EBM teaching in a pandemic: A pre-post comparison of medical students' self-efficacy for dealing with scientific literature

M. R. Noftz
Institute for Social Medicine and Epidemiology, University of Luebeck, Germany
4th year Medical Students
Two weeks of EBM-Teaching in six groups (curricular, n=20/group)

Covid-19 as a new didactic-methodological principle

March 2020 EBM Teaching (online)

- Self-efficacy according to Bandura (Bandura 1994)
- Increase in EBM knowledge and self-efficacy after EBM course (Stack et al. 2020)
- Self-efficacy as a predictor of academic success and academic intention (Chemers et al. 2011, Estrada et al. 2011, Robinson et al. 2018)

Subjective impression of the lecturers: Students increased interest in EBM

- Self-efficacy according to Bandura (Bandura 1994)
- Increase in EBM knowledge and self-efficacy after EBM course (Stack et al. 2020)
- Self-efficacy as a predictor of academic success and academic intention (Chemers et al. 2011, Estrada et al. 2011, Robinson et al. 2018)
To investigate whether and to what extent teaching EBM concepts in relation to current pandemic events influences students' self-efficacy (SWE) in dealing with medical literature on Covid-19.
Methods

• Prospective study, pre-post online survey at eight-week intervals
• 4th year medical students (n=221) winter/summer semester 2020/2021

• Self-developed survey instrument with a total of 14 items (Cronbachs-α 0,8)
  • Five descriptive items
  • Five items on self-efficacy with regard to handling scientific literature on Covid-19 (following the 5-A’s EBM Sackett)
  • Four items on interest in scientific literature/pandemic/importance of EBM skills

• Self-efficacy presented as the means of the sum of the combined individual items
• Differences between the pre-post survey were tested by paired sample t-test (α=5%)
### Results I

#### Demographics

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>83 (38%)</td>
<td></td>
</tr>
<tr>
<td>Mean age, years (SD)</td>
<td>24.8 (3.4)</td>
<td></td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>59 (71%)</td>
<td></td>
</tr>
<tr>
<td>PhD started, n (%)</td>
<td>43 (52%)</td>
<td></td>
</tr>
</tbody>
</table>

#### Mean SWE-Score in dealing with scientific literature (pre/post)

- **WiSe 2021**
  - Total: Pre = 16, Post = 19
  - p < 0.001
- **SuSe 2021**
  - Total: Pre = 17, Post = 20
  - p < 0.001
- **Total and by semester (SWE Score 0-25)**
  - +3.0 score points (SP), p < 0.001
## Results II

### Interest in scientific literature, the pandemic and importance of EBM skills

<table>
<thead>
<tr>
<th>Selection of Items</th>
<th>Total N=83</th>
<th>Winter Semester 2020/2021 N=50</th>
<th>Summer Semester 2021 N=33</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General interest in...</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1: ...scientific topics in medicine.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2: ...the current pandemic situation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3: ...in scientific literature on the current pandemic situation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I0: I believe that competences in the field of EBM are important for me as a future physician.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Pre = Scale mean from the pre-survey (scale 0-100), MD= Mean difference post-pre, *p<0.05
Limitations

- Self-developed survey questionnaire (validity)
- No comparison group
- No comparison of student’s performance (grades) with pre-pandemic times
- Social desirability cannot be exclude
- No statement on EBM competence of students
Conclusions

• The Covid-19 pandemic can serve in teaching as an important lesson on scientific literacy/EBM through personal participation and active learning, different from historical pandemic examples (Fourtassi et al. 2020, Anderson et al. 2020).

• Student-oriented and current topics for teaching EBM content seem to have a positive effect on SWE in relation to scientific literature.

• We need more research and exchange on EBM teaching topics with regard to methodological and didactic principles to improve EBM education.
EBM teaching in a pandemic:
A pre-post comparison of medical students' self-efficacy for dealing with scientific literature

Dr. Maria Noftz (MPH)
Institute for Social Medicine and Epidemiology
University of Lübeck, Germany
E-Mail: maria.noftz@uksh.de
References

- Referentenentwurf des Bundesministeriums für Gesundheit Verordnung zur Neuregelung der ärztlichen Ausbildung [Internet]. Verfügbar unter: https://www.bundesgesundheitsministerium.de (Zugriff am 17.03.22)