

ORIGINAL ARTICLE

Staff-rated ability to provide post-diagnosis support for patients with mild cognitive impairment and related factors

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Grants-in-Aid for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (grant number 20K11038).

Received 29 March 2023; revision received 28 July 2023; accepted 16 August 2023.

Abstract

Background: Proactive interventions for patients with mild cognitive impairment (MCI) are required. We aimed to determine the staff-rated ability to provide post-diagnosis support for patients with MCI at a medical centre for dementia and the related factors.

Methods: We conducted a web-based survey on post-diagnosis support for patients with MCI among healthcare personnel, such as mental health social workers and public health nurses (hereafter referred to as ‘staff’), in consultation and support roles at medical centres for dementia nationwide. The latent characteristic value for ‘staff’s self-rated ability to provide post-diagnosis support to patients with MCI’, which was estimated using the one-parameter logistic model of item response theory, was used as the dependent variable. Multivariate linear regression analysis was used to examine the factors associated with the dependent variable.

Results: We conducted the study at 482 medical centres for dementia. We received responses from 162 participants, 158 of which were valid. We applied item response theory to 45 staff-rated items regarding post-diagnosis support for patients with MCI and found that item difficulty ranged from -2.56 to 1.02 ; 40 items had negative values and were deemed relatively easy. The staff-rated ability to provide post-diagnosis support was significantly higher for ‘The role in assisting patients with MCI is clear’ ($P < 0.005$), ‘A reasonable number of personnel is available to assist immediately after MCI diagnosis’ ($P = 0.001$), and ‘Collaboration with family physician available immediately after MCI diagnosis’ ($P < 0.001$).

Conclusions: The results of this study showed that staff rated their ability to provide post-diagnosis support for patients with MCI as relatively easy. The staff-rated ability to provide post-diagnosis support to patients with MCI may be enhanced by increased availability of staff immediately after MCI diagnosis, clarification of staff roles, and collaboration with family doctors.

Key words: cognitive dysfunction, dementia, primary prevention, risk factors.

INTRODUCTION

Dementia is a rapidly growing public health problem that affects approximately 50 million people worldwide. In 2019, the World Health Organization (WHO) published evidence-based recommendations for lifestyle behaviours and interventions to delay and prevent cognitive decline and dementia.¹

Recently a decreased incidence of dementia was reported in the U.S., potentially owing to increased

education and lifestyle improvements.² In 2020, a study reported that 40% of dementia cases could be prevented or delayed if risk factors were controlled and brain health improved.³ Dementia care should include preventive strategies, especially in the mild cognitive impairment (MCI) stage.⁴ Intervention studies are underway in people with MCI to evaluate strategies for reducing the risk of dementia, including the effectiveness of multi-component interventions to

slow the progression to dementia⁵ and self-care intervention programs for patients with MCI.⁶

In Japan, the medical centres for dementia were established in 2008 and have played a central role in dementia care by providing differential diagnosis and initial treatment for dementia, acute treatment for behavioural and psychological symptoms of dementia, physical complications, and specialised medical consultations. Furthermore, post-diagnosis support for dementia was added to the scope of work in 2021, and lifestyle and peer support strategies were strengthened. However, specific post-diagnosis support for patients with dementia and patients with MCI has not been clearly defined, and few studies have been conducted on post-diagnosis support for patients with MCI. Hence, we believe that the development of support systems for patients with MCI and their families immediately after MCI diagnosis is urgently needed.

MCI is considered a 'borderline or transitional condition between normal aging and dementia',⁷ and not all patients diagnosed with MCI will develop dementia.⁸ During the MCI stage, maintaining a functional and healthy lifestyle may help patients avoid progression to chronic disease.⁹ In addition, the fact that MCI is not generally recognised has a significant impact on the individual's experience and identity.¹⁰ Therefore, we believe an individualised support plan should be initiated immediately after diagnosis to maintain a healthy lifestyle and help patients with MCI and their families understand the condition.

