Additional file 4: Context-Mechanism-Outcome statements with supporting quotes

#	CMO statement	Supporting quotes
1	ADPs that 1) carefully observe attendees, are well-informed about attendees' health and care needs, and promote at-tendees' health and well-being, 2) provide feedback to caregiv-ers about the attendee's care needs and conditions, and 3) pro-vide care perceived as high quality by caregivers (C), delay at-tendees' LTC home admission (O) because 1) ADP staff pick up quickly on changes and concerns so they can be addressed, preventing crises that may lead to the need of more complex institutional care, 2) enable the caregiver to address changes and concerns by sharing the identified issues with caregivers, and 3) reassure caregivers and give them peace of mind, so caregivers can take a break while the attendee attends the ADP, sustaining caregivers' ability to provide continued care at home (M) [96,97,99,101,102].	**Gústafsdóttir (2011) [96]** "Health promotion practices in these day care units were supposed to sustain the active role of an individual with dementia. An active role, supposedly, enhances each person's functional ability. Such enhancement of the functional ability of the clients was regarded very important in all the units and seemingly affected their respective agency and their quality of life [...]. Nevertheless, the emphasis on health promotion practices in these units aimed not least at delaying institutionalization while enhancing the well-being of the guests" (p. 441) "Knowledgeable monitoring of health and well-being characterized the way in which the staff encouraged health promotion practices in all the units participating in this research. The staff formed a clear picture of each client's condition on admission to the unit and had the knowledge and skills to evaluate from 1 day to another how each individual's condition, capabilities, preferences, and mood affected her or his health promotion practices." (p. 441) "The staff pointed out that a regular weekly access to a geriatrician helped them to upheld health promotion practices for their clients. Such consultation allowed for evaluation of any changes that indicated a need for some kind of medical intervention. All evaluation of changes was carried out in close cooperation with the guest's supporting family member, who might bring the attention of staff to certain changes. Remarkably, any changes that undermined the agency of the person with dementia were observed as a sign of dwindling capabilities that might eventually lead to a move to a nursing home." (p. 441) **Guttman 1991 [97]** "The [adult day] programs for a population with dementia provide close health monitoring particularly needed by this group who may suffer from other health problems about which they may be unable to communicate. The health care orientation, medical direction and intensive mix of staffing patterns offered by these programs [...] indicate their potential to better serve the needs of persons with Alzheimer's disease by preventing deterioration, providing respite for caregivers and averting, or postponing institutionalization." (p. 42) "The patient is cared for in a protected, planned, stimulating environment by trained staff. Health status is monitored, therefore problems can be treated with dispatch and institutional stays can be prevented or minimized." (p. 82)

Laird et al. (2017) [99]
"The respite provided by day centres was perceived to be "crucial to carers" [...] and "invaluable for maintaining the client in a community setting" [...]." (p. 5)

"Day centre staff pick up quickly on changes and concerns, and report these on to the social worker and general practitioner as appropriate for assessment and management, and to the family" (p. 5)

"Participants perceived that their feedback offered reassurance to the family that their relative is cared for and safe." (p. 5)

Molzahn et al. (2009) [101]
"[...] she [loved one] is able to have the things she enjoys in here, and be part of the family. That's important to her....She doesn't want to go in a home at this point in time" (p. 41)

"She's legally blind. For her to move to a care facility would be very difficult for her. She knows her home, she loves her home. Her memories are here." (p. 41)

"I know very well that I am 90 years old. I'm living here alone, doing it all by myself well, I won't say doing it all by myself because I have help from the ladies here [ADC] if I need it.... I would not want to go into any place where I have to live with anybody else because I'm quite happy in my own company". (p. 41)

"The day programs were helpful in that "they're watching all the time and seeing." Staff in the day programs facilitated awareness about risk factors, such as rugs on the floor. For some people, the bath service in the adult day program was important. It reduced fear of falling, and one caregiver noted "they [staff] give her that attention....They wash her hair, do her fingernails. And it's safe." (p. 41)

"They are as much concerned about my well-being as they are about his [loved one], because the ones [ADC staff] we have are really good". (p. 43)

