Supplementary material

Supplementary table 1: Psychosocial interventions for the behavioural variant of frontotemporal dementia: results of reviews of frontotemporal dementia

Author(s)	Type of review	Conclusions: components of psychosocial interventions
Graham & Hodges [1] 2005	Narrative review of FTD	Multidisciplinary treatment, including psychiatrists, if the patient has behavioural problems. Behavioural management preferred over medication. Safeguarding, particularly regarding driving ability. Help with jobs, finances, and legal matters.
Neary *et al* [2] 2005	Narrative review of FTD	Patient and caregiver education. Support from the community and healthcare services for patients and caregivers. Respite admissions for caregivers. Day care for patients. Long-term hospitalisation in advanced stages.
Werder *et al* [3] 2007	Narrative review of FTD	Treatments for AD can be applied to FTD. Caregiver education and support. Caregiver training in behavioural management. Behavioural interventions. Long-term hospitalisation.
Mendez *et al* [4] 2008	Systematic review of FTD	Caregiver education and support, including peer support. Counselling for caregivers. Improving caregivers' skills to manage behavioural problems. Help with financial and legal matters for caregivers and patients. Safeguarding for patients - monitoring for driving safety, independent home living, and decision making. Behavioural treatment for patients employing rehabilitation and retraining. ADL training for patients. Environmental modifications for patients:

		restructuring the environment or implementing other restrictive measures to address hyperorality, roaming, wandering, and compulsions. Individual therapy for patients to improve mood, QOL, and social functioning. Attending to patients' physical needs. Promoting physical activity for patients.
Mohandas & Rajmohan [5] 2009	Narrative review of FTD	Education of the patient and family members. Provision of support for patients and families by social, psychiatric, and voluntary services. Respite care for caregivers. Safeguarding for patients, particularly driving safety. Long-term hospitalisation in advanced stages.
Cardarelli *et al* [6] 2010	Narrative review of FTD	Coordinated care. Caregiver education. Caregiver support – peer and community support. Caregiver counselling. For patients, safeguarding to prevent risks, such as risks from driving and transport. Environmental modifications for safe living at home. Help with financial and legal matters. Behavioural interventions.
Rabinovici & Miller [7] 2010	Narrative review of FTD	Caregiver education. Caregiver support. Peer support for caregivers. Behavioural interventions. For patients, safeguarding for home safety. Environmental modifications to manage inappropriate behaviours. Physical interventions for mobility. Structured exercise programmes. Occupational therapy. Speech therapy. Advance planning. Palliative care in advanced stages.
Onur & Yalınay [8] 2011	Narrative review of FTD	Caregiver education. Caregiver training in skills to manage behavioural problems. Improving caregiver coping. Help with finances for caregivers and patients.

		Behavioural treatment. For patients, safeguarding against risks. Environmental modifications to restrict inappropriate behaviour.
Piguet *et al* [9] 2011	Narrative review of FTD	Caregiver education and support. Peer support. Caregiver training in coping skills. Caregiver-delivered behavioural management (ABC model). Safeguarding for patients: assessment and support with driving ability.
Nunnemann *et al* [10] 2012	Systematic review of caregiver burden and interventions in FTD	Individualised management. Coordinated care. Caregiver interventions found to be useful included educational, support or therapeutic groups for caregivers. Respite admissions for caregivers in combination with caregiver education and support. Caregiver-delivered behavioural treatment. Digitally-based caregiver interventions could be helpful. Advanced nursing for palliative care.
Piguet *et al* [11] 2013	Narrative review of FTD	Caregiver education and support. Caregiver training in coping skills. Caregiver-delivered behavioural management (ABC model).
Kirshner [12] 2014	Narrative review of FTD	Education of caregivers and patients through counselling. Cognitive therapy for caregivers and families. Speech and language therapy for PPA.
Warren *et al* [13] 2013	Narrative review of FTD	Early, accurate diagnosis and mobilisation of appropriate support services. Caregiver education and support. Caregiver counselling. Respite admissions for caregivers. For patients, safeguarding to prevent risks associated with driving, mobility, and feeding. Environmental modifications to decrease these risks. Structured activities for behavioural control. Speech therapy and communication aids for language variants.

Riedl *et al* [14] 2014	Narrative review of FTD	Personalised treatment. Multidisciplinary management. Caregiver education. Caregiver support. Peer support and digital support groups for caregivers. Improving caregivers' skills in managing behavioural problems. Caregiver and patient counselling. Multimodal rehabilitation for patients. Safeguarding against risks for patients. Environmental modifications to structure and modify the living environment for safety and behavioural control. Speech therapy in PPA.
Fernández-Matarrubia *et al* [15] 2014	Narrative review of bvFTD	Treatment is meant to alleviate symptoms and behavioural problems. It aims to improve the quality of life of caregivers and patients. Nonpharmacologic interventions developed for the treatment of AD and other disorders may be applied to the treatment of FTD
Ducharme *et al* [16] 2015	Narrative review of FTD versus psychiatric disorders	Multidisciplinary management. Forging treatment alliances with caregivers and families. Caregiver and patient education. Psychosocial and practical support for patients and families. Peer support for caregivers and patients. Psychotherapy for patients and families. Precautions for driving safety. Help with financial issues, legal issues, and disability compensation for patients and caregivers. Occupational therapy for ADL for patients. Speech and language therapies for communication deficits in patients. Day care or respite residential admissions. Ongoing care. Palliative care in advanced stages.

