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## The Socioeconomic impact of telehealth: Results from systematic literature review.

Ohinmaa, Arto; Jennett, Penny; Hailey, David; Scott, Richard; Thomas, Roger

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Presentation

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# The socioeconomic impact of telehealth: Results from systematic review

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On the behalf of the research group

# Contents

- Determinants of socioeconomic indicators
- Quality of economic analysis criteria and perspective of the economic analysis
- Research strategy
- Selection of sub-specialties for closer assessment
- Initial results from pediatrics, mental health and radiology
- Conclusions

# Background

- Telemedicine, new way of delivering health care:
  - Management and production process will change
  - Personnel and their location may change (health care network)
  - New skills and educational requirements
  - Patients' access to care, traveling, costs, as well as social factors may change
  - Changes in other socioeconomic factors
- Reviews of telemedicine literature have shown that there is not good evidence about the cost-effectiveness of telemedicine
- However, no earlier socioeconomic reviews that could be used in decision making

# Socioeconomic indicators

- We used experts and literature to determine the socioeconomic indicators and terms for the literature review
- The broad categories are the following:
  - Community: population with special needs, rural/remote, social isolation, etc.
  - Environment: work safety, poverty, access to transportation, life stress, etc.
  - Macro: economy, labour market, innovation, environment, education and health
  - Person/public: addictions, unemployment, immigration, early life, nutrition, etc.
  - Delivery: Access to health services and health care

# Socioeconomic indicators

## ● Focus of the reporting:

- Access
- Cost (efficiency and other economic factors)
- Equity
- Quality
- Safety

# Search strategy

- The determinants of socioeconomic indicators were covered using a big variety of search terms combined with terms connected to telehealth
- Literature search was done from 30 different databases (health, social sciences, health economic, etc.)
- Hand search from key telemedicine and health informatics journals, and internet pages (more than 70)

# Search strategy

- In the first search about 6800 abstracts and other writings were found
- The search was then targeted on identified health care priorities in Alberta and Canada
  - 1) Pediatrics
  - 2) First Nations
  - 3) Geriatrics
  - 4) Home Care
  - 5) Mental Health
  - 6) Radiology
  - 7) Ultrasound
  - 8) Renal Dialysis
  - 9) Rural / Remote
  - 10) Rehabilitation
  - 11) Systematic Reviews
  - 12) Policy Reviews
  - 13) Economic Analysis



# Economic quality criteria

- **Ten criteria** from Drummond et al. (1997): research question, compared alternatives, establishment of the effectiveness (e.g. RCT), identification, measurement and valuation of important and relevant costs and consequences, timing of costs and consequences, incremental analysis, uncertainty in the estimates, and comprehensive discussion of study results

# Results from selected specialties

## Tele-pediatric applications

### ● Social determinants of health

- Management of asthma (RCT); Improved quality of care, rural adolescents (under served)
- Immunisation rates (2 RCTs); Increased quality of care and access
- Neonatal intensive care (RCT); Improved efficiency, quality and possible stress reduction
- Difficult infants (RCT); Reduced maternal fatigue but not parental stress

# Results from pediatrics

- Cardiology (12 non-RCT); Avoided transfer of neonates, time savings, lower LOS in NICU
- Social environment for sick children; Reduced loneliness, resistance to having further treatments
- After hour referral triage; Decreased rates of referral without adverse effects
- General consultations: Cost savings to families

# Results from pediatrics

## ● Economic studies:

- 5 economic studies (7 publications)
- On the health care perspective; the cardiologic consultations seem to be cost saving, because of the low investment costs to the system and high transportation and caring costs of neonates in intensive care units.
- On the patient/parents' perspective; pediatric specialist and pediatric congenital heart disease consultations can be cost saving.
- Poor economic quality (scores between 0 - 3)

# Results from tele-radiology

## ● Social determinants of health

- Mostly directed towards efficiency of health services, some influence on quality of care.
- Influence on other social determinants (e.g. education, access) likely but less well established by studies.

# Results from tele-radiology

<i>Area of benefit</i>	<i># of studies</i>
Indications of cost savings	15
Approaches to calculation of savings	3
Reduction in transfer of patients	10
Improved quality of care	3
Influence on treatment planning	2
Reduction in adverse effects	1
Reduced travel distance for patients	1

# Results from tele mental health

**Table. Areas of study for mental health applications**

Area of study	RCTs	Non - RCTs
Depression, primary care	3	1
Panic disorder, agoraphobia	1	
Neuro-psychological rehabilitation	1	
Alzheimer's caregiver support	1	
Dementia		1
Telepsychiatry		7
Obesity, other health risks		2
On line forum [obesity/abuse/ psychiatry/anxiety disorder]		1
Training mental health professionals		1

# Results from tele mental health

- *Depression in primary health care; panic disorder – agoraphobia; neuropsychological rehabilitation: (RCTs)* There seems good or fair evidence that telephone – based interventions can be effective to these patient groups. This has implications for access to health care in rural areas, quality of care and probably costs.
- Substantial cost savings in traveling (patients and staff) can be found in many telepsychiatric applications.
- Economic quality moderate (from 2 to 7)



# Conclusions

- The number of studies that indicate the they have studied socioeconomic indicators is huge, however, relatively few studies have made systematic assessment in the area.
- The results from radiology, mental health and pediatrics shows that telemedicine can improve access to care and quality of care especially in rural and remote places. Cost savings were demonstrated in many cases, because of the reduced travel and time cost of patients and staff.
- Economic quality of studies moderate or poor