The aim of this study was to determine the staff-rated ability to provide post-diagnosis support for patients with MCI at a medical centre for dementia and the related factors.

METHODS

Survey target and method

To clarify the staff's self-rated post-diagnosis support for patients with MCI, the individuals who provide the post-diagnosis support to patients with MCI must be surveyed. Therefore, mental health care workers, public health nurses, and others with medical consultation roles at medical centres for dementia (hereafter referred to as 'staff'), who are likely to provide post-diagnosis support to patients with MCI, were included in the study.

As of the end of August 2022, a letter explaining the purpose of the study was sent to the directors of 482 designated medical centres for dementia, requesting them to provide the research participant request letter and a self-administered, anonymous, web-based form to any 'mental health care workers, public health nurses, and others who have experience providing consultation and support to patients with MCI and their families'. The survey was conducted using a self-administered, anonymous, web-based form.

As a result of the web survey, we received responses from 162 participants, of which 158 were included in the analysis after excluding four participants with missing data.

Survey items

The questionnaire comprised questions regarding the participant's personal attributes, the attributes of their respective medical centre for dementia, and the types of support provided to patients diagnosed with MCI.

Individual participant attributes

The following personal attributes were evaluated: age, main qualifications, years of consultation experience at the medical centre for dementia, and work status (full-time employment defined as engaging in this work for more than 80% or 50% of their total working hours and part-time).

Attributes of each participant's respective medical centre for dementia

We collected the following information regarding the attributes of each participant's respective medical centre for dementia: type of medical institution in which the medical centre for dementia is located, year of designation as a medical centre for dementia, number of MCI diagnoses per year (April 2021 to March 2022), number of consultations per month with patients with MCI (April 2021 to March 2022), and number of consultations per month with families of patients with MCI (April 2021 to March 2022).

We conducted an interview survey in a previous study¹¹ on the difficulties faced by staff at a medical centre for dementia in providing support immediately after a diagnosis of MCI.

Based on the results of our previous study, the following eight items were identified as relevant to providing post-diagnosis support for patients with MCI: 'Support groups are offered for patients with MCI', 'There is a designated place where support is provided for patients with MCI', 'The role of staff in assisting patients with MCI is clear', 'The role of the medical centre for dementia for patients with MCI is clear', 'A reasonable number of personnel is available to assist immediately after MCI diagnosis', 'Established system for support immediately after MCI diagnosis in place, similar to that of dementia', 'Collaboration with family physician available immediately after MCI diagnosis', and 'System in place for regular check-ups for patients with MCI'. The participants responses were based on a four-point scale as follows: 'Strongly agree', 'Agree', 'Disagree', and 'Strongly disagree'.

Post-diagnosis support for patients diagnosed with MCI

In our previous study,¹¹ we evaluated the difficulties faced by staff at medical centres for dementia in providing support immediately after a diagnosis of MCI and considered what type of post-diagnosis support was needed based on the difficulties described by the staff. Furthermore, in accordance with the WHO guidelines¹ and reports¹² on the recommended support to reduce the risk of dementia and the post-diagnosis support that is actually provided for patients with MCI at medical centres for dementia, we developed 45 staff-rated items related to the support needed for patients with a diagnosis of MCI (see Table 1). The WHO guidelines were also included in Japanese¹³ to ensure comprehension. The respondents were asked to answer the questions using a four-point scale as follows: 'Strongly agree', 'Agree', 'Disagree', and 'Strongly disagree'.

Categorisation of survey item options

In the present study, the actual sample size was smaller than that envisaged in the study design (158 respondents); therefore, we decided to merge the options for each item for the following reasons.

The eight items related to post-diagnosis support for patients with MCI originally developed by the authors are ordinal categorical variables; therefore, determining whether they satisfy the assumption of

linearity with the dependent variable when entered as independent variables in a regression analysis is difficult. In such cases, the items must be entered as multiple dichotomous variables in the regression analysis. However, for seven of the eight items, the amount of data was extremely limited, with fewer than 10 people (3–10 people) choosing a particular option. In such circumstances, we assumed that the standard error would be greater if analyzed as a multi-categorical variable, and the possibility of detecting a relationship with the criterion category would be small. Therefore, we decided to group the similar choices into dichotomous variables by merging them into agree ('Strongly agree' and 'Agree') and disagree ('Disagree' and 'Strongly disagree') categories to avoid such problems.

