Cost-effectiveness of Therapeutic Patient Education

Prof. Alain Golay, Dr Grégoire Lagger, Dr Zoltan Pataky

Service of Therapeutic Education for Chronic Diseases
University Hospitals of Geneva

http://setmc.hug-ge.ch
Plan

• How to evaluate the efficacy of TPE
• Efficacy of TPE in 34 meta-analyses
• Efficacy of TPE in different chronic diseases
• Cost-effectiveness of TPE
How to evaluate the efficacy of TPE

- Which criteria of efficacy?
- Which type of TPE?
- How is TPE described?
Which criteria of efficacy

• Quality of life
• Psycho-social, depression, anxiety
• Drug observance
• Biological markers
• Morbidity – mortality
• Cost-efficacy

Quantitative – Qualitative?
Which type of TPE?

- Basic information
- General group discussions
- Practical skills training
- Behavior therapy, goal setting, reinforcement
- Problem solving strategies
- Practical psychosocial problems
- Cognitive therapy, role of thoughts and emotions
- Multidisciplinary-complex: psycho-pedagogical
- Art-therapy - relaxation
How is TPE described?

- Type: basic information to multidisciplinary complex
- Setting: individual or groups
- Ambulatory-hospitalized
- Duration: 1 hour, 1 day, 1 week, 12 sessions...
- Which healthcare providers?
- Reproduceable
Methodology

- 50,000 publications found in Pubmed
- 557 studies selected for 34 meta-analyses
- 88 studies selected for good descriptions
- 36 studies selected for good descriptions and complex-multidisciplinary TPE
Methodology

- 5 million TPE interventions not published
- 500,000 studies qualitative-quantitative TPE not selected by Pubmed
- 50,000 publications found in Pubmed
  - 557 studies selected for 34 meta-analyses
  - 88 studies selected for good descriptions
  - 36 studies selected for good descriptions and complex-multidisciplinary TPE
# Efficacy of TPE in 34 meta-analyses

<table>
<thead>
<tr>
<th>Disease</th>
<th>Meta-analyses</th>
<th>Studies</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>8</td>
<td>60</td>
<td>12,000</td>
</tr>
<tr>
<td>Asthma</td>
<td>3 (1 critical)</td>
<td>30</td>
<td>4,000</td>
</tr>
<tr>
<td>BPCO</td>
<td>4 (2 reviews)</td>
<td>80</td>
<td>5,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3</td>
<td>100</td>
<td>8,000</td>
</tr>
<tr>
<td>Cardiology</td>
<td>3 (1 review)</td>
<td>63</td>
<td>8,000</td>
</tr>
<tr>
<td>Obesity</td>
<td>1 (1 review)</td>
<td>30</td>
<td>1,000</td>
</tr>
<tr>
<td>Rhumatology</td>
<td>1</td>
<td>17</td>
<td>4,000</td>
</tr>
<tr>
<td>Oncology</td>
<td>4</td>
<td>177</td>
<td>12,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>34</strong></td>
<td><strong>557</strong></td>
<td><strong>± 54,000</strong></td>
</tr>
</tbody>
</table>
# Description’s quality of the educational interventions

N = 557 studies

<table>
<thead>
<tr>
<th>No description at all</th>
<th>Few descriptions only</th>
<th>Good descriptions but not complete</th>
<th>Very good descriptions with details</th>
</tr>
</thead>
<tbody>
<tr>
<td>22%</td>
<td>51%</td>
<td>23%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Efficacy of TPE

N = 557 studies

Percentage of studies

- 7% Worst
- 35% No effect
- 58% Improvement
Efficacy of TPE in studies selected for good description

N = 88 studies

- 2% Worst
- 39% No effect
- 59% Improvement
Global efficacy in studies with good description and good level of TPE

N = 36 studies

Percentage of studies

Worst  No effect  Improvement

0 %  38 %  62 %
Efficacy of TPE

Summary

• Improvement in 58% of the 557 studies selected from PubMed

• Improvement in 59% of the 88 studies with good description of educational intervention

• Improvement in 62% of the 36 studies with good description of educational intervention and with good level of TPE
Efficacy of TPE in different chronic diseases
Efficacy of TPE in diabetic patients

- Foot ulcers - 49%
- Hospitalisations - 89%
- Antibiotics - 57%
- Foot operations - 87%
- Amputations - 79%
- Missed workdays - 70%

Patout CA et al. Diabetes Care 2000;23:1339
Efficacy of a patient education programme on number of amputations

No education
(138 amputations)

Education
(30 amputations)

Toes
4.2 x

Below the knee
2.4 x

Above the knee
11.6 x

Assal et al Diab & Métab 19: 491, 1993
Asthma

Effect of education on absence from work

67 workers: 1 year follow up

Schizophrenia

Efficacy of TPE on relapses

TPE treatment

« Standard » treatment

Tuberculosis

Education improves compliance to treatment

1 year follow-up

p < 0.05

Efficacy of TPE on HbA1C

- Meta-analyses of 31 randomized controlled studies  n = 4263 Diabetics
- HbA1C decreased by 0.76 % and 1 % with 23.6 hours of total contact time with the educator
- The duration, the contact is predictor for HbA1C improvement
- 8 out of 31 studies had no effect at all, but in 6 out of 8, the control group received also a TPE

