

# Technology-based counselling in dementia (TeCoDem): a mixed-methods systematic review



Dorothee Bauernschmidt<sup>1</sup>, Julian Hirt<sup>1,2,3</sup>, Janina Wittmann<sup>1</sup>, Gero Langer<sup>1</sup>, Fabian Wilde<sup>1</sup>, Susanne Unverzagt<sup>4</sup>, Gabriele Meyer<sup>1</sup>, Anja Bieber<sup>1</sup>

<sup>1</sup> Institute of Health and Nursing Science, Medical Faculty, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany

<sup>2</sup> Center for Dementia Care, Institute of Nursing Science, Department of Health, Eastern Switzerland University of Applied Sciences, St.Gallen, Switzerland

<sup>3</sup> Department Clinical Research, University of Basel, Basel, Switzerland

<sup>4</sup> Institute of General Practice and Family Medicine, Martin Luther University Halle-Wittenberg, Halle (Saale), Germany

## Background and objectives

People with dementia and their informal carers are likely to benefit from individual and timely counselling. Telephone counselling might reduce depressive symptoms experienced by carers of people with dementia [1]. The SARS-CoV-2 pandemic highlighted, that technology-based counselling could be an alternative to personal contact interventions due to better accessibility and convenience. We aimed (i) to identify conditions of successful implementation of technology-based counselling interventions in dementia and (ii) to investigate the effectiveness of these interventions.

## Methods

We used a mixed-methods design and planned to conduct a Qualitative Comparative Analysis (QCA) and a meta-analysis [2]. We performed a comprehensive systematic literature search combining an electronic database search with supplementary search methods. Studies with various designs of telephone-, web-, or mobile-based counselling interventions for people with dementia and/or informal carers were included for the QCA to identify necessary or sufficient conditions for a successful implementation. A meta-analysis was performed according to the Cochrane handbook methodology [3] on our primary outcome depressive symptoms as well as on burden and self-efficacy/mastery. We did not restrict to specific outcomes and performed a narrative synthesis or structured reporting where pooling of data was not possible.

## Results

### Qualitative Comparative Analysis

We included 61 reports on 29 technology-based interventions ranging from long-established helplines to theory-based, manualized interventions at different stages of implementation.

