 15%, while in the rest of the state it increased from 15% to 18%. The areas with the highest proportions of their populations aged 65 years or above were all located on the South Australian coast. Victor Harbor had the highest proportion with 35%, followed by Goolwa - Port Elliot (33%), Moonta (29%), Yorke Peninsula - North and Yorke Peninsula - South (both 27%). These proportions all increased since June 2001.

### Population aged 65+ 2011 Census

	# of persons	% of total
Total persons	257,546	100%
Metro	176,270	68.4%
Country	80,889	31.4%
No address	387	0.2%

### Population aged 65 years and over, Statistical Areas Level 2, South Australia - 30 June 2011 Australian Bureau of Statistics



South Australia has used a centrally based service located in Adelaide to provide specialist psychiatry services to country areas. Resident psychiatrists are not available in these areas to provide easily accessible continuous care. Fewer specialists are employed in country areas as compared to similar services in the metropolitan area. To enable care closer to home, tele-psychiatry has been an important model for delivery of psychiatric services to these regions. Currently, specialist psychiatry care is provided to the country areas in South Australia by a combination of tele-psychiatry consultation and face to face consultation by a psychiatrist visiting some but not all areas once in every 4-8 weeks.

In South Australia, tele-psychiatry service has established itself in the routine care of the adult consumers aged less than 65 years. It has been evaluated for its utilisation, acceptance and level of

satisfaction in this population. It is in its incipient stage in terms of its application in the population 65 years and over. There is limited knowledge relating to tele-psychiatry services among the older population world-wide and especially in South Australia.

### **Aims and objectives**

- Describe utilisation patterns of telepsychiatry by people above the age of 65 years over the two year period from January 2010 to December 2011
- Describe demographic details, co-morbid medical conditions, diagnosis and recommendations of these patient cohorts
- Postulate reasons for changes in utilisation with recommendations for the future development of a nascent service.

### **Review of literature**

Tele-psychiatry is perceived to be feasible and acceptable (1, 2,3). High level of satisfaction with telepsychiatry is reported among clients (4). Telemedicine has enabled improved access to specialist services among people living in rural Australia.(5)

For people aged less than 65 years, tele-psychiatry assessment is found to be the same as face to face assessment in a study that formed part of the initial project at Rural and Remote Mental Health Services, South Australia. The study by Bagient et al (1997) revealed that the psychiatric assessment of consumers in a tele-psychiatry assessment was as reliable for diagnostic assessments and treatment recommendations as a face-to-face consultation (6). Tele-psychiatry is found to be acceptable to the referrer, consumer and service provider when applied to adult and adolescents in rural and remote South Australia. Clarke (1997) conducted a retrospective and prospective review of a series of acute tele-psychiatry assessments, evaluating consumer and referrer satisfaction with the process of accessing specialty psychiatric services via tele-psychiatry. This study confirmed that there is wide acceptance of tele-psychiatry by consumers, referrers and service provider health professionals(7). Tele-psychiatry is a satisfactory mode of service delivery among adults in rural and remote regions of South Australia. A review article by Hawker et al (1998) reported that at Rural and Remote Mental Health Services in South Australia, during 1994-1998, there were 2219 clinically related tele-psychiatry sessions, of which 1947 directly involved consumer assessments and 272 involved the supervision of health-care providers. This made South Australia one of the most experienced centers in the world for clinical applications in tele-psychiatry. Tele-psychiatry continues to be an important part of routine care of adult consumers based in rural communities of South Australia (8).

There are few studies on tele-psychiatry services specifically related to older consumers around the world. The available studies have shown that tele-psychiatry assessment is generally satisfactory among older consumers compared with face to face assessment (9, 10, 11, 12). At low band width of 128 kbps, it is useful for verbal assessments with some problems in visual assessments of abnormal movements (13, 14). It has been especially useful for application of standardised rating scales such as (11, 15). Johnston et al (2001) published results of a two year study on providing tele-psychiatry assessments from the University Medical Centre at Wake Forest (North Carolina), of residents in a nursing home located rurally. The consumers were aged 60-95 years (mean age, 79.3 years) with a range of diagnoses. The most common diagnosis was dementia with behavioural and psychological symptoms followed by depression. It was greatly appreciated by the consumers and family and helped in more efficient management of the consumers (10).

A most recent review of telepsychiatry services in elderly revealed, if well designed forms are used, data are adequately transmitted through telematic channels (fax and the Internet) and those providing care to patients participate in the consultations, the quality of the information obtained, the care provided, and the satisfaction of the persons involved may be even greater than in the case of face-to-face consultations. (16,17)

There are no published studies regarding application of tele-psychiatry services among the older persons from Australia. It has been suggested that tele-psychiatry may not be an acceptable mode of assessment and treatment among older consumers. Doubts have been raised regarding its utility and acceptance. (4)

## Material and method

### Setting and process of tele-psychiatric consultation for older consumers residing in Rural and Remote South Australia

**Older Persons Mental Health Service, CHSA:** Until 2010, the mental health services to older consumers residing in rural and remote regions of South Australia were provided by psychogeriatricians from the metropolitan service and a team of three clinical nurses. The psychiatrists assisted with the telepsychiatry consultations while the nurses visited the country regions to do face to face assessments which were then discussed with a psychiatrist for their input. In 2010 Older Persons Mental Health Service (OPMHS) exclusively devoted to older consumers in rural and remote regions of South Australia was set up. This includes a team of 3 psychiatrists (1.5 Full Time Equivalent), a psychiatric registrar (1 FTE) and 2 mental health nurses at Glenside as well as the appointment of clinicians (9.2 Full Time Equivalent) working specifically with older persons in 13 community mental health teams across rural and remote regions of South Australia. The psychiatrists provide visiting service once in 4-8 weeks to a few but not all regions and conduct assessments via telepsychiatry.