We also applied the item response theory graded-response model or two-parameter logistic model to the 45 items rated by staff regarding their ability to provide post-diagnosis support for people diagnosed with MCI; however, because the sample size was small and the parameters could not be appropriately estimated, a one-parameter logistic model (hereafter referred to as 1PLM) was applied. Therefore, considering the similarity of the item choices, we decided to categorise the variables into two categories as follows: agree ('Strongly agree' and 'Agree') and disagree ('Disagree' and 'Strongly disagree').

In addition, the number of responses were not tabulated for three items: the number of MCI diagnoses, number of consultations with patients with MCI, and number of consultations with family members of patients with MCI. Therefore, an untabulated category was created for each of these items. As the sample size was also small, we decided to classify each item by the median value, and together with the untabulated category, classified them as three separate variables.

Statistical analysis

In the statistical analysis, the unidimensionality of the 45 staff-rated items related to post-diagnosis support for patients with MCI was examined using the contribution rates (eigenvalues) obtained in the factor analysis with tetrachoric correlation coefficients; internal consistency was confirmed according to McDonald's Ω reliability coefficient.

Table 1 Staff-rated ability to provide post-diagnosis support for patients with MCI

	Post-diagnosis support for patients diagnosed with MCI	Yes		Item difficulty
		<i>n</i>	%	
1	I recognise the need for support for families diagnosed with MCI	151	95.6	-2.56
2	I can assess the history of diabetes in patients with MCI	145	91.8	-2.08
3	I can confirm the history of hypertension in patients with MCI	143	90.5	-1.97
4	I can provide information to the referring hospital on the situation immediately after MCI diagnosis	142	89.9	-1.91
5	I can confirm the depressed mood in patients with MCI	141	89.2	-1.86
6	I can confirm the sleep status of patients with MCI	140	88.6	-1.81
7	I can confirm the social activities of patients with MCI	138	87.3	-1.72
8	I can confirm the history of traumatic brain injury in patients with MCI	133	84.2	-1.51
9	I can identify whether patients with MCI have difficulties in their daily lives	131	82.9	-1.44
10	I can confirm the alcohol intake of patients with MCI	131	82.9	-1.44
11	I can confirm the dietary status of patients with MCI (i.e., who cooks meals and who they eat with)	131	82.9	-1.44
12	I can recommend a second visit to patients with MCI if I determine that continued support is needed	128	81	-1.34
13	I can obtain information from my doctor about diagnosis of MCI	126	79.7	-1.27
14	I can explain the importance of socialising often in order to prevent dementia to family members of patients with MCI	126	79.7	-1.27
15	I can recommend the next visit to patients with MCI as per doctor's orders	125	79.1	-1.24
16	I can perform the assessment of activities of daily living in patients with MCI	124	78.5	-1.21
17	I can encourage patients with MCI to get out and socialise often to help prevent dementia	124	78.5	-1.21
18	I can confirm the smoking status of patients with MCI	123	77.8	-1.17
19	I can confirm to identify a family member who can join a patient with MCI who was seen alone to receive the diagnosis	122	77.2	-1.14
20	I can identify changes in cognitive function when patients with MCI return for follow-up visits	122	77.2	-1.14
21	I can perform assessments of instrumental activities of daily living (such as shopping and cooking for patients with MCI)	119	75.3	-1.05
22	I can confirm the body shape (obesity) of patients with MCI	114	72.2	-0.91
23	I can counsel patients with MCI regarding their ability to drive	113	71.5	-0.89
24	I can recommend exercise to patients with MCI to prevent dementia	108	68.3	-0.75
25	I can confirm the exercise habits of patients with MCI	105	66.5	-0.68
26	I can explain to family members of patients with MCI that exercise is necessary to prevent dementia	102	64.6	-0.60
27	I can respond in a timely manner when the need for assistance is identified in patients with MCI	100	63.3	-0.55
28	I can share the support plan for MCI with my physician immediately after diagnosis	99	62.7	-0.53
29	I can recommend good sleep habits to patients with MCI to prevent dementia	95	60.1	-0.43
30	I can explain to family members of patients with MCI that good sleep is necessary to prevent dementia	95	60.1	-0.43