Caceres *et al* [17] 2016	Integrative review of family caregivers of patients with FTD	Patient and family-centred care, based on collaborative relationships. Individualised, needs-based interventions for caregivers. Caregiver education and practical support, including informational, peer, and financial support. Promoting positive appraisal and improved coping strategies among caregivers, such as acceptance, adaptation, and reframing. Encouraging leisure activities and reminiscence for caregivers. Education and training of healthcare providers to assist families effectively.
Ljubenkov & Miller [18] 2016	Narrative review of FTD	Coordinated care. Caregiver education. Caregiver support. Peer support for caregivers. For patients, safeguarding against risks involved in driving, firearms use, home, and physical safety. Environmental modification to promote home living. Help with financial and legal matters, and disability benefits. Structured social and physical stimulation. Exercise and promoting physical activity. Attention to medical and nutritional needs. Speech therapy for PPA. Caregiver-based behavioural interventions using distraction, redirection, and simplification of complex tasks.
Ahmed [19] 2017	Narrative review of FTD	Educational, social, and emotional support for caregivers and patients. Individual psychotherapy for patients. Nursing care for patients. Inpatient care for patients during exacerbations.

Olney *et al* [20] 2017	Narrative review of FTD	Caregiver education. Behavioural interventions. For patients, environmental modifications to restrict inappropriate behaviours. Physical exercise to delay cognitive decline. Speech therapy for PPA.
Piguet *et al* [21] 2017	Narrative review of FTD	Individualised treatment. Caregiver education and support. Peer support for caregivers. Improving caregiver coping. Training caregivers in behavioural management. For patients, Tailored Activity Programme to manage behavioural problems. Environmental modification – a predictable environment to manage inappropriate behaviours. Behavioural management to redirect and distract patients with problem behaviours. Virtual reality to address behavioural problems.
Hodges & Piquet [22] 2018	Narrative review of FTD	Caregiver education and support. Tailored Activity Programme for behavioural problems. Language retraining in PPA.
Young *et al* [23] 2018	Narrative review of FTD	For patients: environmental modifications to address problem behaviours. Structured exercise programmes. Behavioural interventions using redirection and distraction. Cognitive behaviour therapies a possible option.
Seeley [24] 2019	Narrative review of bvFTD	Specialist management by a multidisciplinary team. Caregiver education, emotional support, and access to community resources. Caregiver skills training to manage behavioural problems. Caregiver stress management. Patient support. Help with financial matters. For patients, safeguarding measures to mitigate risks. Environmental modifications – structuring environments for safety and behavioural control. Palliative care in advanced stages.

Sivasathiaseelan *et al* [25] 2019	Narrative review of FTD	Multidisciplinary management. Caregiver education. Practical, financial, and emotional support for caregivers. Counselling for caregivers. Caregiver training in skills to manage behaviour problems. Respite care for caregivers. Patient education. Help for patients with financial matters and jobs. Safeguarding to mitigate risks, including driving risks, poor decision-making, and financial misjudgments. Structured, stable environments for patients tailored to their needs. Occupational therapy to ensure a safe home environment. Behavioural interventions. Attending to physical needs. Advance planning. Speech therapy and communication devices for language variants.
Piguet & Kumfor [26] 2020	Narrative review of FTD	Caregiver interventions, including caregiver education and support. Improving caregiver coping skills. Caregiver-delivered behavioural intervention (Positive Behaviour Support approach). Speech therapy for PPA. Cognitive training for executive function and memory deficits.
Younes & Miller [27] 2020	Narrative review of FTD	Caregiver education. For patients, environmental modifications. Mental and physical activity. Occupational and physical therapy. Speech therapy for PPA.
Ahmed *et al* [28] 2021	Narrative review of bvFTD	Caregiver support through education and improvement in coping skills. Tailored Activity Programme for behavioural problems. Positive behaviour support.
Balachandran *et al* [29] 2021	Narrative review of bvFTD	Multi-disciplinary treatment. Caregiver support to enhance QOL. Community support. Advance planning.

Power & Lawlor [30] 2021	Narrative review of FTD	Early identification and diagnosis. Caregiver education and support.
Puppala *et al* [31] 2021	Narrative review of FTD	Caregiver education
Boeve *et al* [32] 2022	Narrative review of FTD	Early and accurate diagnosis. Caregiver education. Cognitive therapy to improve caregiver appraisal and coping. Assessment of safety risks, including driving, owning firearms, victimisation, and propensity for self-harm. Measures to enhance safety for patients and others. Help with financial difficulties. Promoting physical, cognitive, and leisure activities for patients. Tailored Activity Programme and positive behaviour support for behavioural symptoms. Environmental modifications, such as assessing environmental triggers, easing pain, using distraction, and implementing harm reduction strategies. Speech and language therapy mostly for patients with PPA.
Caga *et al* [33] 2022	Systematic review of caregiver coping in FTD	Multidisciplinary management. Caregiver education and support. Optimisation of caregiver well-being. Enhancing caregivers' problem-focused strategies by identifying stressors. Positive behaviour support. Mindfulness-based cognitive therapy to improve caregivers' awareness, appraisal, and coping.
Antonioni *et al [34]* 2023	Narrative review of FTD	Caregiver education and support. Environmental modifications. Physical activity, occupational, and speech therapy.

