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Screening and follow-up care for cognitive and emotional problems after transient ischaemic attack and ischaemic stroke: a national, cross-sectional, online survey among neurologists in the Netherlands

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ABSTRACT

Background After stroke, many patients experience cognitive and/or emotional problems. While national guidelines recommend screening for these problems, actual screening rates might be limited.

Objective This study aimed to examine the clinical practice at neurology departments regarding screening, information provision and follow-up care for cognitive and emotional problems after transient ischaemic attack (TIA) and ischaemic stroke.

Methods A nationwide, cross-sectional, online survey was conducted between October 2018 and October 2019 among neurologists in all hospitals in the Netherlands.

Results Neurologists in 78 hospitals were invited to join the survey, and 52 (67%) of them completed it. Thirty-one (59%) neurologists reported that screening for cognitive problems after TIA and ischaemic stroke was mostly or always performed. When cognitive screening was performed, 42 (84%) used validated screening instruments. Twenty-nine (56%) of the respondents reported that screening for emotional problems was mostly or always performed. When emotional screening was performed, 31 (63%) reported using validated screening instruments. Timing of screening and information provision was highly variable, and the majority reported that there was no protocol for follow-up care when cognitive or emotional problems were found.

Conclusions This study demonstrates that clinical practice at neurology departments is highly variable regarding screening, information provision and follow-up care for cognitive and emotional problems in patients after TIA or ischaemic stroke. Approximately half of the participating neurologists reported that screening was performed only sometimes or never for cognitive and emotional problems after TIA and ischaemic stroke.

Strengths and limitations of this study

- A detailed overview is provided of the current clinical practice at neurology departments with regard to screening for cognitive and emotional problems after transient ischaemic attack or ischaemic stroke.
- Multiple opportunities are identified to further optimise the clinical practice of screening and care for cognitive and emotional problems after stroke.
- Neurologists in all Dutch hospitals were invited to participate and a satisfactory percentage completed the survey.
- Being a survey study, the results might deviate from the actual clinical practice, for example, due to social desirability.
- This study focuses on the views of neurologists and their teams, which might underestimate the true screening rates for cognitive and emotional problems.

INTRODUCTION

Stroke is a leading cause of disability worldwide.[1] After stroke, many patients experience cognitive and/or emotional problems, which affect their quality of life and participation.[7–11] Therefore, national guidelines recommend screening and care for cognitive and emotional problems after stroke.[12–15] The Dutch guideline recommends screening all patients who had a stroke for cognitive problems, using the Montreal Cognitive Assessment (MoCA) rather than the Mini-Mental State Examination (MMSE), and referral to rehabilitation services when cognitive problems are present.[15] With regard to emotional problems, multiple screening instruments are considered suitable, namely the Hospital Anxiety and Depression Scale (HADS), the Beck Depression Inventory, the Symptom CheckList-90 subscale for depression and the Hamilton Depression Scale.[15] When emotional problems are present,

psychotherapy or pharmacotherapy should be considered.[15] Previous studies in the UK found that compliance with the guidelines is low as regards screening for cognitive and emotional problems after transient ischaemic attack (TIA) and ischaemic stroke.[16 17] In the Netherlands, in general, patients who had a stroke are admitted to a stroke unit in the acute phase, where a neurologist functions as treating physician. From the stroke unit, patients are discharged home, to a rehabilitation centre or to a nursing home. If patients are discharged home, they are followed up at the outpatient clinics of the neurology department.

This study aimed to investigate the current clinical practice of screening for cognitive and emotional problems after TIA and ischaemic stroke at neurology departments in hospitals in the Netherlands. This study examined:[1] if patients who had a TIA or an ischaemic stroke are screened for cognitive and emotional problems,[2] if so, which screening instruments are used,[3] when screening is performed,[4] whether patients receive information regarding the presence and nature of cognitive and emotional problems and[5] what kind of follow-up care is delivered when cognitive and/or emotional problems are present.

MATERIALS AND METHODS

Study design and participants

A nationwide, cross-sectional, online survey was conducted in the Netherlands between October 2018 and October 2019. Neurologists in all Dutch hospitals with an inpatient neurology ward were invited to participate in this survey. In the Netherlands only neurologists, and no other specialists, act as treating physicians at stroke units. For every neurology department, one neurologist with experience of stroke care was asked to complete the survey about screening and care for cognitive and emotional problems after TIA and ischaemic stroke at their department. The neurologist was allowed to forward the survey to another neurologist, a nurse practitioner or a physician assistant within the same department with experience of stroke after care.