Table 1 Continued

	Post-diagnosis support for patients diagnosed with MCI	Yes		Item difficulty
		<i>n</i>	%	
31	I have the opportunity to address family concerns and anxieties in the immediate aftermath of an MCI diagnosis	93	58.9	−0.38
32	I can provide information on social resources related to care and dementia prevention to patients with MCI	91	57.6	−0.33
33	I can explain to family members of patients with MCI that a balanced diet is necessary to prevent dementia	90	57	−0.31
34	I can recommend a balanced diet for patients with MCI to prevent dementia	89	56.3	−0.28
35	I can create opportunities for patients with MCI to address their fears and concerns immediately after diagnosis	86	55.4	−0.21
36	I can confirm whether patients with MCI are using the social resources I referred them to during follow-up visits	85	53.8	−0.19
37	I can provide psychological support to families of patients diagnosed with MCI	85	53.8	−0.19
38	I can provide information on social resources related to dementia prevention to patients with MCI	83	52.5	−0.14
39	I can confirm the hearing function of a patients with MCI	81	51.2	−0.09
40	I can gather information on resources for patients with MCI	80	50.6	−0.07
41	I can prepare information on resources available to patients with MCI	74	46.8	0.08
42	I can confirm the diet of patients with MCI (i.e., do they eat a balanced diet)	70	44.3	0.17
43	I can assess the psychological state of a family member in the immediate aftermath of an MCI diagnosis	70	44.3	0.17
44	I can assess the patient's psychological state immediately after MCI diagnosis	69	43.7	0.20
45	I can consult with patients with MCI regarding employment assistance	39	24.7	1.02

Abbreviation: MCI, mild cognitive impairment.

The 1PLM of item response theory was then applied to estimate the item difficulty and latent trait values (i.e., staff-rated ability to provide post-diagnosis support to patients with MCI). Item difficulty is an indicator of the level of difficulty, with a mean value of 0 and a range of approximately −4 to 4. Negative values indicated that the item is relatively easy, whereas positive values indicated relatively difficult items.

To examine the factors associated with staff's self-rated ability to provide post-diagnosis support to patients with MCI, the latent characteristic value for 'Staff's self-rated ability to provide post-diagnosis support to patients with MCI', which was estimated by the 1PLM of item response theory, was used as the dependent variable.

Then, multivariate linear regression analysis was applied using 'Years of consultation experience at a

medical centre for dementia', 'Working status (ref: full-time employment)', 'Number of consultations per month with patients with MCI' (ref: ≤2 patients/month, >2 patients/month or uncounted), 'Support groups are offered for patients with MCI' (ref: No), 'There is a designated place where support is provided for patients with MCI' (ref: No), 'The role of staff in assisting patients with MCI is clear (ref: No)', 'The role of the medical centre for dementia in the treatment of patients with MCI is clear (ref: No)', 'A reasonable number of personnel is available to assist immediately after MCI diagnosis (ref: No)', 'Established system for support immediately after MCI diagnosis in place, similar to that of dementia (ref: No)', 'Collaboration with family physician available immediately after MCI diagnosis (ref: No)', and 'System in place for regular check-ups for patients with MCI (ref: No)' as independent variables.

Statistical significance was defined as a two-sided *P*-value of <0.05. StataBE/17.0 (Stata Corp., LLC, College Station, TX, USA) and R version 4.1.2 (R Foundation for Statistical Computing, Vienna, Austria) software were used for the statistical analysis.