The clinicians based in the community liaise with the GPs and aged care sector to provide initial assessments and case management. The clinicians have been receiving regular training and professional development in geriatric mental health care since 2010 and work in close liaison with the psychiatrists and the team at Glenside. The service has no dedicated inpatient beds and people requiring admission in a psychogeriatric unit are admitted to metropolitan inpatient units.

### Patients accepted for case management by country teams under Older persons Mental Health Service, Country Health SA

Year	Teams- (country - new service)
2010	246
2011	427

**Telepsychiatry service:** Tele-psychiatry assessment for older consumers living in rural and remote regions of South Australia is provided by medical staff working for Older Persons Mental Health Services (OPMHS), based on the Glenside campus. The tele-psychiatry service was used for older consumers since 1998 and was provided by metropolitan based psychiatrists until 2010. OPMHS was set up in early 2010. The equipment uses ISDN line at a band width of 128kbps. At a few places it is possible to connect using broadband with a band width of 768 kbps. Consumers are referred for specialist consultation by the local General Practitioner (GP) directly or via the local mental health teams working in the country. A referral is made using a standard form used for all telemedicine requests for people aged 18 and over that has details regarding the consumer's demographics, reason for referral, brief history and assessment along with details of medical history and investigations (Appendix 1). An initial triage is done depending on the available information and investigation results. A time is fixed for the assessment and the consumer is accompanied by a staff member involved in the consumer's care which may be the GP, nurse or community mental health team worker. A family member may also be present for the assessment. A new assessment is allotted 60 minutes. The consumer is interviewed in the initial 50 minutes. After the assessment, the impression is conveyed to the consumer/family member, and the staff accompanying the consumer with discussion of the proposed management plan.. A typed version of the assessment with the advised management plan is

faxed to the referring GP and the local mental health team. A consumer can be followed up on a repeat request at any later time.

**Sample:** The sample for this study included consecutive patients, 65 years and over, with mental health problems resident in rural and remote South Australia referred to OPMHS, Country Health SA for telepsychiatry assessment during 2010-11, a representative period of evolution of a new service.

### **Data Collection**

To assess the utilisation pattern of tele-psychiatry services for older consumers, three data sources were used; the client records, tele-psychiatry referral form and letters sent to the GPs following assessment. Following data will be collated from the different sources:

- The data regarding age, sex, living condition, source of income, total number of tele-psychiatry consults was collected from client records.
- Details on disability, medical co-morbidity, details of the referrer , reason for referral was collected from the referral form.
- Details' regarding people present during the consult, diagnosis and recommendation was collected from the assessment letters sent to the GP.

### **Results**

A total of 44 telepsychiatry consults occurred in 2010, data is available for 41 consults. In 2011, 120 telepsychiatry consults occurred and data is available for 103 consults.

**Table 1 Profile of consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11**

	Jan-Dec 2010 (n=41)	Jan-Dec 2011 (n=103)
Mean Age (SD)	76.94 (SD 7.67)	74.83 (SD 7.43)
Gender		
Female	24 (58.53%)	65 (63.11%)
Male	17 (41.47%)	38 (36.89%)
Living Situation		
Private own/rental, Independent house in a village	28 (69.05%)	77 (74.76%)
RACF	9 (21.43%)	16 (15.53%)
Hospital	4 (9.52%)	4 (3.88%)
Not stated	0 (0%)	6 (5.83%)
Physical disability		
Nil	26 (63.41%)	68 (66.02%)
Visual/hearing impaired	8 (19.5%)	17 (16.50%)
Unsteady gait/restricted mobility	4 (9.52%)	14 (13.59%)
Not stated	4 (9.52%)	5 (4.85%)
Speech/aphasia	0 (0%)	2 (1.94%)
Medical Illnesses		
2 or more medical conditions	23 (56.1%)	75 (72.82%)
Single medical condition	10 (24.4%)	17 (16.40%)
Nil	8 (19.5%)	13 (12.62%)
Not stated	0 (0%)	2 (6.8%)
MMSE		
Mean score (SD)	25.34 (SD 4.98)	25.72 (SD 4.01)
Not mentioned	15 (36.6%)	12 (11.65%)
Reason for referral		
Depression/anxiety	20 (48.8%)	50 (48.54%)
Assessment and assistance in care/Review	8 (19.51%)	29 (28.16%)
Abnormal behaviour (odd/confused/paranoid/aggression/uncooperative)	8 (19.51%)	15 (14.56%)
Self-harm ideation/attempt	6 (14.64%)	10 (9.71%)
Person sitting in with the patient at far end		
Member of the CMHT/clinician	17 (41.46%)	56 (54.37%)
Clinical nurse( RACF/hospital/practice)	13 (31.71%)	32 (31.07%)
Family (spouse/son/daughter)	8 (19.51%)	41 (39.81%)
Not stated	2 (4.88%)	6 (5.83%)
GP	2 (4.88%)	4 (3.88%)
DSM IV diagnosis		
Major Depressive Disorder	15 (36.59%)	42 (40.77%)
Bipolar Disorder	6 (14.63%)	17 (16.50%)
Delirium	5 (12.2%)	9 (8.74%)
Dementia	5 (12.2%)	17 (16.50%)
Anxiety disorders (PTSD, Panic Disorder, NOS)	4 (9.76%)	8 (7.77%)
Schizophrenia	4 (9.76%)	6 (5.83%)
Medication side effects	3 (7.32%)	3 (2.91%)
No axis 1 diagnosis	4 (12.2%)	6 (5.83%)
Alcohol dependence/abuse	0 (0%)	2 (1.94%)
Recommendations provided		
Medication recommendation only	13 (31.71%)	45 (43.69%)
Medication recommendation + other (Investigations/further evaluation/ Psychosocial intervention)	14 (34.14%)	40 (38.83%)
Admission to metro hospital +/- medication	9 (21.95%)	10 (9.71%)
No further changes	3 (7.32%)	8 (7.77%)

