

MIDDEL Biomarkers of stress

The impact of music on short-term stress in people with dementia and depressive symptoms: repeated salivary cortisol and alpha-amylase assessment in the context of the multinational MIDDEL trial

Poster number: 4

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Aims, research questions and working hypothesis: Stress negatively impacts well-being and quality of life in people with dementia, music may have a stress-reducing effect. We assessed the short-term effect of music on stress in Germany, Norway and the Netherlands as part of the MIDDEL cluster-randomized controlled trial (Music Interventions for Dementia and Depression in Elderly care).

Means/methods implemented by the consortium: Participants: Care home residents were eligible for inclusion in this add-on study if they were participants in the MIDDEL trial. Participants with swallowing difficulties were excluded. Intervention: Participants were randomly allocated to group music therapy (GMT), recreational choir singing (RCS) or a control group receiving care as usual without music interventions. The control group participated in a book reading session on data collection days. Data collection: At three timepoints, saliva samples were collected using SalivaBio Children Swabs at 10 minutes before, 15 and 60 minutes after GMT, RCS or a book reading session, along with a Visual Analogue Scale for Stress .

What are the outcomes of the project? (milestones achieved, key results obtained): Informed consent was provided for 207 care home residents (45.3% of eligible participants) in Germany (n = 62), the Netherlands (n = 110) and Norway (n = 35). 1014 saliva samples were collected in 183 participants. 671 samples (66.2%) were valid for alpha-amylase assay and 633 samples (62.4%) for cortisol assay. Salivary cortisol, alpha-amylase, and subjective stress Significantly changed from pre- to post-intervention within groups in multiple (but not all) assessments. No significant difference was found between study arms.

Significance and impact of the work on the field: Objectively determining the impact of music on stress in people with dementia is a challenge. Collecting and measuring biomarkers alpha-amylase and cortisol in saliva is reliable and non-invasive and therefore may be a valuable contribution to research into the effectiveness of music interventions in dementia. Our findings show it is feasible to collect saliva samples in persons with dementia. Findings indicate group interventions can have a positive impact on stress levels in care home residents with dementia. The level of arousal or intensity of participation required from the person with dementia may play a role in salivary cortisol and alpha-amylase concentrations. This may affect our mixed findings of the short-term impact of music on stress.

Next steps and future challenges: To increase the number of valid saliva samples, future studies should consider stimulation of saliva flow. Further analysis will be conducted to assess the role of potential confounding variables. A sensitivity analysis will be conducted, including a passive control group as a subgroup, i.e. participants who provided saliva samples, but did not actually attend the music session. Future research should explore the influence of having both participants and proxies (care staff) fill out a Stress Visual Analogue Scale.