Ethical considerations

The participants were selected by the director of the medical centre for dementia, and the application document clearly stated that participation was voluntary. The study purpose, objectives, methods, and duration, reasons for being selected as research participants, that responding to the survey was voluntary and not compulsory, the anticipated risks and disadvantages, and protection of privacy and disclosure of information, were clearly stated in the explanatory letter addressed to the participants. Consent to the study was considered based on receipt of the participants' responses to the web-based survey. This study was approved by the Life Science Ethics Review Committee of Kumamoto Health Sciences University (approval number: 22023).

RESULTS

Individual participant attributes

The individual participant attributes are shown in Table 2. The mean age (standard deviation) of the participants was 41.6 (9.6) years, and the mean years of consultation experience at the medical centre for dementia (standard deviation) was 4.7 (3.2) years. The most common main qualifications were mental healthcare worker (97 (61.3%)), followed by clinical psychologists (29 (18.3%)), and public health nurses (27 (17.1%)). Although some staff members possibly had multiple certifications, only their primary certifications were considered. From April 2021 to March 2022, 84 (53.1%) respondents worked full-time defined as engaged in such work for more than 80% of their total working hours and 62 (39.2%) worked full-time defined as engaged in such work for more than 50% of their total working hours; more than 90% of the respondents worked full-time.

Attributes of the medical centre for dementia

Table 3 shows the attributes of the participants' respective medical centres for dementia. The most common types of institutions with dementia centres

Table 2 Personal attributes of the participants (*n* = 158).

Attribute	Description	<i>n</i> (%) or mean (SD)
Age		41.6 (9.6)
Years of consultation experience at a medical centre for dementia		4.7 (3.2)
Main qualifications	Mental health social worker	97 (61.3)
	Clinical psychologist	29 (18.3)
	Public health nurse	27 (17.1)
	Certified social worker	3 (1.9)
	Other (occupational therapist)	2 (1.3)
Work status (April 2021–March 2022)	Full-time employment [†]	84 (53.1)
	Full-time employment [‡]	62 (39.2)
	Part-time	12 (7.6)

Abbreviation: SD, standard deviation. [†] Full-time employment defined as engaging in such work for more than 80% of total working hours. [‡] Full-time employment defined as engaging in such work for more than 50% of total working hours.

reported in this study were psychiatric hospitals; 85 (53.8%) staff from psychiatric hospitals responded to the survey. The year of designation as a medical centre for dementia was from 2008 to 2012 for 65 (41.1%) respondents and from 2013 to 2017 for 64 (40.5%); more than 80% of the staff worked at institutions that had been in operation for more than 5 years. The median number of consultations per month with patients with MCI was two; 78 (49.4%) had ≤2 consultations/month, 48 (30.4%) had >2 consultations/month, and 32 (20.2%) had an uncounted number of consultations/month.

In addition, 126 (79.7%) respondents answered 'Yes' to 'Support groups are offered for patients with MCI'. A total of 45 (28.5%) respondents answered 'Yes' to 'Collaboration with family physician available immediately after MCI diagnosis' and 40 (25.3%) answered 'Yes' to 'System in place for regular check-ups for patients with MCI'.

Staff-rated ability to provide post-diagnosis support for patients with MCI

Factor analysis of the 45 staff-rated items related to post-diagnosis support for patients with MCI showed that the contribution rate (eigenvalues) was 36.3% (16.3) for Factor 1, 10.3% (4.6) for Factor 2, 7.3%

Table 3 Medical centre for dementia attributes (*n* = 158)