Khan & De Jesus [35] 2023	Narrative review of FTD	Multidimensional, multidisciplinary management. Caregiver education and support. Cognitive behaviour therapy for caregivers. For patients, safeguarding against risks to patients and caregivers, such as dangerous driving or overeating. Help with financial and occupational matters. ADL training. Physical activity and occupational therapy. Environmental modifications. Speech therapy for PPA. Palliative care in advanced stages.
Tartaglia & Mackenzie [36] 2023	Narrative review of FTD	Caregiver and patient education. Behavioural interventions. Speech therapy for PPA.
Clark [37] 2024	Narrative review of FTD	Individualised management. Caregiver education. Behavioural interventions based on the DICE model. Speech therapy for PPA.
Cole *et al* [38] 2024	Narrative review of semantic dementia	Coordinated care. Caregiver education. Increasing caregiver awareness through signposting. Peer support. Environmental modifications. Speech and language therapies for language variants.
Dacka *et al* [39] 2024	Narrative review of FTD	Multidisciplinary treatment. Caregiver education and support. Improving caregiver skills to manage the patient's problems. Patient education. Environmental modifications to create a safe, structured, and stimulating environment adapted to patients' needs. Safeguarding patients in financial decision-making and driving. Helping patients with jobs and finances.

Mollah *et al* [40] 2024	Narrative review of FTD	Occupational therapy - Tailored Activity programme and promotion of leisure activities. Speech and language therapy for PPA. Education of health professionals. Individually tailored, multidisciplinary treatment. Early, accurate diagnosis is crucial for management. Caregiver education and support. Behavioural interventions. For patients, physical therapy is used to improve gait and mobility. Occupational therapy to support individuals in their daily activities. Environmental modifications to promote safety. Speech therapy for language variants and others with communication deficits.

ABC model - antecedent-behaviour-consequence model; AD – Alzheimers's Disease; ADL – Activities of daily living; bvFTD - Behavioural variant of frontotemporal dementia; DICE – D- description, I-investigation, C-creation, E-evaluation; FTD - Frontotemporal dementia; PBS approach – Positive Behaviour Support approach; PPA - Primary progressive aphasia; QOL – Quality of life

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Supplementary table 2: Psychosocial interventions for the behavioural variant of frontotemporal dementia: results of treatment reviews of frontotemporal dementia

Author(s)	Type of review	Conclusions: components of psychosocial interventions
Litvan [41] 2001	Narrative review of FTD treatment	Early caregiver intervention that provides education, social support, and emotional support. Detection and treatment of depression and other psychiatric disorders among caregivers. Respite care for patients with severe behavioural disturbances.
Perry & Miller, [42] 2001	Narrative review of FTD treatment	Caregiver education. Caregiver support, including emotional and peer support. Training caregivers to manage behavioural problems. Caregiver-delivered behavioural treatment. Respite care for caregivers. For patients, safeguarding against risks associated with driving, social disinhibition, and high-risk behaviours. Planning ahead. Long-term hospitalisation.
Chow [43] 2005	Systematic review of FTD treatment	Caregiver support, including peer support. Behavioural interventions. Environmental modifications. Alternative therapies, such as aromatherapy. Speech therapy for semantic dementia.
Galariotis *et al* [44] 2005	Narrative review of FTD treatment	Caregiver interventions.
Boxer & Boeve, [45] 2007	Narrative review of FTD treatment	Treatment is supportive and aimed at reducing distress for patients and caregivers. A combination of medications and psychosocial measures needs to be used.

		Nonpharmacologic interventions developed for Alzheimer's disease may be applied to the treatment of FTD.
Caselli & Yaari, [46] 2008	Narrative review of FTD treatment	Caregiver education. Caregiver support, including peer support. Caregiver counselling. For patients, safeguarding against risks, such as driving or possessing weapons. Help with financial and legal matters. Assistance with ADL. Behavioural supervision. Long-term hospitalisation.
Vossel & Miller, [47] 2008	Narrative review of FTD treatment	For patients: Safeguarding against physical risks. Physical therapy to improve mobility. Occupational therapy for home safety. Regular exercise.
Mendez [48] 2009	Narrative review of FTD treatment	Coordinated care. Caregiver education. Caregiver support, including support from peer groups and community sources. Caregiver counselling. Respite care for caregivers. Behavioural interventions - caregiver-delivered behavioural management based on the ABC model. Behavioural restrictions, diversions, and re-training to prevent inappropriate and high-risk behaviours. For patients, safeguarding to prevent risks associated with driving and socially inappropriate behaviour. Environmental modifications to reduce risks and control behavioural disturbances. Physical activity. Social engagement. Rehabilitation techniques or retraining to improve procedural memory and behaviour. ADL training. Communication training. Attention to medical needs.