Figure 1 Gender distribution of consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

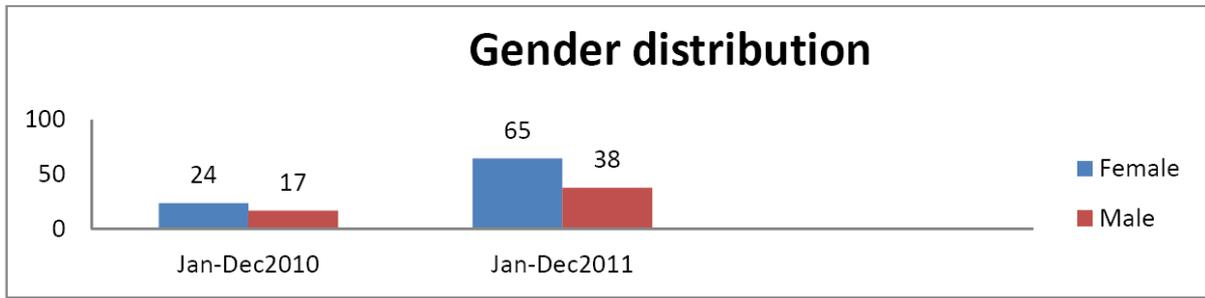


Figure 2 Living Situation of consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

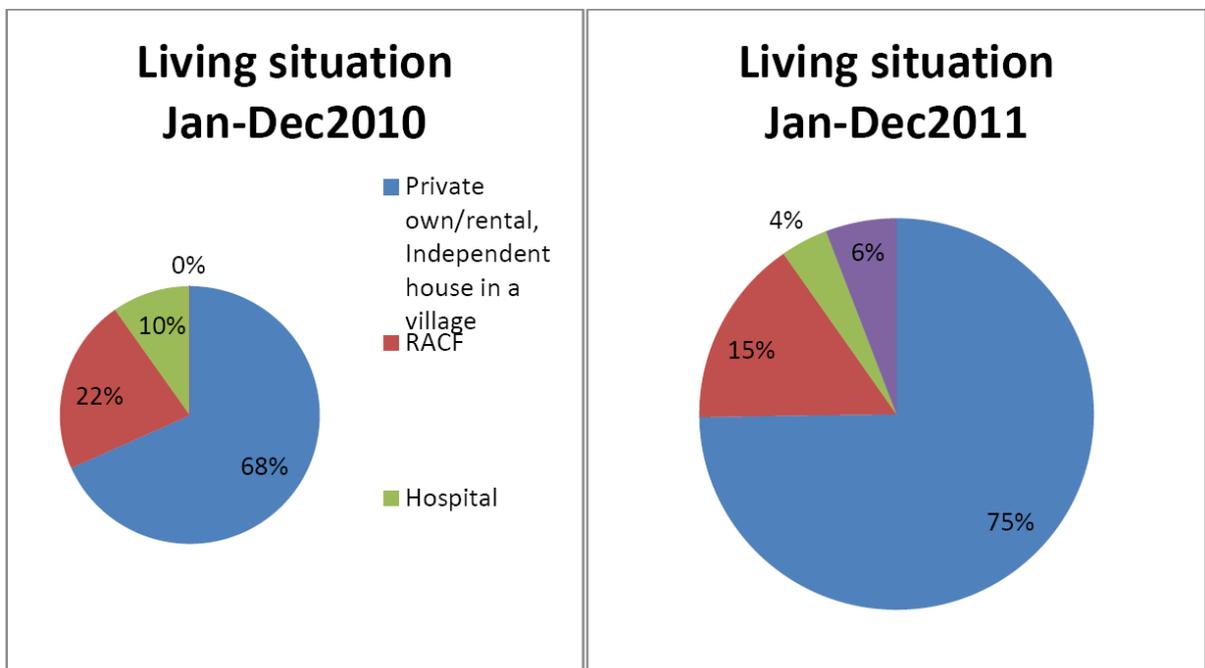


Figure 3 Physical disability in consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

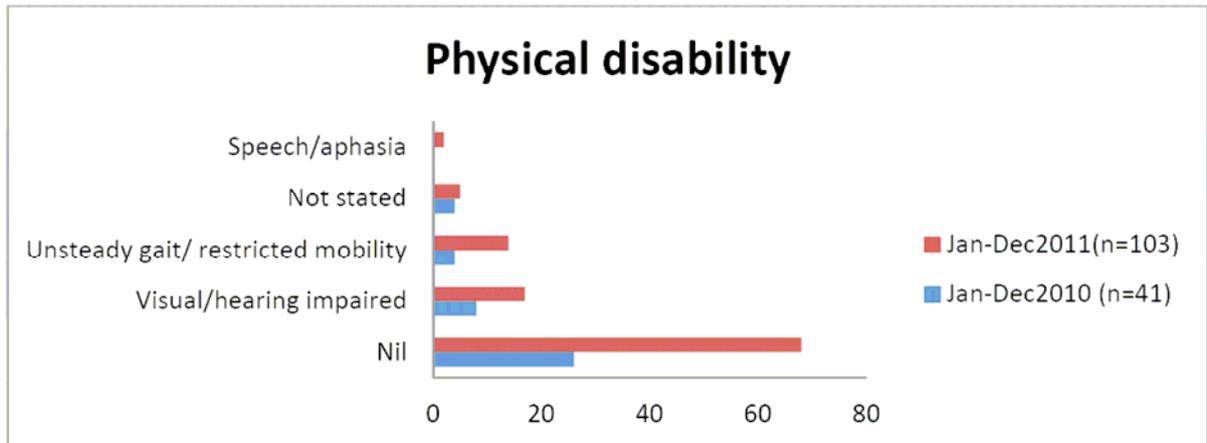


Figure 4 Medical comorbidities in consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