Symonds-Brown et al. (2025) [102]
"The nurse at the programme could see the results on the electronic health record and assumed that the doctor had prescribed treatment, but, because the typical trigger for the test was not an office visit, the results were not communicated by the physician's office to the family. Thus, the delirium related to Peg's confirmed but not acted-upon urinary tract infection continued, and Peg's functioning continued to decline. At the programme she

		stopped doing crossword puzzles and seemed quieter. Her family hired a second staff to help out at home to ensure that the evenings and weekends were covered. At both home and the programme there were whispers of 'placement' looming." (p. 2176)
2	ADPs that offer integrated family support (compared to ADPs that focus on attendees only) (C) reduce attendees' risk of LTC home admission (O) because both, attendees and caregivers are systematically supported in coping with the various dementia-related care needs, enabling them to better meet these needs (M) [92,93].	**Dröes et al. (2004) [92]** "[…] the increase in feeling of competence and the increase in experienced support by services in the experimental group [integrated caregiver support] […] were accompanied by delay in institutionalization of the person with dementia […]." (p. 208) **Dröes et al. (2006) [93]** "The [integrated caregiver support program] integrates different types of support which have proved to be effective in practice and/or research. These types of support include, among other things, informative meetings, discussion groups and social activities for the carers, which are intended to improve their knowledge and sense of competence and to support them emotionally and socially." (p.113) "A reduction of experienced burden and an increase in experienced support from professional services over a seven month participation period were found within the [integrated caregiver support] group: 82% of the carers felt less burdened. We also found a delaying effect on nursing home placement." (p. 121) "Another effect that might, at least partly, explain the delay in admission was that the carers of the [integrated caregiver support] group experienced increased support from other professional services. This effect may well have been stimulated by the case management offered in the [integrated caregiver support program], and by the close collaboration of the meeting centres with other care and welfare Services." (p. 122)
3	Attending an ADP (vs not attending) (C) reduces attendees' risk of LTC home admission (O), because caregivers receive respite, which gives them more energy to take care of the attendee and better meet their care needs, and ADP attendance delays attendees' physical and cognitive decline (M) [97,103].	**Guttman 1991 [97]** "Many families would continue to care for their impaired relatives in the community on an extended basis if they had relief from the interminable burden of care. Adult day care is viewed, more and more, as a viable and acceptable modality for both providing relief for the caregiver and as an appropriate setting for care of the dementia patient." (p. 35) "[…] the group whose impaired relatives had participated in day care had significantly lower scores on stress, and desire to institutionalize the patient, relative to Time 1. And daycare emerged as the variable which contributed the most variance when the dependent variable was desire to Institutionalize." (p. 73) "The results of this study have shown a relationship between adult day care utilization and a decrease in the desire of the caregiver to institutionalize the patient. Since willingness to

		institutionalize is highly predictive of actual institutionalization, it can be concluded that day care for many Alzheimer's patients can be an appropriate and effective alternative long-term care modality [...].” (p. 82) **Tomita et al. (2010) [103]** Those who used [...] respite care [...] were less likely than non-users to be [...] institutionalised.” (p. 10) “For day care, when the subjects are limited to individuals certified as having light need for long-term care, a positive effect was seen.” (p. 10) “Two possible mechanisms may explain the effects of [ADP attendance] in preventing [...] institutionalisation. One is that [ADPs] prevent a decline in the physical and mental state of individuals certified as needing long-term care (prevention of decline) [...] and the other is that these services reduce the care burden of caregivers, allowing them to maintain their ability to provide care (maintenance of caregivers’ ability) [...]. (p. 10)
4	If an ADP 1) sufficiently integrates caregivers, 2) sufficiently supports caregivers, or 3) provides person-centred care (C), the attendee will stay exposed to ADP services (O) because the caregiver is willing and able to keep sending the attendee to the day program (M) [92,93,99].	**Cox (1997) [91]** “[...] the greater anxiety and depression among those [caregivers] stopping the program suggests that the service is, in itself, insufficient to meet their needs or those of their relative. [...] Consequently, for many caregivers respite is unable to offer relief or prevent nursing home placement.” (p. 512) “[There is a] necessity of combining respite care with counseling that can strengthen the coping mechanisms of caregivers and their willingness to accept services.” (p. 512) **Dröes et al. (2004) [92]** “[...] participation in the [integrated caregiver support] Program [...] seems to be more effective with regard to increasing the feeling of competence of the carers, that is, the extent to which they feel able to go on caring for the person with dementia.” (p. 208) “After only three months we found a significant effect in experienced support from professional services: carers in the [integrated caregiver support] Program experienced more support from services while carers who utilized the regular day-care felt that the support in this period decreased. Finally, also after three months, an effect was observed in applied coping strategies: carers who participated in the [integrated caregiver support] Program appeared to avoid problem situations relatively more frequently than carers in the control group. Restriction of situations that evoke stress can be considered an effective way of coping.”