Manoochehri & Huey, [49] 2012	Narrative review of FTD treatment	Caregiver education. Caregiver support from family and friends, health professionals, and support groups. Behavioural management – structured activities, reminiscence, and caregiver-delivered behavioural management based on the ABC model. For patients, safeguarding to prevent risks associated with driving, financial mismanagement, and socially inappropriate behaviour. Environmental modifications for risk reduction and behavioural control.
Wylie *et al* [50] 2013	Narrative review of FTD treatment	Multidisciplinary, multimodal treatment. Coordinated care. Collaborative care. Caregiver education. Caregiver support, including emotional support from professionals and peers. Improving caregiver coping. Caregiver counselling. Intensive psychotherapy for caregivers with high levels of psychological distress. Respite admissions for caregivers. Assistance with financial problems and legal matters for patients and caregivers. For patients, safeguarding against driving risks. Long-term hospitalisation. Advance planning. Palliative care.
Pressman & Miller [51] 2014	Narrative review of FTD treatment	Individually tailored approach. Caregiver education. Caregiver support, including individual and peer-group support. Caregiver counselling and stress management. Caregiver-delivered behavioural treatment using a combination of redirection, distraction, and offering simple choices. For patients, safeguarding against risks due to driving, physical injuries, and socially disinhibited behaviours. Environmental modifications to ensure a safe and structured environment. Regular exercise. Physical therapy to improve mobility.

Tsai & Boxer, [52] 2014	Narrative review of FTD treatment	For patients: Exercise. Dietary modifications. Safeguarding against driving risks. Assistance with feeding. Environmental modifications for home safety. Physical therapy to improve mobility. Occupational therapy to improve the home environment and daily living skills. Cognitive activities. Speech therapy for language deficits.
Tsai & Boxer, [53] 2016	Narrative review of FTD treatment	Caregiver interventions, including education and support. Behavioural management. Exercise training. Environmental modifications for behavioural control. Physical therapy to improve mobility. Speech therapy for PPA.
Gambogi *et al* [54] 2021	Systematic review of bvFTD treatment	Tailored Activity Programme, an occupational therapy intervention for patients and caregivers, improves caregiver outcomes, reduces the patient's behavioural problems, and improves functioning. Alternative therapies, such as music therapy, can be tried.
Ljubenkov & Boxer, [55] 2021	Narrative review of FTD treatment	Early education for patients and caregivers. Links to FTD organisations for counselling, education, and support of caregivers. Caregiver training in behavioural management using the DICE framework. For patients: safeguarding against risks of driving, weapon possession, medication mismanagement, home safety, injuries and falls, public behaviour, and financial risks. Cognitive and social stimulation. Environmental modifications for behavioural control and enhanced safety. Exercise and physical activity. Speech therapy for PPA. Attention to diet and nutritional needs.
Magrath Guimet *et al* [56] 2022	Narrative review of FTD treatment	Caregiver education, training, and support. Caregiver interventions to reduce stress and improve skills for managing behavioural disturbances. Behavioural management – structured activities, reminiscence, and caregiver-delivered behavioural management

		based on the ABC model. For patients, advice on legal and financial issues. Environmental modifications: structured routines and optimally stimulating environments to reduce risks and behavioural problems. Exercise and physical activity. Speech therapy for language variants.
Benussi & Borroni, [57] 2023	Narrative review of FTD treatment	Multidisciplinary team. A tailored pharmacological and psychosocial approach that addresses the cognitive and behavioural domains.
Neylan & Miller, [58] 2023	Narrative review of FTD treatment	Caregiver education. Caregiver support, including individual support, support groups, and community resources. Improving caregivers' coping and behavioural management skills. Caregiver-delivered behavioural intervention. Respite care for caregivers. For patients, safeguarding against risks of driving, weapon possession, injuries, public behaviour, financial risks, and falls. Physical therapy to improve mobility. Occupational therapy to optimise function and improve the home environment. Help with financial matters and disability benefits. Regular physical exercise. Cognitive activities. ADL training. Attention to dietary and nutritional needs. Advance planning. Palliative care. Speech therapy for PPA.
Aziz *et al* [59] 2025	Narrative review of behavioural treatment for FTD	Multidisciplinary management. Caregiver education. Caregiver support. Caregiver training to manage behavioural problems. Behavioural interventions using the DICE framework. Environmental modifications for behaviour problems, particularly

		psychosis. Alternative therapies, such as aromatherapy, animal-assisted therapy, exercise, music therapy, art therapy, and reminiscence therapy.
Lozupone *et al* [60] 2025	Narrative review of FTD treatment	Behavioural interventions. Structured cognitive rehabilitation programmes. Alternative therapies, such as music, dance, art therapies, or computer games, for agitation and other behavioural problems. Speech and language therapy for PPA.