Questionnaire items		<i>n</i>	%
Type of medical institution where medical centre for dementia was established	Mental hospital	85	53.8
	General hospital	44	27.9
	Advanced treatment hospital	15	9.5
	Regional medical care support hospital	10	6.3
	Clinic	4	2.5
Year designated as a medical centre for dementia	2008–2012	65	41.1
	2013–2017	64	40.5
	2018–2021	29	18.4
Number of MCI diagnoses at medical centre for dementia (April 2021–March 2022)	<50/year	95	60.1
	≥50/year	50	31.7
	Uncounted	13	8.2
Number of consultations for patients with MCI per month (April 2021–March 2022)	≤2 cases/month	78	49.4
	>2 cases/month	48	30.4
	Uncounted	32	20.2
Number of consultations for family members of patients with MCI per month (April 2021–March 2022)	≤2 cases/month	65	41.2
	>2 cases/month	59	37.3
	Uncounted	34	21.5
Support groups offered for MCI patients	Yes	126	79.7
	No	32	20.3
There is a designated place where support is provided for patients with MCI	Yes	105	66.5
	No	53	33.5
The role of staff in assisting patients with MCI is clear	Yes	88	55.7
	No	70	44.3
The role of the medical centre for dementia in the treatment of patients with MCI is clear	Yes	87	55.0
	No	71	45.0
A reasonable number of personnel is available to assist immediately after MCI diagnosis	Yes	81	51.3
	No	77	48.7
Established system for support immediately after MCI diagnosis	Yes	80	50.6
	No	78	49.4
Collaboration with family physician available immediately after MCI diagnosis	Yes	45	28.5
	No	113	71.5
System in place for regular check-ups for patients with MCI	Yes	40	25.3
	No	118	74.7

Abbreviation: MCI, mild cognitive impairment.

(3.3) for Factor 3, 4.7% (2.0) for Factor 4, and 4.4% (1.9) for Factor 5. The high contribution of the first factor and degree of decrease in eigenvalues between the first and second factors suggested general unidimensionality. The McDonald's ω reliability coefficient was 0.96, confirming the internal overall consistency of the items. The descriptive statistics and item difficulty results of the staff-rated ability to provide post-diagnosis support for patients with MCI are presented in Table 1. Less than 50% of the respondents answered 'Yes' to the five items regarding the content of post-diagnosis support for patients with MCI as follows: 'I can consult with patients with MCI regarding employment assistance', 'I can assess the patient's psychological state immediately following an MCI diagnosis', 'I can assess the psychological state of a family member immediately following an MCI diagnosis', 'I can verify the current diet of

patients with MCI (i.e., do they eat a balanced diet)', and 'I can prepare information on the resources available to patients with MCI'. The number of respondents who received 'Consultation on employment support' was less than 30%.

The latent characteristic values estimated using the 1PLM were generally that of a normal distribution with a mean (standard deviation) of -0.000 (0.959), median of -0.082 , minimum of -1.687 , maximum of 2.003 , and skewness of 0.352 , although slightly skewed to the right. The item response theory applied to the 45 content items of post-diagnosis support for patients with MCI resulted in a range of item difficulty from -2.56 to 1.02 . Forty of the items had negative values, indicating that the items were relatively easy. However, the difficulty level for 'Consultation on employment support' was 1.02 , indicating that the item was relatively difficult.

Staff-rated ability to provide post-diagnosis support to patients with MCI and related factors

The multivariate linear regression analysis results of the staff's self-rated ability to provide post-diagnosis support to patients with MCI and its associations are shown in Table 4.

The staff-rated ability to provide post-diagnosis support tended to be significantly higher for 'The role of staff in assisting patients with MCI is clear' ($P = 0.005$), 'A reasonable number of personnel is available to assist immediately after MCI diagnosis' ($P = 0.001$), and 'Collaboration with family physician available immediately after MCI diagnosis' ($P < 0.001$).

DISCUSSION

The types of medical institutions that include medical centres for dementia described in a 2019 report¹¹ included mental hospitals (49.8%), general hospitals (39.1%), clinics (7.8%), and others (15.8%). Although our survey did not ask about other types of

institutions, 53.8% of participants worked in mental hospitals, 27.9% in general hospitals, and 2.5% in clinics. Although the proportion of general hospitals included in this study was low, no major differences were observed between general hospitals and other types of institutions, and the composition did not differ significantly from that of the national situation, suggesting that there was little bias related to the staff's facility type.