"[…] carers who participate in [integrated caregiver support] programs mostly report that they are very satisfied with the offered support […] and manage to go on caring longer than carers who don't receive this support." (p. 208)

Dröes et al. (2006) [93]
"The integrated [caregiver support] also proved more effective than regular psychogeriatric day care in decreasing psychological and psychosomatic symptoms in the subgroup of lonely carers." (p. 121)

"A reduction of experienced burden and an increase in experienced support from professional services over a seven month participation period were found within the [integrated caregiver support] group: 82% of the carers felt less burdened." (p. 121)

Gitlin et al. (2024) [95]
"Augmenting [ADPs] with systematic caregiver support […] resulted in reductions in caregiver depressive symptoms over time […]. […] caregivers using [the enhanced caregiver support ADP] benefit from ongoing systematic support to address depressed mood and evolving care needs." (p. 8)

"We also found that […] caregivers in [the enhanced caregiver support ADP group] utilized [ADPs] more than caregivers at control sites. Specifically, people with dementia in intervention sites attended [ADPs] 47 more days than control sites, representing a 60.6% increase […]. (p. 8)

Laird et al. (2017) [99]
"It was highlighted that day care attendance fosters a "sense of purpose and a sense of belonging" […] that not only sustained clients with dementia, but slowed down progression of cognitive impairment." (p. 5)

"The participants placed emphasis on sustaining the relationship between the family carer and the client with dementia, which they understood had potential to become "intense." The respite provided by day centres was perceived to be "crucial to carers" […] and "invaluable for maintaining the client in a community setting" […]." (p. 5)

"Participants perceived that their feedback offered reassurance to the family that their relative is cared for and safe." (p. 5)

		"There is a broad consensus in the international literature on family caregiving that day care services, designed to meet the needs of service users and families, are central to the well-being of family carers and to their ability to continue a caregiving role [...]. Findings from the present study conveyed a sympathetic understanding of the complexity of family caregiving relationships in the dementia trajectory, and of the importance of day respite for people living with dementia and their family carers [...]. The participants in our study also highlighted that day care attendance was particularly important for reassuring family members who lived some distance away that their relative was safe." (p. 7)
5	If attendees' ADP exposure is sufficient (C), their risk of LTC home admission decreases (O) because they receive the required monitoring and support, and their caregivers receive the respite and guidance needed to prevent care needs from deteriorating and to address deteriorating care needs (M) [64,66,94,98,100].	**Gaugler et al. (2003) [94]** "[...] those who used low [...] and high amounts of adult day services were more likely to experience an earlier placement. Prior research has emphasized that care recipients who utilize community-based long-term care infrequently are institutionalized sooner, as the ''dosage'' of service is not sufficient to exert any meaningful impact on care recipient functioning or offer adequate relief to caregiving families." (p. 227) "[...] for some families community-based support [including ADPs] is a stepping stone to institutionalization; caregivers become acclimated to relinquishing responsibilities to formal providers and use these services as a transition to 24-hr skilled nursing care. The particular services used by these families may be too little, too late; community-based support is utilized for a short period of time while the nursing home is selected. It appears as though these different processes are at work in the present study." (p. 227) **Gaugler et al. (2005) [66]** "Another important factor to consider when one is interpreting the findings is the low utilization of adult day services. On average, caregivers utilized 7.69 days of adult day services in the 6 months prior to baseline, and 62.7% did not use adult day care at all [...]. As has been reiterated in evaluations of adult day services and its effectiveness for care-recipient and caregiver outcomes, a potential reason for the lack of demonstrable benefits is low utilization [...]. Because of the infrequent use of adult day services, these programs may have had little opportunity to exert benefits. The same process may have occurred in the current study, explaining the lack of effects of early adult day service utilization on time to nursing home placement." (p. 183) "It was not clear whether those who indicated a need for community-based long-term-care services early in their dementia caregiving careers received the necessary formal help. As in other studies, adult day care utilization was low, suggesting some unwillingness [or access barriers?] on the part of dementia caregivers to utilize this service." (p. 183)