ABC model - antecedent-behaviour-consequence model; ADL – Activities of daily living; bvFTD - Behavioural variant of frontotemporal dementia; DICE - Describe (context, environment, patient and caregiver perspective, degree of distress), Investigate (potential iatrogenic causes, pain, fear, boredom), Create (a plan for intervention with a discrete follow-up time), Evaluate (evaluate the intervention and plan continuation or withdrawal); FTD - Frontotemporal dementia; PPA - Primary progressive aphasia

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Supplementary table 3: Psychosocial interventions for the behavioural variant of frontotemporal dementia: results of reviews on psychosocial treatment of frontotemporal dementia

Author(s)	Type of review	Conclusions: components of psychosocial interventions
Talerico & Evans, [61] 2001	Narrative review of safety measures for FTD	Individualised interventions. Caregiver education & support. Caregiver training in ensuring safety. Environmental modifications for behavioural control and safety. Behavioural interventions. ADL training.
Merrilees *et al* [62] 2010	Narrative review of psychosocial treatment for FTD	Environmental modifications for behavioural control and safety. Applying physical restrictions to ensure safety. Behavioural interventions. Improving caregiver coping.
Hall *et al* [63] 2013	Narrative review of psychosocial treatment for FTD	Multidisciplinary management. For patients, ensuring safety in the least restrictive manner. Structuring daily routines. Physical therapy for mobility. Stimulating activities. Behavioural interventions. Speech therapy for PPA. Palliative care.
Kortte *et al* [64] 2013	Narrative review of psychosocial treatment for FTD	Multidisciplinary management. Individually tailored treatment. Caregiver education and support, including community support. Caregiver training to assist in patient management. For patients, compensatory techniques for cognitive and communication deficits, behavioural problems, and ADL training. [1] Includes cognitive rehabilitation, speech therapy, behavioural interventions, and occupational therapy. Remedial or restorative strategies include environmental measures such as structuring routines, improving home safety, and reducing

		environmental demands. Remedial interventions are also used in speech therapy. Activity-based interventions consist of structured and meaningful activities.
O'Connor *et al* [65] 2013	Systematic review of psychosocial interventions for patients with FTD (n=16)	Caregiver education, support, and coping skills training interventions. Behavioural interventions. The TAP was the most promising intervention because it integrated caregiver and patient interventions and was specific to FTD.
Shinagawa *et al* [66] 2015	Systematic review of psychosocial interventions for patients with FTD (n=4)	Behavioural interventions were the most effective for patients with FTD.
Barton *et al* [67] 2016	Narrative review of psychosocial treatment for FTD	Caregiver education & support. Caregiver training in managing behavioural problems. Environmental modifications for behavioural control and safety. Occupational therapy. The TAP to reduce behavioural problems. Behavioural interventions. Alternative therapies, such as music therapy.
Vlotinou *et al* [68] 2023	Systematic review of occupational therapy interventions for patients with FTD (n=11)	The TAP, the PBS intervention, other behavioural treatments, day-care programmes, group-home interventions, music therapy, physical activity, and exercise-based treatments were effective. Interventions to improve ADL were also useful. Family caregiver involvement was essential. Caregiver burden was reduced, and the interventions provided respite from caregiving duties.

ADL- Activities of daily living; bvFTD - behavioural variant of frontotemporal dementia; FTD - frontotemporal dementia; PBS- Positive Behaviour Support; PPA - Primary progressive aphasia; TAP - Tailored Activities Programme

[1] Compensatory methods compensate for motor, sensory, and/or cognitive impairments, whereas remedial or restorative interventions improve function by targeting the underlying causes of impairments.

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Supplementary Table 4: Studies of non-pharmacological interventions in the behavioural variant of frontotemporal dementia [1]

Authors	Study design	Participant sample	Intervention or study details	Results and conclusions	Quality rating [2]
			Caregiver interventions		
Diehl *et al* [1] 2003	Mixed methods Support groups for caregivers	8 spousal caregivers of patients with FTD	Weekly 90-minute supportive and educational groups for 7 weeks.	At the end of treatment and after six months, caregivers found the groups helpful and their benefits enduring. Caregivers were able to share their difficulties and learn from others. They established new contacts and friendships. Caregiver satisfaction was high. On a 14-item questionnaire, caregivers rated the supportive elements as useful. The groups had improved their knowledge	Very low

				& understanding of the FTD.	
Banks *et al* [2] 2006	Qualitative Psychoeducational, supportive sessions for caregivers	48-55 caregivers of patients with FTD for lectures	3 lectures on FTD, its treatment, and caregiver management. Support groups for caregivers.	Mostly positive feedback from caregivers, some negative responses.	Very low
Grinberg *et al* [3] 2008	Descriptive Caregiver and patient interventions	Caregivers of 6 patients with FTD and 12 patients with similar behavioural problems	Day care-based intervention. Carer education & support. Training in behaviour management skills for caregivers. Respite for caregivers. Individual or group-based support, activities, and stimulation for patients.	Staff acquired new skills and knowledge to care for patients with FTD and their families. Caregivers found the supportive elements and the respite offered to be useful.	Very low
Reah & Julien, [4] 2008	Descriptive study Caregiver education & support	25 caregivers of patients with bvFTD and svFTD	Specialised support groups for caregivers that identified unique needs, provided education,	The groups improved caregivers' knowledge, coping skills, stressor adaptation, and resilience.	Very low