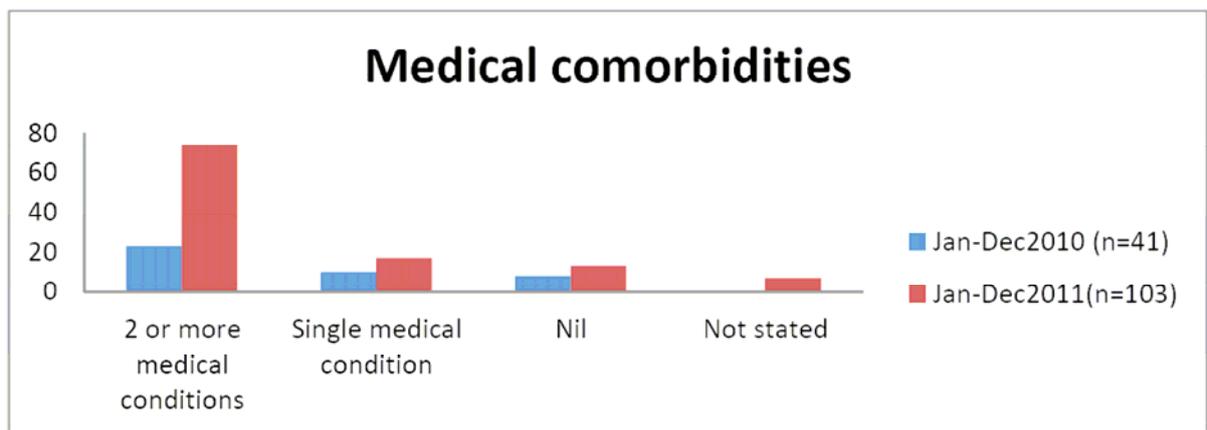


Figure 5 Purpose of referral of consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

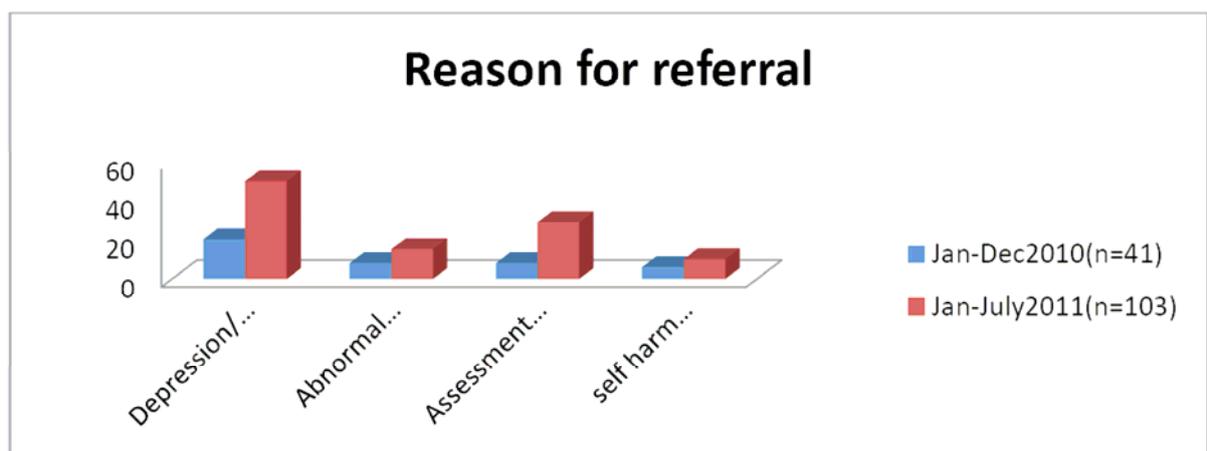


Figure 6 Person accompanying consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010-11

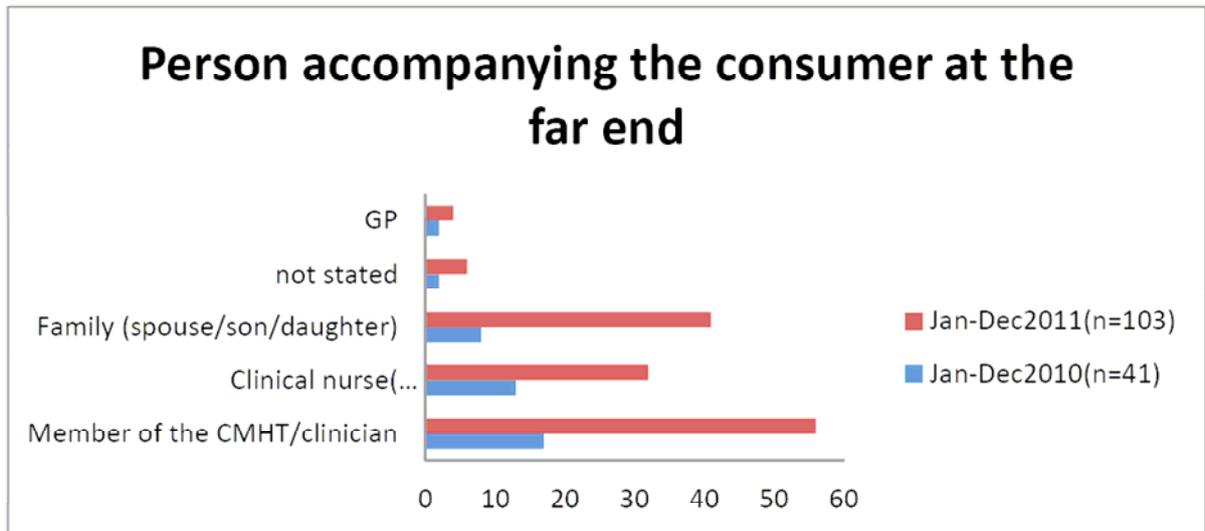


Figure 7a Psychiatric Diagnosis in consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010