		Kelly et al. (2016) [98] "The present study provides compelling evidence for the beneficial effects of day program attendance, and shows that these effects increase systematically as consistency of day program attendance increases. [...] the risk of institutionalization was lower for individuals who attended [ADPs] at a Moderate or High dosage [...], and the hazard decreased systematically with increasing [ADP] dosage [...]." (p. 828) "[...] this study provides compelling evidence for the beneficial effect of [ADPs] on a system-based outcome—that is, reduced risk of institutionalization—on a population of community-dwelling seniors. Results further indicate that benefits increase systematically with higher dosages, and are not likely due to additional home health services that are typically provided to consistent ADS attendees." (p. 832) **McCann et al. (2005) [100]** "Contrary to our hypothesis, participants with Alzheimer's disease who used more days of adult day care each week had an increased risk of nursing home placement. This risk persisted despite consideration of multiple indicators of disease duration and severity and of caregiver burden and workload. [...] Some investigators have suggested that the reason adult day care does not delay nursing home placement is because caregivers wait too long to begin using it. [...] the caregivers are so burdened and the patient so severely impaired that the relief that adult day care provides may actually expedite nursing home placement." (p. 761) **Rokstad et al. (2018) [64]** "[...] the current study [revealed] an increased risk for [nursing home] admission in the [ADP] group compared to the control." (p. 7) [A] potential explanation is that day care services are introduced in the moderate to late stage of dementia, when stress and burden have become too high for caregivers to master. As such, the service will serve more as a transitional period to residential care than as a respite to postpone the need for [nursing home] admission [...]. [...] intervention early in the caregiving process can offset caregiver stress through utilisation of adult day service support, respite and education [...]." (p. 8)
6	If ADPs are utilized early in their caregiver trajectory (C) the attendee's risk of LTC admission may be reduced (O) because ADPs may be able to help the caregiver mitigate the struggles associated with assuming a caregiving role, and attendees and caregivers receive early supports,	**Cho et al. (2009) [90]** "For wives, [ADP] use shortened the time to placement. These results suggest that [ADPs] may serve as a stepping-stone to institutionalization, at least for wives. For daughters, in contrast, the effect of [ADP] use was to delay institutionalization. [...] wives and daughters enrolled their relative into [ADP] at different points in their own caregiving careers. [...] wives who select to use [ADPs] view it as a trial institutionalization, which then allows them to take a more permanent step to place their husband in a nursing home. They may feel they

helping to slow down deterioration in attendees (M) [64,66,90,94,100].	have fulfilled their obligation and are ready to let go. Daughters selecting to use [ADPs], in contrast, may be more likely to be looking for ways to free up time for addressing competing obligations, including work, and other family and social obligations." (p. 65) **Gaugler et al. (2003) [94]** "[…] for some families community-based support [including ADPs] is a stepping stone to institutionalization; caregivers become acclimated to relinquishing responsibilities to formal providers and use these services as a transition to 24-hr skilled nursing care. The particular services used by these families may be too little, too late; community-based support is utilized for a short period of time while the nursing home is selected. It appears as though these different processes are at work in the present study." (p. 227) **Gaugler et al. (2005) [66]** "[…] for caregivers in their earlier stages of the role, the utilization of in-home services such as personal care or chore help was predictive of a delay in institutionalization. Although a range of evaluations has suggested the equivocal effects of community-based long-term-care [including ADP] use in delaying nursing home placement, these studies have not considered the importance of timing, or when services are utilized in the course of dementia caregiving […]. As the findings imply, the timing of service use is a potentially important component to consider when one is examining the empirical associations between community-based long-term care and key dementia caregiving outcomes. […] early community-based long-term-care utilization in the dementia caregiving context can potentially mitigate the upheaval that occurs during the early stages of informal long-term care and even delay nursing home placement, an elusive yet desired program outcome for community-based long-term-care providers." (p. 183) "It was not clear whether those who indicated a need for community-based long-term-care services early in their dementia caregiving careers received the necessary formal help. As in other studies, adult day care utilization was low, suggesting some unwillingness [or access barriers?] on the part of dementia caregivers to utilize this service." (p. 183) **McCann et al. (2005) [100]** "Contrary to our hypothesis, participants with Alzheimer's disease who used more days of adult day care each week had an increased risk of nursing home placement. This risk persisted despite consideration of multiple indicators of disease duration and severity and of caregiver burden and workload. […] Some investigators have suggested that the reason adult day care does not delay nursing home placement is because caregivers wait too long to begin using it. […] the caregivers are so burdened and the patient so severely impaired