			fostered peer support & learning from other caregivers, and improved coping skills.		
Marziali & Climans, [5] 2009	Qualitative study Caregiver education & support	Spousal caregivers of 6 patients with FTD	Internet-delivered 10-session, manual-guided psychosocial support group, followed by 12 additional online sessions facilitated by a group member.	Feasibility – Adherence with the digital intervention was good. Online groups were no different from in-person groups. Utility – The intervention reduced caregiver burden but not caregiver stress. Caregivers were satisfied with the support they received and their access to the platform.	Very low
Mioshi *et al* [6] 2013	Open trial, case-control study	Nine caregivers of patients with FTD	Caregiver groups, weekly for 15 weeks, 120-minute	Assessments post-intervention and after 12-	Very low

	Caregiver coping	in the intervention group & 12 caregivers in the control group with no treatment	sessions. Identifying modifiable and non-modifiable stressors. Appraisal of the stressor. Use of problem-solving, cognitive reframing, and seeking social support strategies to cope with the stressors.	month follow-up. At both assessments, significant reductions ($p<0.05$) in caregiver burden and caregivers' reactions to behavioural problems ($p<0.05$) in the intervention group, compared to the control group. No significant differences in symptoms of depression, anxiety, or stress between the 2 groups. On the coping skills questionnaire, a significant difference ($p<0.05$) was found in the "humour" strategy between the groups.	
McKinnon *et al* [7] 2013	Qualitative study Caregiver coping	Same sample as Mioshi *et al* 2013	Same intervention as by Mioshi *et al* 2013	Post-intervention, responses to a hypothetical	Very low

				problem-solving scenario indicated that a significantly greater proportion of caregivers in the intervention group had higher problem-solving scores than in the control group. This indicated that caregivers successfully learned problem-solving coping skills following the intervention.	
Dowling *et al* [8] 2014	RCT Caregiver stress management and improving coping	12 caregivers each in the intervention & attention control group	5 weekly individual 60-minute sessions of the "Life Enhancing Activities for Family Caregivers" [3] intervention for positive emotion skill-building intervention	Outcomes assessed at six weeks (post-intervention) & 10 weeks (follow-up). Significant differences between the two groups on positive and negative affect, perceived stress, and caregiver burden	Moderate

				($p<0.05/0.01$). Delivery by videoconferencing was feasible.	
Gossink *et al* [9] 2018	RCT Psychoeducational, supportive, and behavioural management training for caregivers	30 family caregivers of patients with FTD, 15 in the intervention group & 15 in the control group of treatment as usual.	Five 120-minute sessions over 6 months. Psychoeducation by professionals, support from other caregivers, and teaching caregivers to manage behavioural problems using the ABC framework.	Sense of competence increased significantly ($p<0.05$) among caregivers who received the intervention. Differences in caregiver burden, perceived stress, and depressive symptoms were not significant. Qualitative results revealed that caregivers were satisfied with the groups, felt that their coping skills had improved, and wished to continue organising support groups.	Moderate

Casaletto *et al* [10] 2020	Observational study Physical and mental activity for caregivers	105 family members who had mutations for FTD & 69 who did not	Physical activity & exercise & mentally stimulating activities – rated on structured scales	Higher activity was associated with slower cognitive decline, less severity, better mood, better neuropsychological outcomes, and less brain atrophy on imaging.	Low
Fisher *et al* [11] 2023	Open trial Caregiver-delivered behavioural intervention	10 family caregivers of patients with FTD	4 weekly individual 120-minute sessions of the PBS intervention, consisting of improving caregiver skills to manage behavioural problems. Delivered by a hybrid videoconferencing platform.	At 3-month follow-up, there were no significant changes in dementia severity, ADL impairment, or caregiver confidence in managing behaviour on structured scales. Caregivers found the intervention useful and acceptable. Qualitative analysis showed that a majority changed their approach to managing behavioural problems.	Very low

				Digital delivery was feasible.	
			Patient interventions		
Ikeda *et al* [12] 1995	Patient series Behavioural interventions for patients	Six patients with Pick's disease	Interventions using preserved episodic and procedural memory, and visuospatial function. Engaging patients in old hobbies, favourite games, and meaningful activities. Rehabilitation & retraining ("routinising therapy") to replace stereotyped behaviours with adaptive ones. [4]	Reduced agitation, impulsivity, social misconduct, disinhibition, and stereotyped behaviours. Improved quality of life & ADL.	Very low
Ikeda *et al* [13] 1996	Patient series Behavioural intervention- for patients and caregivers	Twelve patients with Pick's disease hospitalised for 1.5 months.	Short-term hospitalisation allowed clinicians to observe patients and devise behavioural interventions, teach	Behavioural improvement, improved family attitude towards the patients, and reduced caregiver burden.	Very low

			family caregivers skills for behavioural control, and help families use hospital & community resources.		
Tanabe *et al* [14] 1999	Patient reports Behavioural interventions for patients	Two patients, one with bvFTD & another with svFTD	Engagement in favourite (e.g., singing) or meaningful activities (e.g., checking blood pressure), also called "routinising therapy." [4]	Reduction in socially inappropriate behaviour and caregiver burden.	Very low
Robinson [15] 2001	Patient report Multi-modal rehabilitation for patients and caregivers	Single patient with Pick's disease.	Rehabilitation was based on preserved procedural memory. Techniques included speech therapy, communication devices, physical therapy to improve mobility, and home-based occupational therapy to enhance environmental safety.	The interventions lead to functional improvement and slowing of decline in mental and physical health over 2 years.	Very low