Norris S L et al. Diabetes Care, 2002
Efficacy of TPE on blood pressure

- Meta-analyses of 102 studies n = 6581
- Knowledge improved in 87 %
- Compliance measured in 30 studies and improved by 88 % in combined TPE + behaviour and psycho support
- Blood pressure is significantly improved in 88 % of the studies

Efficacy of TPE on readmission rates in patients with heart failure

- Meta-analyses of 8 randomized controlled studies
- Readmissions decreased in 7/8 studies
  \[ RR = 0.79 \quad \text{NNT} = 9 \]
- No effect on mortality

Patient education programmes for older people with heart failure

- 21 controlled randomised studies 1995 – 2005
- Patients > 60 ans, with severe heart failure
- 12/21 effective studies on mortality, readmissions,
- TPE must be done during hospitalisation and with follow-up

Eur Heart J, 2006, 27:596
Effect of TPE and psycho-social support on quality of life in cancer patients

- Meta-analyses: 37 controlled studies $n = 3120$

- Significant effect of TPE on quality of life

- Significantly after 12 weeks and better than social support or psychotherapy

Rehse B. et al 2003, 50: 179-186
Response to behavior therapy for obesity programme >26 weeks and extended-contact sessions (10-22 weeks)

<table>
<thead>
<tr>
<th></th>
<th>Initial w.loss (kg)</th>
<th>Net loss after extended contact (kg)</th>
<th>% initial loss maintained</th>
<th>Successful long term loss (&gt;5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>77</td>
<td>17.4</td>
<td>15.6</td>
<td>90 %</td>
</tr>
<tr>
<td>2.</td>
<td>45</td>
<td>13.8</td>
<td>15.2</td>
<td>110 %</td>
</tr>
<tr>
<td>3.</td>
<td>38</td>
<td>11.0</td>
<td>12.4</td>
<td>113 %</td>
</tr>
<tr>
<td>4.</td>
<td>49</td>
<td>9.9</td>
<td>10.1</td>
<td>101 %</td>
</tr>
<tr>
<td>5.</td>
<td>77</td>
<td>9.6</td>
<td>6.5</td>
<td>71 %</td>
</tr>
<tr>
<td>6.</td>
<td>48</td>
<td>9.2</td>
<td>8.2</td>
<td>90 %</td>
</tr>
<tr>
<td>7.</td>
<td>148</td>
<td>8.4</td>
<td>7.1</td>
<td>88 %</td>
</tr>
</tbody>
</table>

Medical costs for obesity and role of patient education

- Medical costs induced by obesity are considerable and mainly due to its complications.
  € 2 billions in Switzerland, 98 % for complications
  A. Schmid, A. Golay et al, Soz-Präventivmed. 50:87-94, 2005

- Weight loss programmes are cost efficient:
  a 8.6 Kg weight loss in obese-Diabetic patients for 11 years induces a save of € 13600 per patient per year.
## Total save after a two-week obese patient education

<table>
<thead>
<tr>
<th></th>
<th>During 9 months before</th>
<th>During 9 months after</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical costs induced by physicians</td>
<td>€ 64 101</td>
<td>€ 56 253</td>
<td>- € 7 848</td>
</tr>
<tr>
<td>Medical direct costs</td>
<td>€ 18 341</td>
<td>€ 16 686</td>
<td>- € 1 655</td>
</tr>
<tr>
<td>Paramedical direct costs</td>
<td>€ 10 005</td>
<td>€ 9 142</td>
<td>- € 863</td>
</tr>
<tr>
<td>Indirect costs: days out of work</td>
<td>12 649</td>
<td>5 377</td>
<td>- 7 272</td>
</tr>
<tr>
<td>TOTAL Save</td>
<td>€ 115 101</td>
<td>€ 87 458</td>
<td>€ 17 638</td>
</tr>
</tbody>
</table>

The total save is: € 480 per patient per year (17%)
Diabetes:
80% decrease of hospitalisations

Asthma:
80 % decrease of hospitalisation

Back pain:
+ 50 % return to work

N= 50 patients each group
Education - behaviour training - physical fitness (54 h. for 3 weeks)

Mayer et al. Spine 1985 ; 10 : 482
The contribution of education has not been well addressed

- Lack of theoretical basis of learning
- Poor methodology, description of interventions
- Evaluation often incomplete
- HCP insufficient formation in teaching

Y Lacasse et al. Chest 1997;111:1077-1088
A global approach

- patient education
- renewed training for general practitioners
- close follow-up with regular consultations
- an organized system of nursing care

Efficacy of Patient Education

Patient’s knowledge increase
Better recognition of symptoms
Better use of medication
More patient satisfaction
Enhanced well-being of patients
Improved clinical outcomes

Asthma: Guevara et al 2003, Devine et al 1996
Hypertension: Devine et al 1995, Boulware 2001
Patient education
Self-management interventions
Teaching plans
Psycho-educational programs, ...

are **cost-effective**

Conclusions

- Efficacy of TPE is well proven in controlled studies
- The quality and complexity of TPE is very important
- The methodology should be better described
- Authors’ reported weaknesses in the research methodology
- Lack of description of the educational interventions
Conclusion

The studies showing no effect of TPE are those with a control group having received some education.

We need more studies with robust methodology and using a complex reproduceable TPE model.
1$ invested in patient education makes a profit of 4 $ per patient
Thanks to all my collaborators

Alain.Golay@hcuge.ch

www.setmc.hug-ge.ch