First, regarding the attributes of the medical centre for dementia where the participants worked, approximately 80% of the staff responded that study groups were held to provide support for patients with MCI. We considered that it was possible that the knowledge and skills gained from the study groups may be used to provide post-diagnosis support to patients with MCI. Regarding post-diagnosis support for patients with MCI, the proportion of staff who answered 'Agree' was less than 50% for five of the 45 items. We considered that incorporating these five items into the content of the study groups may be beneficial.

In terms of support for family members of patients with MCI, more than 90% of the staff felt that family

Table 4 Staff-rated ability to provide post-diagnosis support to patients with MCI and related factors (multivariate linear regression analysis)

Items	Regression coefficient	Standard error	Standardised regression coefficient (β)	<i>P</i> -value
Years of consultation experience at a medical centre for dementia	0.022	0.020	0.073	0.270
Work status (April 2021–March 2022) Full-time employment [‡] (ref = full-time employment [†])	0.450	0.139	0.023	0.746
Part-time employment (ref = full-time employment [†])	-0.358	0.250	-0.990	0.153
Number of consultations for patients with MCI per month >2 cases/month (ref = ≤2 cases/month)	0.152	0.155	0.073	0.328
Uncounted (ref = ≤2 cases/month)	0.003	0.167	0.001	0.985
Support groups offered for patients with MCI (ref: No)	0.256	0.183	0.107	0.164
There is a designated place where support is provided for patients with MCI (ref = No)	-0.148	0.154	-0.073	0.337
Role of staff in assisting patients with MCI is clear (ref = No)	0.635	0.224	0.330	0.005
The role of the medical centre for dementia in the treatment of patients with MCI is clear (ref = No)	-0.099	0.241	-0.051	0.684
A reasonable number of personnel is available to assist immediately after MCI diagnosis (ref = No)	0.463	0.136	0.242	0.001
Established system for support immediately after MCI diagnosis (ref = No)	0.091	0.178	0.047	0.611
Collaboration with family physician available immediately after MCI diagnosis (ref = No)	0.552	0.148	0.261	<0.001
System in place for regular check-ups for patients with MCI (ref = No)	0.124	0.154	0.563	0.421

Abbreviation: MCI, mild cognitive impairment. [†] Full-time employment was defined as engagement in such work for more than 80% of the total working hours.

[‡] Full-time employment was defined as engagement in such work for more than 50% of the total working hours.

members of patients diagnosed with MCI needed support. However, only approximately 50% of the staff felt they were able to provide psychological support and assess the psychological state of family members of patients diagnosed with MCI. This may be partly due to the fact that psychological support requires an ongoing time commitment, and less than 20% of the participants in this study were clinical psychologists or other professionals who specialise in psychological support. Since a high level of burden exists for a significant proportion of caregivers of patients with MCI,¹⁴ the needs of caregivers, such as family members of patients with MCI, should first be confirmed and the condition of MCI carefully explained. Then, additional specialised staff support can possibly satisfy the individual's needs, such as mental health social workers providing information on social resources, clinical psychologists and other professionals responding to anxiety issues, and public health nurses and other professionals providing support for activities of daily living.

The item difficulty of post-diagnosis support for patients with MCI ranged from -2.56 to 1.02 . Forty of the items had negative values, suggesting that the items were relatively easy. However, the difficulty level for 'I can consult with patients with MCI regarding employment assistance' was 1.02 , indicating that this item is relatively difficult even for staff who are relatively able to provide post-diagnosis support to patients with MCI. Recently, with the increase in the number of patients with dementia, there is an increasing need for healthcare providers to offer employment support immediately after diagnosis for workers with juvenile dementia.¹⁵ However, employment support for patients with early-onset dementia and MCI requires encouragement from the workplace,¹⁶ and employment support is not a problem that can be solved solely by medical centres for dementia. Therefore, we believe that staff members should deepen their knowledge of employment support as well as their role in providing information to patients with MCI and their families, and should be connected continuously to employment support offices.