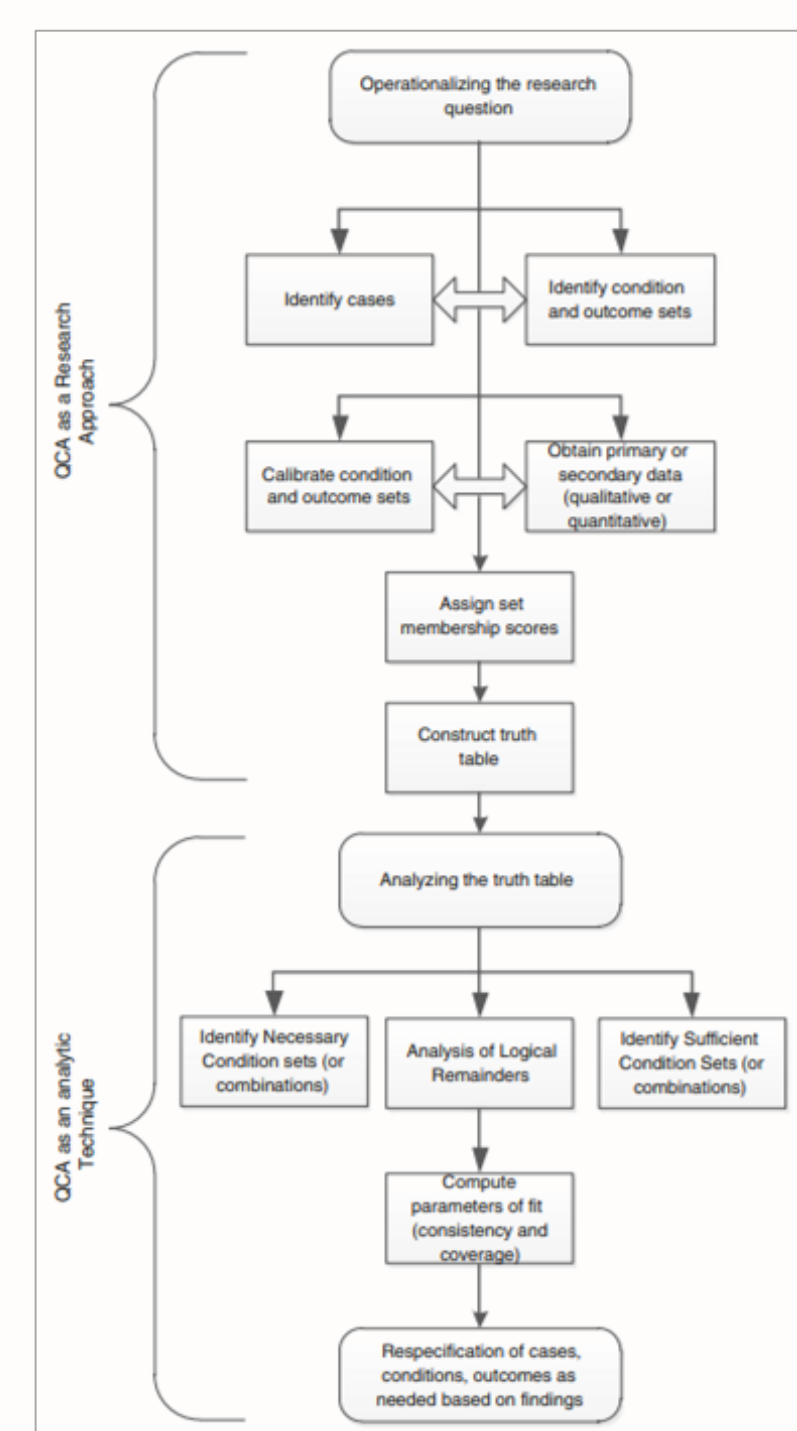


Figure 1: QCA as an approach and as an analytic technique [5]

The indicators 'acceptability', 'fidelity', 'adoption', 'appropriateness', 'feasibility', 'implementation cost', 'penetration', and 'sustainability' [4] were used for operationalizing the outcome 'successful implementation'. We adjusted the definitions of the indicators according to the study context and used them to inform the extraction of data. A fuzzy-set approach was planned to calibrate the implementation success for each intervention.

The included publications differed considerably in type, scope, detailedness, and quality of reporting. Details on implementation issues were insufficiently reported for most interventions. We found no adequate information to assess the degree of implementation success across the interventions.

After intensive discussion in the research team, we concluded not to conduct a QCA due to the lack of a consistent data basis.

### Synthesis of results

We included five RCTs with 880 participants. Telephone or videoconferencing software was used to deliver two to 23 counselling sessions over a period of one to twelve months. Comparisons were educational and resource materials only, standard (helpline) services, non-directive support, and home visits. We rated all outcomes at an overall high risk of bias.

The pooled data of two studies with 246 participants revealed non-significant lower depression scores experienced by informal carers at six months or twelve months (SMD -0.15; 95% CI -0.40 to 0.10,  $I^2=0\%$ ).

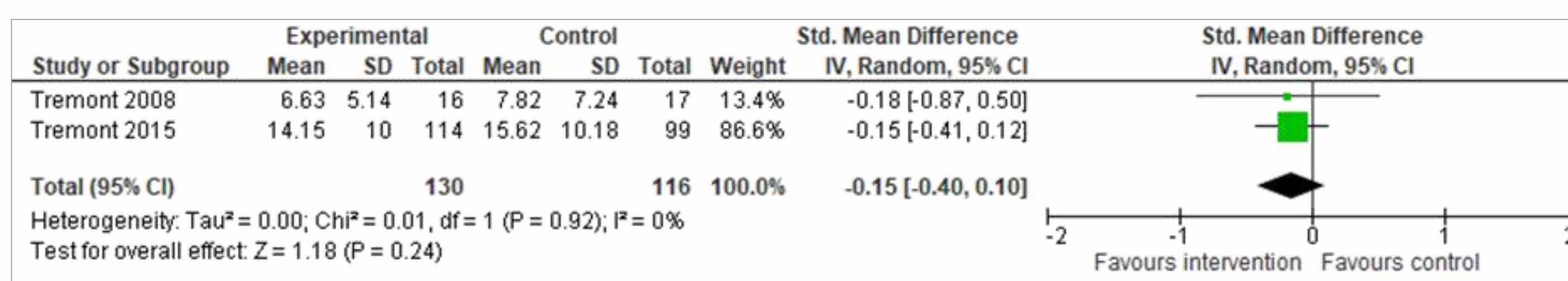


Figure 2: Forest Plot for depressive symptoms experienced by carers of people with dementia

There were also no effects on carers' perceived burden and self-efficacy/mastery. In a variety of different outcomes, only individual studies show effects of technology-based counselling on few outcomes such as carers' reaction to dementia-related behavior or resource use of informal carers.

## Conclusions

Very few technology-based counselling interventions have been evaluated in RCTs or in process evaluation studies. We found no clear evidence for the effectiveness of these interventions in reducing depressive symptoms experienced by informal carers of people with dementia. There was no sufficient data basis to identify conditions for a successful implementation. Consistent reporting and further research is needed to understand how technology-based counseling interventions can be made effective and successfully implemented.

Funding statement: German Federal Ministry of Education and Research (BMBF); grant number: 01KG2110

Correspondence to: anja.bieber@medizin.uni-halle.de