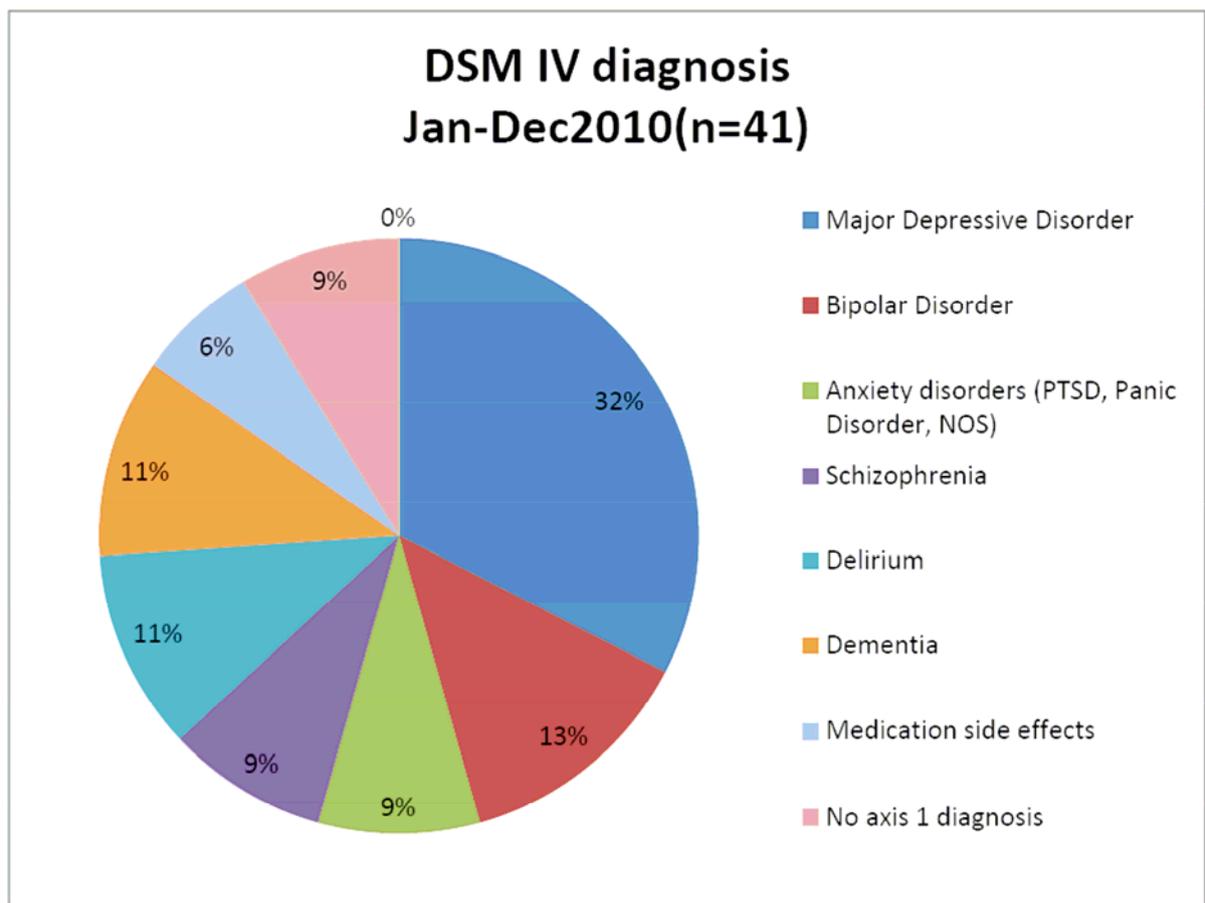


Figure 7b Psychiatric Diagnosis in consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2011