Next, we explored the self-rated ability of medical centre for dementia staff in providing post-diagnosis support to patients with MCI and the related factors. The results revealed that the staff's self-rated ability to provide post-diagnosis support tended to increase

significantly the more adequately staffed the centre was, thereby facilitating support immediately after MCI diagnosis. Currently, only 53.3% of medical centre for dementia staff work full-time; therefore, staff shortages at medical centres for dementia are a major issue. The post-diagnosis support function, which was newly added in 2021, requires the establishment of a system and staffing for post-diagnosis support for patients with MCI. Future studies should verify and evaluate the effectiveness of post-diagnosis support for patients with MCI and consider how to acquire and retain personnel for post-diagnosis support.

A trend was observed in that the clearer the role of the staff providing post-diagnosis support to patients with MCI, the higher the self-rated ability to provide post-diagnosis support. Staff providing interventions in the early stages of MCI can help patients with MCI maintain a functional and healthy lifestyle and may prevent them from becoming severely and chronically unwell.⁹ Furthermore, intervention programs that are managed and deployed independently by older adults are expected to maintain their mental health,¹⁷ and remote monitoring of their health status and activities using Internet of Things reportedly supports independent living for older adults.¹⁸ Therefore, staff should be aware of their roles in post-diagnosis support for patients with MCI and initiate support immediately after diagnosis to facilitate proactive self-management and promote wellbeing.

Although less than 30% of the staff felt they had good collaboration with doctors, a trend was observed in that the staff's self-rated ability to provide post-diagnosis support increased significantly along with increased collaboration with doctors immediately after the diagnosis of MCI. Medical centres for dementia play a role in differential diagnosis and post-diagnosis support for people with dementia, and support is provided through collaboration with the patient's family physician. Therefore, we considered that individualised support for patients with MCI is possible through collaboration with family physicians. First, establishing a system to promote collaboration with their family physician is necessary to support patients with MCI immediately after diagnosis.

This study had some limitations. First, we included staff with a consultative role at a medical centre for dementia in Japan. Therefore, the current status of post-diagnosis support for patients with MCI in small

community clinics remains unclear. However, when MCI is diagnosed at a small community clinic, more patient-oriented support can likely be provided on an ongoing basis. In the future, clarifying the post-diagnosis support provided for patients with MCI in small community clinics is necessary.

Second, we employed a 1PLM with a small sample size and easy parameter estimation; in future studies, a more valid item response theory model that considers item discrimination and other factors should be considered. Statistical analysis was not conducted on the association with institution type. However, the characteristics of the institution may influence the staff's rating; therefore, further study is required in the future. Ultimately, 32 (20.2%) staff members answered that the number of MCI diagnoses had not been compiled. Therefore, the association between the number of MCI diagnoses and the staff's self-rated ability could not be clarified. However, we believe that evidence of post-diagnosis support for patients with MCI will accumulate through continued verification and evaluation of such support by highly competent staff.

Our study revealed that the difficulty of the items related to post-diagnosis support provided by the staff of the medical centre for dementia for patients with MCI ranged from -2.56 to 1.02 , and 40 items had negative values, indicating relatively low levels of difficulty.

Staff's self-rated ability to provide post-diagnosis support to patients with MCI may be enhanced by increased availability of staff immediately after MCI diagnosis, clarification of staff roles, and collaboration with family doctors. We believe initiating support from staff with expertise is necessary to enable patients with MCI to proactively manage themselves and promote their wellbeing.

ACKNOWLEDGMENTS

We thank the directors and staff of the medical centres for dementia for their participation in the questionnaire survey. This work was supported by Grants-in-Aid for Scientific Research (C) from the Ministry of Education, Culture, Sports, Science, and Technology of Japan (grant number 20K11038). We would like to thank Editage (www.editage.com) for English language editing.

DISCLOSURE

Authors declare no conflict of interests for this article.

DATA AVAILABILITY STATEMENT

Research data are not shared.

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