			Wife acted as case manager.		
Lough & Hodges, [16] 2002	Patient report Behavioural interventions for patients	Single patient with FTD	The behavioural techniques used included changing routines, replacing them with adaptive behaviours, using signage, giving positive commands, and using a mobile phone to convey instructions.	Checking, wandering, and travelling improved.	Very low
Romero & Wenz, [17] 2002	Open trial Multi-modal rehabilitation for patients and caregiver education	Forty-one patients & their caregivers, 13 patients with FTD	Short-term (4-week) hospital-based intensive rehabilitation and caregiver intervention to improve knowledge & behavioural management skills.	The intervention was associated with an improvement in depression and other symptoms in patients, behavioural control, and improved functioning in the patients. It reduced burden and	Low

				psychological distress in caregivers.	
Merrilees [18] 2007	Patient reports Interventions for patients with problem behaviours	Four patients with FTD	Different strategies that could be employed were behavioural, using the ABC framework, environmental modifications, and physical strategies to restrict behaviour	Employment of these strategies may reduce behavioural abnormalities & caregiver burden.	Very low
Yamakawa *et al* [19] 2008	Patient report Environmental modifications for patients	Single patient with FTD	Environmental control measures implemented for 2 weeks included closing all ward doors at night & regular walks with staff during the day.	Closing the doors improved sleep, but daytime walks increased evening & night time activity levels. The severity of behavioural problems was reduced.	Very low
Yokota *et al* [20] 2006	Open trial Group-home care for patients	Eight patients with FTD	Features of group-home care included creating a homelike environment, helping patients maintain	At 6 months, there was a significant reduction in BPSD (NPI & CMAI; $p < 0.05$), improvement in	Very Low

			their home routines, ensuring patient privacy, and encouraging freedom.	quality of life ($p < 0.05$), and decreased need for antipsychotic use.	
Raglio *et al* [21] 2012	Patient report Music therapy for patients	Single patient with FTD	Treatment consisted of 50 30-minute individual music therapy sessions, conducted by a trained music therapist, twice a week over 6 months.	BPSD (NPI & CMAI) and depression improved significantly. Nurses rated her behavioural disturbances as improved.	Very low
Kimura & Takamatsu, [22] 2013	Open trial Aromatherapy for patients	Twenty patients with FTD.	Lavender aromatherapy for 4 weeks & no aromatherapy for 4 weeks.	Significant reduction in BPSD on the NPI ($p < 0.05$). Lowered the requirement for chlorpromazine.	Low
Fick *et al* [23] 2014	Patient report Behavioural intervention for patients	Single patient with FTD	Giving the patient a lollipop during behavioural disturbances	Reduction in vocally disruptive behaviour & agitation was noted with the pacifier.	Very low
O'Connor *et al* [24] 2016	Patient report	Two patients with bv FTD & svFTD	TAP intervention for four 4 months by an	At 4 months post-intervention, patients	Very low

	Activity-based intervention		occupational therapist. Techniques included assessment, activity prescription, and generalisation of strategies. Eight 60-90-minute sessions at home.	showed reduced behavioural disturbances, increased engagement in meaningful activities, and improved functioning. Reduced distress, improved confidence, and greater vigilance associated with behavioural disturbances were noted among caregivers.	
Langhammer *et al* [25] 2019	Open trial A patient intervention combining music therapy, physical activity, and exercise (walking)	Six patients with FTD & their family caregivers	The intervention was conducted by the staff at the hospital where the patients were residing. It consisted of 8 weeks of daily sessions.	The outcome measure was the Broset Violence Checklist. On the BVC, there were significant improvements in anxiety, restlessness, irritability, and aggression following the intervention ($p < 0.05$). It	Very low

				was feasible to deliver the intervention.	
O'Connor *et al* [26] 2019	RCT Activity-based intervention	Twenty patient-caregiver dyads of patients with FTD. Nine patients had bvFTD, and 11 had other subtypes. Nine dyads received TAP & 11 in the control group received caregiver education	TAP intervention for four 4 months by an occupational therapist. Techniques included assessment, prescription of activities, and generalisation of strategies. Eight 60-90-minute sessions at home.	Significant improvements in BPSD (NPI-C) and IADLs (DAD) were noted in the intervention group ($p < 0.05$). The 2 groups did not differ on quality of life & caregiver vigilance. Qualitative analyses showed that the intervention was feasible & acceptable. There were no dropouts. Carers had better skills, greater confidence, more respite from caregiving, and higher engagement following the intervention.	Moderate