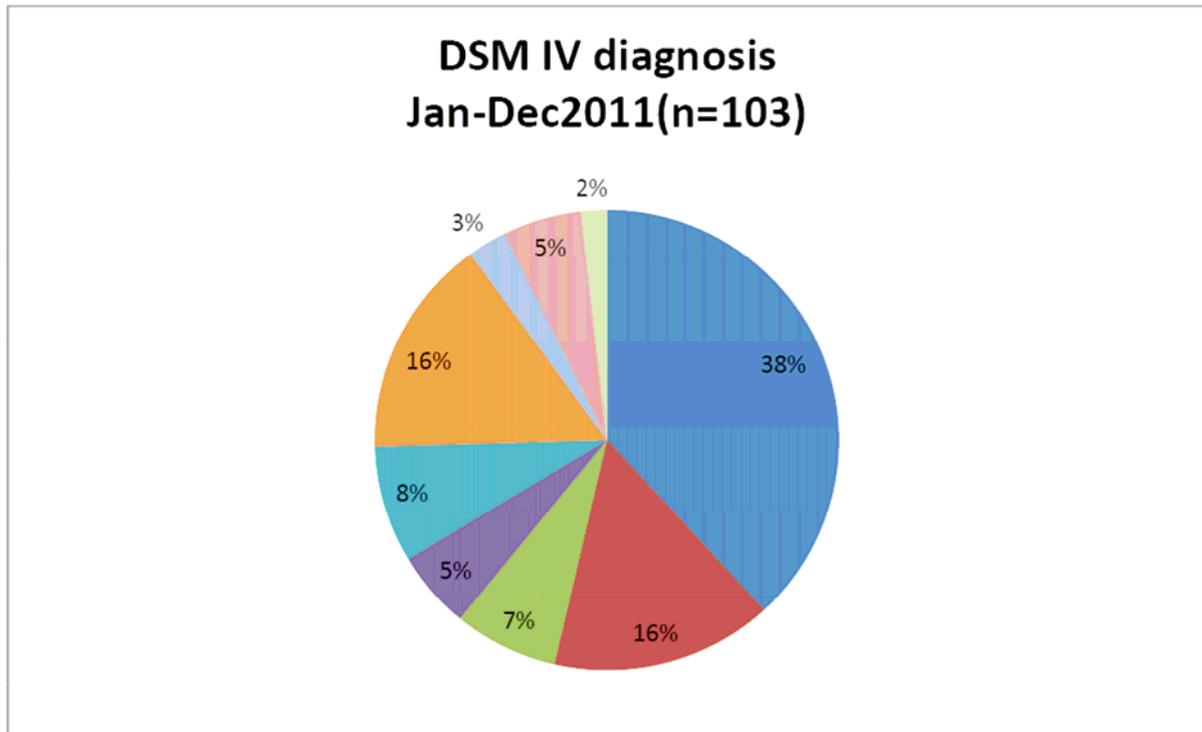
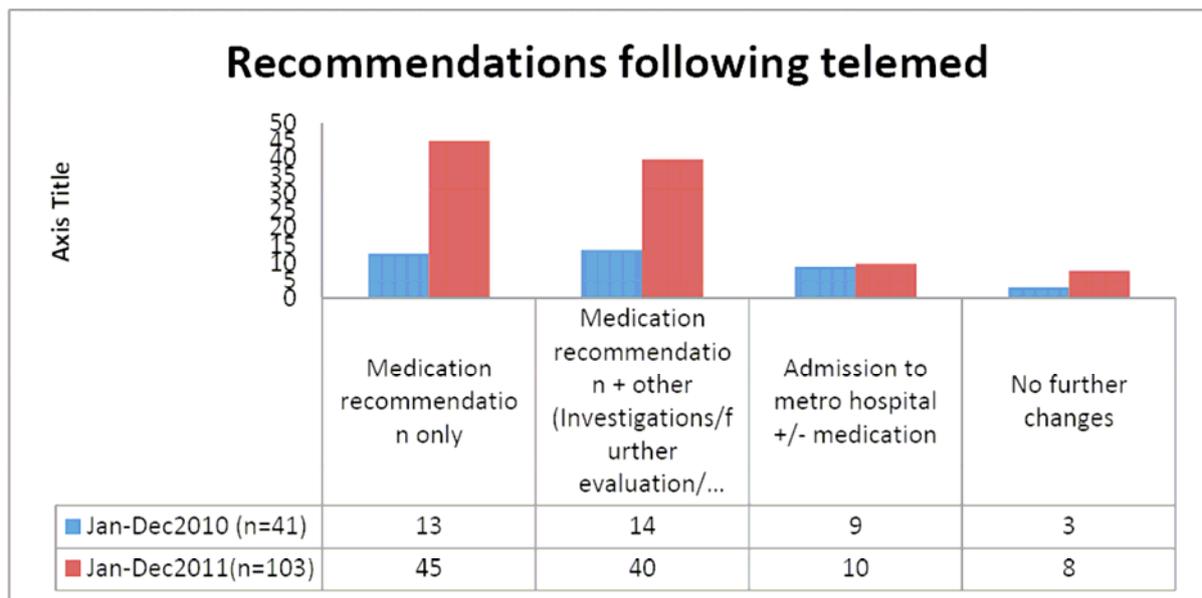


Figure 8 Recommendations for management following the consults of consumers aged over 65 years seen via telepsychiatry by Older Persons Mental Health Service, Country Health SA in 2010



## Discussion

Of all the applications of telemedicine, telepsychiatry has probably made the most evident impact. This may be because of the very nature of the speciality where information can be gathered in an audio-visual manner, its accessibility in remote areas and cost effectiveness due to reduced cost of travel and most efficient use of professional time (18). It has been found to be acceptable, cost effective and a reliable means of diagnosis and treatment (1-5)

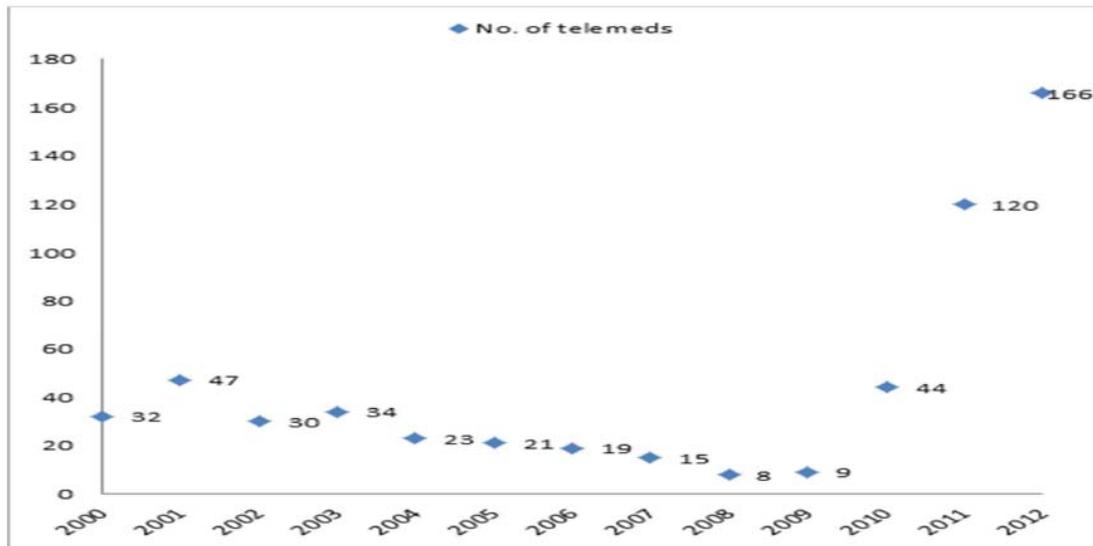
Application of telepsychiatry in older persons is an area of special interest for a number of reasons. Older persons form a large proportion of the population residing in rural and remote areas, far away from easily accessible specialist care and they have multiple co morbidities that make travel difficult. Thus the most vulnerable population faces greatest challenge in terms of access to quality care. Whilst telepsychiatry can overcome the geographical isolation it is speculated that visual/hearing impairment, cognitive deficits and the very nature of technology by itself may make its application challenging in this population.