		that the relief that adult day care provides may actually expedite nursing home placement." (p. 761) **Rokstad et al. (2018) [64]** "[…] the current study [revealed] an increased risk for [nursing home] admission in the [ADP] group compared to the control." (p. 7) [A] potential explanation is that day care services are introduced in the moderate to late stage of dementia, when stress and burden have become too high for caregivers to master. As such, the service will serve more as a transitional period to residential care than as a respite to postpone the need for [nursing home] admission […]. […] intervention early in the caregiving process can offset caregiver stress through utilisation of adult day service support, respite and education […]." (p. 8)
7	If ADPs do not provide individualized, one-on-one cognitive stimulation therapy, but rather broad, group-based cognitive activities, while home care services do provide one-on-one cognitive stimulation therapy (C), attendees' risk of LTC home placement is higher than that of non-attendees (O) because 1) attendees' cognition declines more severely than non-attendees' cognition and 2) attendees' relationships with their caregiver are less supported that non-attendees' relationships with their caregivers (M) [68].	**Hong et al. (2025) [68]** "[…] individuals receiving day care or combined care were more likely to be admitted to LTC facilities than those receiving home care. Home care services provide one-on-one cognitive activity programs tailored to the cognitive levels of beneficiaries with dementia. In contrast, day care services primarily offer group-based cognitive activities, which often include individuals with varying levels of cognitive impairment, from mild to severe dementia. This heterogeneity may hinder the delivery of tailored interventions and reduce the potential effectiveness of cognitive activities. Prior research has shown that home- based individualized cognitive stimulation therapy not only improves cognitive function but also enhances the quality of relationships with caregivers. Furthermore, individualized cognitive stimulation therapy is more effective in delaying institutionalization. Home care tailored to individuals' cognitive abilities and fostering emotional bonds with caregivers in a familiar home environment may help preserve cognitive function and delay LTC facility admissions. Therefore, the findings suggest that promoting the use of individualized home care for individuals with dementia may help delay institutionalization." (p. 4)
8	ADP attendees whose caregiver is their daughter or daughter-in-law (compared to attendees whose caregiver is their wife) (C) are admitted to LTC homes later (O) because daughters/daughters-in-law seek support from ADPs sooner in the care trajectory (exposing both the attendee and themselves to ADP supports for a longer time, which increases the ADP benefits) since their motivation is to receive respite and free up time for their own needs, while wives feel more obligated to take on the care themselves for as long as possible and only use ADPs when they	**Cho et al. (2009) [90]** "For wives, [ADP] use shortened the time to placement. These results suggest that [ADPs] may serve as a stepping-stone to institutionalization, at least for wives. For daughters, in contrast, the effect of [ADP] use was to delay institutionalization. […] wives and daughters enrolled their relative into [ADP] at different points in their own caregiving careers. […] wives who select to use [ADPs] view it as a trial institutionalization, which then allows them to take a more permanent step to place their husband in a nursing home. They may feel they have fulfilled their obligation and are ready to let go. Daughters selecting to use [ADPs], in contrast, may be more likely to be looking for ways to free up time for addressing competing obligations, including work, and other family and social obligations." (p. 65)

	reach their limits (maybe even seeing the ADP as a trial institutionalization to prepare for a LTC home admission) (M) [90].