POSTER PRESENTATION 3: PHYSICAL AND MENTAL HEALTH

Cantonese-speaking smart doll for institutionalized elderlies with all-cause dementia at severe stage

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Purpose Behavioral and Psychological Symptoms of Dementia (BPSD) refer to a cluster of symptoms, such as agitation, irritability, aberrant motor behavior and depression, demonstrated by persons with dementia (Margallo-Lana et al., 2001). The syndrome affects over 70% of institutionalized persons with dementia (Margallo-Lana et al., 2001) and have increased caregiving stress of nurses and care workers (Song & Oh, 2015). This study aims at investigating if engagement with a Cantonese-speaking smart doll could reduce BPSD and improve social communication in persons with dementia. **Method** The smart doll was a custom-made infant-sized doll consisting of soft rag wrap, cotton filling and a battery-powered, programmed electronic device. It would invite participants for engagement by saying "I am bored" and "Play with me" in a child-like voice in Cantonese. Cognitive training games such as counting numbers, naming familiar places and telling weekdays were included in the doll. Nine female participants with severe dementia were recruited from local elderly homes, with written informed consent obtained from their guardians or family members. The doll was given to the participant 5 days per week during daytime from 9 am to 6 pm. Before intervention, demographics of the participants were recorded (Table 1). Outcome measures, including Observational Measurement of Engagement (OME; Cohen-Mansfield et al., 2009), Social subscale of Verbal and Nonverbal Interaction Scale-CR (VNVIS-CR; Williams et al. 2017), and Cohen-Mansfield Agitation Inventory (CMAI; Cohen-Mansfield, 1991), were carried out by caretakers at the elderly homes. OME was measured once at baseline, while VNVIS-CR and CMAI were measured before and after the 1-month intervention. **Results and Discussion** The participants spent on average 3.4 ± 3.9 min within the 15 min observation time, with attention score of 2.0 ± 1.1 (out of 1-4), and attitude score of 4.7 ± 0.9 (out of 1-7). This study found no significant improvement/decline in the verbal and nonverbal interaction of the participants (0.78 ± 9.09, $p=0.80$, paired t-test) (Figure 1a). A statistically significant decrease in agitation of the participants was found after one-month interaction with the smart doll (0.63 ± 0.74, $p<0.05$, paired t-test) (Figure 1b). Small-numbered and single-gendered participants are two limitations of this study. Further study is needed to verify if the results can be generalized to a larger population with both female and male subjects.

References

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Table 1. Participant's demographic data

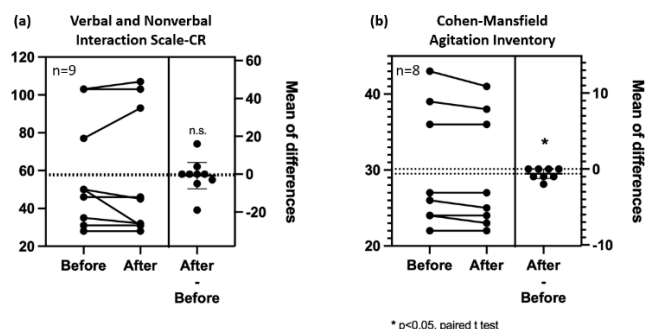| Participant (N=9)	Mean (SD)
Gender, N Male Female	 0 9
Age range: 56-94	80.4 (14.7)
Years of staying in elderly home, (n=8)	0.82 (0.88)
Montreal Cognitive Assessment (MoCA) test (30), (n=8)	5.1 (3.0)

Figure 1. Behavioural changes of participants in **(a)** interaction and **(b)** agitation scales.