An RCT assessing the effects of varying exposure times of therapeutic communication robots on dementia in group homes in Japan

Kaoru Inoue 1), Mitsunobu Kono 2), Ryuji Kobayashi 3), Takanori Shibata 4), Chiyomi Yatsu 1), Daryl Patrick Gamboa Yao 5), Masahiro Shigeta 6) 1) Tokyo Metropolitan University, 2) Kinjo University, 3) Hyogo Medical University, 4) National Institute of Advanced Industrial Science and Technology, 5) University of Illinois at Chicago and 1), 6) The Jikei University School of Medicine

Background:

-Japan faces challenges with an aging population and a shortage of caregivers.

Figure 1. PARO

•	-There is keen interest in communication robots like PARO for dementia care.													Table 1. The Baseline demographic and clinical characteristics for each group				
-In the U.S., PARO has been approved as a medical device.																		hrice weekly
-Considering clinical usage of PARO in Japan, current scarcity for strong evidence such as RCT hopes to aid in effective application.																group (n=53) g		
	lical usage of FANC	J III Japan, current scarcity	for strong eviden	se suc	JI as	NCT hopes	to alu	mene	sclive	appii	Cation				Sex	Female	44	31
Methods:																Male	9	1
		up homes were assigned t							k for	one-ł	iour se	ession	s.					
-PARO was placed in communal areas for participants to interact with freely, with no caregiver encouragement.															Age	Youngest	65	78
-Changes in BPSD severity and caregiver burden were assessed using a linear mixed model, with primary outcomes measured using the																Oldest	99	98
Neuropsychiatric Inventory brief Questionnaire (NPI-Q).															Average tandard deviation	86.8 7.67	87.8 4.92	
	, inventory brief Qu	lestionnaire (NFI-Q).														tandard deviation	1.01	4.92
Results:															Care level	Care level 1	7	6
-91 participants were recruited, with 85 included in the analysis.													oure level	Care level 2	9	10		
-The group using PARO three times a week showed improvement in severity scores post-intervention, but differences between once-weekly														Care level 3	20	10		
and three-times-weekly groups were not statistically significant.														Care level 4	6	2		
-Caregiver burden score significantly improved in the three-times-weekly group compared to the once-weekly group.														Care level 5	11	3		
-	en score significant	ly improved in the three-tir	nes-weekly group	comp	ared	to the once	e-week	kiy grou	ıp.									
Conclusions:															Level of	la	0	0
-Using PARO ond	ce a week for one r	nonth did not significantly	affect BPSD seve	ritv or	care	giver burde	n. Thre	ee time	es a w	eekι	Isage	reduce	ed		independence in	l b	0	0
-Using PARO once a week for one month did not significantly affect BPSD severity or caregiver burden. Three times a week usage reduced caregiver burden significantly. –														daily living for	ll a	3	0	
														ll b	17	7		
-Improvement in the severity score was clinically valuable but statistically not significant, suggesting a need for longer intervention periods.														IIIa	11	11		
-Short-term use of PARO may reduce caregiver burden and potentially enhance care quality in group homes.														III b IV	9 12	6		
		11 facilities invited	1													M	12	0
		6 facilities (12 floor units) volunteered														101	Ŧ	Ū
Inclusion	Assessment of eligibility (n= 98)														Independence in	J1	0	0
		Excluded (n=6) Did not meet criteris(n=6)													daily living of the	J2	6	2
	Declined (n=0)								elderly with	A1	17	15						
	Other reasons (n=0) Table 2. Change in outcome measure Pre and post intervention,													A2	11	9		
	Randami-zation (n=85)		Com	npariso	n betv	ween groups	(one-we	eekly VS	S thrice	e-weeł	dy grou	p)				B1	4	4
Allocation Once weekly group(n= 58)	+	Thrice weekly group (n=34)	Group A: Once-weekly (n=53) Group B: Thrice-weekly(n=32) Difference (Group B - A)											B2	10	2		
	located for intervention (n=58) ccepted allocation (n=58)	Allocated for intervention (n=34) Accepted allocation (n=34)	-	_S mean	95%		LS mean	95%		P-value	LS mean	95%		P-value		C1	1	0
De	eclined allocation (n=0)	Declined allocation (n=0)	NPI Severity Score													C2	4	0
Ot	ther reasons (n=0)	Other reasons (n=0)	Pre		5.916 ,		5.487		8.961	-					Distancia		10	22
Follow up Once weekly group (n= 58)		Thrice weekly group (n=34)	Post	8.654	6.142 ,		3.737		7.211	-					Diagnosis	Alzheimer's disease Juvenile-onset	19	23
Ur	nable to follow up (n=5)	Unable to follow up (n=1)	Amount of change	0.226	-1.076 ,	1.528 0.730	-1.750	-3.426 ,	-0.074	0.041	-1.976	-4.099,	0.146	0.068		Alzheimer's disease	1	0
	ntervention discontinued (n=4)) Moved location (n=1)	Illnes (n=1)	NPI Caregiver Burden Score													Vascular dementia	3	0
			Pre	9.324	5.641,	13.006	5.818	0.712,	10.925							Lewy body dementia	0	2
Ļ		Ļ	Post		6.150 ,		3.037		8.144							Frontotemporal	Ū	2
Analysis Once weekly group(n= 53)	nalvzed (n=53)	Thrice weekly group (n=33)	Amount of change	0.509	-1.312 ,	2.331 0.579	-2.781	-5.125 ,	-0.437	0.021	-3.291	-6.259,	-0.322	0.030		dementia	1	0
	halyzed (n=53) kcluded from analysis (n=0)	Analyzed (n=33) Excluded from analysis (n=0)														Demenia	26	5
	Figure 2. Flow Diagra	am														Not known	3	2