Nakanishi & Yamaga, [27] 2021	Patient report Behavioural interventions for patients	Single patient with FTD	"Routinising therapy "[4] with activities such as cleaning up after meals & doing household chores. Daily sessions were conducted by the occupational therapist & staff at the nursing home for 2 weeks.	Improvements in the patient's BPSD (NPI-NH), ADL (HADLS), and QOL (QOL-AD) were noted following the intervention. There were no changes in cognition (MMSE) or dementia severity (CDR). Improvements were maintained 1 month after the intervention. The burden on staff was reduced.	Very low
O'Connor *et al* [28] 2021	Open trial Behavioural intervention for patients	Four patient-caregiver dyads of patients with FTD.	The PBS intervention was implemented to address apathetic and disinhibited behaviours. It consisted of 80-minute, 5-7 home-based sessions delivered	The frequency, severity, and associated caregiver distress for disinhibited behaviours were reduced. The frequency of apathetic behaviours worsened, but the severity & associated	Very low

			by an occupational therapist over 3 months.	caregiver distress remained the same. There was no impact on ADL. The intervention was useful & acceptable to the caregivers. They were engaged in treatment & learned skills to manage behaviour.	
de Heus *et al* [29] 2026	Patient series Behavioural intervention for patients	Six patients with bvFTD	"Focusing" - structured daily routine, focus on specific activities to replace problem behaviour and avoid triggers	On structured assessment- reduction in disinhibition. Staff reported better control and more positive interactions with patients. A training programme for staff. Intervention feasible & acceptable.	Very low
Other studies					
Chow *et al* [30] 2011	Internet survey Caregivers' needs for treatment	Twenty-two caregivers of patients with	Internet-based, anonymous survey specifically designed to	Caregivers wanted more online educational resources about FTD. They	Very low

		bvFTD & 47 caregivers of patients with other subtypes of FTD	elicit caregivers' needs for support and resources needed for their patients' care.	wanted more online resources for family counselling about FTD and support for families.	
Grunberg *et al* [31] 2022	Qualitative Patient & caregiver preferences for psychosocial intervention	23 patients and their partners. Four with bvFTD & 6 with other types of FTD.	Thematic analysis of patient-partner couples' preferences for the content and delivery of psychosocial intervention.	Content preferences: Mindfulness skills, skills to cope with losses, communication skills, problem-solving skills, skills to manage symptoms and their progression, learning to regulate emotions, and participation in meaningful activities Delivery preferences: A virtual, dyadic intervention delivered shortly after diagnosis	Very low

Mjørud *et al* [32] 2025	Qualitative study Healthcare professionals' views	Twenty-one healthcare professionals experienced in treating FTD.	Three focus groups to elicit the experiences and perceptions of healthcare professionals regarding the care of patients with FTD. The groups were conducted virtually.	Psychosocial interventions need to be structured and simple to understand, and collaborative. Components should include attention to daily routines, clear communication, family caregiver involvement, and support for family caregivers. Training and staff supervision are essential.	Very low

ABC - Antecedent-behaviour-consequence framework; ADL- Activities of daily living; BVC - Broset Violence Checklist; CDR - Clinician Dementia Rating scale; FTD - Frontotemporal dementia; bvFTD - Behavioural variant of frontotemporal dementia; BPSD – Behavioural and Psychological symptoms of dementia; CMAI -Cohen Mansfield Agitation Inventory; CSDD -Cornell Scale for Depression in Dementia; DAD - Disability Assessment for Dementia; HADLS - Hyogo Activities of Daily Living Scale; IADL – Instrumental activities of daily living; LOTCA - Lowenstein Occupational Therapy Cognitive Assessment battery; MMSE – Mini-mental State Examination; NPI - Neuropsychiatric Inventory; NPI-C-Neuropsychiatric Inventory– Clinician rating scale; NPI-NH - Neuropsychiatric Inventory– Nursing Home; PBS - Positive Behaviour Support; QOL – Quality of life; QOL- AD - Quality of Life

in Alzheimer's Disease; PBS - Positive Behaviour Support; RCT – randomised controlled trial; svFTD - Semantic variant of FTD; TAP -Tailored Activities Programme

[1] Other studies of psychosocial intervention in FTD have not been included due to insufficient details on interventions and/or patient samples. These included studies on the establishment of psychosocial services for FTD (Comstock 2004 [33], Shnall et al. 2013 [34]) that did not meet the selection criteria. Several Japanese studies could also not be included because their full details were not accessible· These included studies on routinising therapy (Shigenobu & Ikeda, 2001), daycare interventions (Tokikawa *et al., 2000;* Takahashi *et al.,* 2007*),* and cooking to improve ADL in FTD (Tokimasa *et al.,* 1996). These studies are included in the Japanese Society of Neurology's guidelines [35].

[2] Rating of the quality of the study according to the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) criteria

[3] "Life Enhancing Activities for Family Caregivers" consists of imparting caregivers with skills to increase positive affect during stressful periods. The skills include "capitalising on positive events, gratitude, mindfulness, positive reappraisal, focusing on personal strengths, attainable goals, and acts of kindness."

[4] In"routinising therapy, "the patient is guided to perform activities that he/she patient is interested in or prefer, by using the preserved episodic memory, procedural memory and visuospatial cognitive functions.

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