Few studies refer to specific tele-psychogeriatric programmes in the community. Community clients form only a small percentage of the telepsychiatry programmes. The only other service that closely replicates the present service model is the Conn and Patterson group at Boycrest in Toronto. The Conn and Patterson group at Baycrest in Toronto has been providing psychogeriatric care to a community population and, to a lesser extent, to institutionalised elderly individuals via videoconference since 2000 in Northern Ontario(Canada) (19,20,21). Since 2002, they have been responsible for providing this service in a region with a radius of 750 miles with a highly scattered and aged population with no access to a specialist in geriatric psychiatry. This region is divided into areas where community workers provide a link between community demands and the telemedicine service. The aim of the program was not only to provide access to specialised consultation but also to provide support and training to caregivers and to the different sociohealth service providers. During the first six years of the program, evaluations of both clinical consultations and educational sessions have remained consistently positive.

The present model of telepsychiatry service delivery in rural and remote regions of South Australia covers an enormous area of 982,173 square kilometers and offers mainly clinical consultations. The services in the community are provided by the local clinicians in the Community Mental Health Teams in close liaison with the age care sector and the GPs. The specialist input is provided via a combination of telepsychiatry and visiting service by specialists to some areas. Visiting service is usually infrequent due to costs involved, travel time and limited number of specialist staff. Thus it is usually prioritised for consumers who may be more seriously ill or with greater needs. It cannot cater for all needs of the community thus depriving the community of a specialist service in turn disadvantaging them.

The main purpose of telepsychiatry is to make specialist services more easily accessible to the population as close to their living situation as feasible. It can help to bridge the gap and assist management of patients in the community. With the evolution of the service there has been an absolute increase in numbers as well as proportion of consumers seen. The absolute numbers have increased from 44 in 2010 to 120 in 2011. While in the initial year of 2010, approximately 7% of total consumers accepted by the service received a telepsychiatry consultation, in 2011, 12% of total consumers accepted by the service received a telepsychiatry consultation.

**Figure 9**      **Telepsychiatry consults for older persons residing in rural and remote regions of South Australia**



The graph above (Fig 9) captures the number of telepsychiatry consults for older persons residing in rural and remote regions of South Australia. It shows a definite increase in utilisation of the service especially after setting up of a specific service for older persons in Country South Australia.

As shown in the Fig.2 above, the increase in numbers is predominantly attributed to the increase in number of consumers still living in the community in private or rental accommodation (68% in 2010, 75% in 2011). Also, there is increased involvement of the local community and family reflected in the increasing number of consumers accompanied by community mental health team member (2010, 41.46%; 2011, 54.37%) and family members (2010, 19.51%; 2011, 39.81%) during the telepsychiatry consultation.

A small proportion of consumers seen via telepsychiatry reside in Residential Aged Care Facility (RACF). This may be attributed to lack of telepsychiatry facility within the RACF that can be synchronised with the secure system set up by Country Health SA. The consumers in the RACF are more disabled, less easily transported to the nearby facility for the consult and they may have more cognitive impairment and other visual or hearing disabilities that probably make the medium less suitable.

A prominent proportion of consumers seen via telepsychiatry in 2010 (63.41%) did not have physical disabilities and had minimal cognitive deficits as reflected in the MMSE scores (Mean 25.34, SD 4.98). This trend persists over 2011 (66.02%) even with expansion of the service thus reflecting the difficulty in using this mode in older consumers with physical or cognitive disabilities. However, more and more consumers (26 in 2010 v/s 74 in 2011) with complex medical needs are seen via telepsychiatry thus highlighting the need for a specialist assessment in this group.

The majority of the consumers are referred for assessment of symptoms of depression and anxiety (2010, 48.8%; 2011, 48.54%). In 2011 greater numbers were referred for a review and assistance in care (2010, 19.51%; 2011, 28.16%) thus reflecting the increasing use of telepsychiatry to assist the teams and GPs working in the community with care of existing consumers. The most common diagnosis was that of Major Depression (2010, 36.59%; 2011, 40.77%) followed by Bipolar disorder (2010, 14.63%; 2011, 16.5%) and Dementia (2010, 12.2%; 2011, 16.5%). Increased number of consumers with Dementia were seen via telepsychiatry in 2011 (16.5%) as compared to 2010 (12.2%). Alcohol or other substance use related disorders has been an extremely rare diagnosis.

Over the two years, while there has been no increase in number of consumers recommended inpatient treatment, there is an increased recommendation on medications and other medical/psychosocial interventions (2010, 34.14%; 2011, 38.83%). With the involvement of the community mental health teams, it can be expected that multidisciplinary treatment can be coordinated more efficiently thus leading to more comprehensive recommendations, using the biopscho-social model.

## Conclusion

To some extent, the telepsychiatry service has succeeded in expanding its outreach into the community. However, while the telepsychiatry service has expanded with the establishment of a new service, it caters to less than 15% of the consumers referred to the central service. Those seen by telepsychiatry are mainly consumers still living in the community with few physical disabilities or cognitive deficits. Telepsychiatry is limited in terms of the technology and may not be very useful in assessment of severely ill, people with hearing-visual impairments or significant cognitive deficits. To date the population in Residential Aged care Facilities is poorly covered via this medium. There is a need to explore alternative methods of service delivery to the vulnerable population that is difficult to reach using the existing telepsychiatry service.

## Future directions and recommendations

1. Telepsychiatry can be a useful means of reaching out to the older persons living in the community in rural and remote regions
2. The study supports the conclusion that the care model required in telepsychiatry should not be simply consultation by the psychiatrist (which could be adequate in other applications of telepsychiatry where the patient has greater autonomy) but consultation-liaison and collaboration with other care providers (22).
3. Even using cutting-edge technology, care should be administered cautiously in the case of advanced dementia patients, patients with serious sensory deficits or those having disorders affecting psychomotor activity (23).

## References

1. Hilty DM, Marks SL, Urness D, et al. Clinical and educational telepsychiatry applications: a review. *Can J Psychiatry*. 2004;49(1):12-23.
2. Norman S. The use of telemedicine in psychiatry. *J Psychiatr Ment Health Nurs*. 2006;13(6):771-777. [PubMed],
3. Hyler SE, Gangure DP, Batchelder ST. Can telepsychiatry replace in-person psychiatric assessments? a review and meta-analysis of comparison studies. *CNS Spectr*. 2005;10(5):403-413.
4. Rowe N, Gibson S, Morley S, Krupinski EA. Ten-year experience of a private nonprofit telepsychiatry service. *Telemed J E Health*. 2008 Dec;14(10):1078-86.
5. Moffatt JJ, Eley DS. The reported benefits of telehealth for rural Australians. *Aust Health Rev*. 2010 Aug;34(3):276-81.
6. Baigent MF, Lloyd CJ, Kavanagh SJ, Ben-Tovim DI, Yellowlees PM, Kalucy RS, Bond MJ Telepsychiatry: 'tele' yes, but what about the 'psychiatry'?. *J Telemed Telecare*. 1997;3 Suppl 1:3-5.
7. Clarke PH: A referrer and patient evaluation of a telepsychiatry consultation-liaison service in South Australia. *J Telemed Telecare* 1997, 3(Suppl 1):12-14.
8. Hawker F, Kavanagh S, Yellowlees P, Kalucy RS: Telepsychiatry in South Australia [review]. *J Telemed Telecare* 1998, 4:187-194.
9. Jones BN, III, McCall WV, Reboussin B, Johnston D: Reliability of telepsychiatry assessments: subjective versus observational ratings. *J Geriatr Psychiatry Neurol*. 2001 summer; 14(2):66-71.

10. Johnston D, Jones BN, III: Telepsychiatry consultations to a rural nursing facility: a two-year experience. *J Geriatr Psychiatry Neurol* 2001, Summer;14(2):72-5.
11. Grob P: Psychiatric assessment of a nursing home population using audio-visual telecommunication. *J Geriatr Psychiatry Neurol* 2001, Summer;14(2):63-5.
12. Kirkwood KT, Peck DF, Bennie L: The consistency of neuropsychological assessments performed via telecommunication and face to face. *J Telemed Telecare* 2000, 6:147-151.
13. Ball C, Puffett A: The assessment of cognitive function in the elderly using videoconferencing. *J Telemed Telecare* 1998,4(Suppl 1):36-38.
14. Jones BN, III, Johnston D, Reboussin B, McCall WV: Reliability of telepsychiatry assessments: subjective versus observational ratings. *J Geriatr Psychiatry Neurol* 2001, Summer;14(2):66-71
15. Montani C, Billaud N, Tyrrell J, et al.: Psychological impact of a remote psychometric consultation with hospitalized elderly people. *J Telemed Telecare* 1997, 3:140-145.
16. Lee, J. H. et al. (2000). A telemedicine system as a care modality for dementia patients in Korea. *Alzheimer Diseases and Associated Disorders*, 14, 94-101.
17. Rabinowitz, T., Murphy, K., Amour, J., Ricci, M., Caputo, M. and Newhouse, P. (2010). Benefits of a telepsychiatry consultation service for rural nursing home residents. *Telemedicine and EHealth*, 16, 34-40
18. Ramos-Ríos R, Mateos R, Lojo D et al: Telepsychogeriatrics: a new horizon in the care of mental health problems in the elderly. *International Psychogeriatrics* (2012), 24:11, 1708-1724.
19. Conn, D. K. and Bilas, H. (2000). Centre spreads geriatric expertise using telehealth, internet. *Canadian Healthcare Technology*, 5, 15.
20. Conn, D. K. and Bilas, H. (2001). Internet-based healthcare connects providers. *Maximizing Human Potential (American Society on Aging)*, 9, 4-5.
21. Bilas, H. and Conn, D. K. (2002). Senior care and telehealth: the baycrest way. *Long Term Care*, 12, 25-28.
22. Hilty, D. M., Yellowlees, P. M. and Nesbitt, T. S. (2006b). Evolution of telepsychiatry to rural sites: changes over time in types of referral and in primary care providers' knowledge, skills and satisfaction. *General Hospital Psychiatry*, 28, 367-373.
23. Jones, B. N. and Ruskin, P. E. (2001). Telemedicine and geriatric psychiatry: directions for future research and policy. *Journal of Geriatric Psychiatry and Neurology*, 14,59-62.