The data supporting the findings of this study are available from the corresponding author on reasonable request.

Development and content of the survey

The survey was developed by a multidisciplinary team, including a clinical neuropsychologist, a rehabilitation physician, two vascular stroke neurologists and a resident in neurology. A data manager verified the content and structure after the survey had been built in the web-based system Castor Electronic Data Capture (EDC).[18]

The survey was divided into two parts: one part about screening and follow-up care for cognitive consequences after TIA and ischaemic stroke, and the second part about screening and follow-up care for emotional consequences. Both parts included 10 multiple choice questions, resulting in 20 questions in total (see tables 1 and 2). The number of answer options ranged from 2 to 9. The multiple choice questions were formatted either as single-answer multiple choice questions (only one answer allowed) or as multiple-answer multiple choice questions (multiple answers allowed).

Survey administration

All neurologists received an invitation by email to participate in this online survey. Non-respondents received up to two subsequent emails. If the questionnaire was not completed after invitation by email, the neurologist was contacted by telephone. Participants completed the survey independently online, using a computer. Data were collected anonymously.

Statistical analysis

The results of the survey were analysed using descriptive statistics. For single-answer multiple choice questions, all answer options were recorded as percentages of the total number of respondents. For multiple-answer multiple choice questions the following analysis was performed. First, a dichotomous dummy variable was computed for each potential answer option. The options of the dummy variables were 'marked' or 'not marked' for each answer option. All answer options were then recorded as percentages of 'marked', divided by the total number of respondents. IBM SPSS V.22.0 was used for analyses.

Patient and public involvement

Patients or the public were not involved in the design, conduct or reporting of this research.

RESULTS

Response rate and characteristics of the participants

Of the neurologists in 78 Dutch hospitals who were invited to join the survey, 52 (67%) completed the survey. The characteristics of the respondents are shown in table 3. Nineteen (37%) participants were female, and the median age was 45 years (IQR: 40–57); 7 (15%) were working at a university hospital, 44 (87%) in a large general hospital (more than 100 stroke patients per year) and 1 (2%) in a small general hospital (less than 100 stroke patients per year). Of the non-respondents, 1 (4%) was working at a university hospital, 25 (96%) at a large general hospital and none at a small general hospital.

Screening for cognitive problems after TIA and ischaemic stroke

The various items regarding screening for cognitive problems in patients after TIA or ischaemic stroke are shown in table 1. Of the respondents, 31 (59%) reported that patients were mostly or always screened for cognitive problems after TIA or ischaemic stroke, while 21 (41%) said that patients were sometimes or never screened. When screening for cognitive problems was performed, 42 (84%) stated that validated screening instruments were used. When screening instruments were used,

Table 1 Screening for cognitive problems after TIA and ischaemic stroke

	Item	Answer options	n (%)	University hospital (n=7)	General hospital (n=45)
1.	Are patients screened for cognitive problems?	Always	8 (15)	0	8
		Mostly	23 (44)	5	18
		Sometimes	19 (37)	2	17
		Never	2 (4)	0	2
2.	Are validated screening instruments used?*	Yes	42 (84)	7	35
		No	8 (16)	0	8
3.	Which screening instrument(s) is/are used?†‡	MoCA	35 (83)	6	29
		MMSE	21 (50)	3	18
		CLCE-24	6 (14)	2	4
		Other§	4 (9)	0	4
4.	When does screening take place?*‡	During hospital admission	31 (62)	5	26
		<1 week after discharge	2 (4)	0	2
		1–4 weeks after discharge	5 (10)	1	4
		4–8 weeks after discharge	19 (38)	3	16
		>8 weeks after discharge	14 (28)	2	12
5.	Do patients receive information about possible cognitive problems?	Always	15 (28)	2	13
		Mostly	25 (48)	2	23
		Sometimes	12 (23)	3	9
		Never	0 (0)	0	0
6.	Do patients receive written information about possible cognitive problems?	Always	13 (25)	2	11
		Mostly	13 (25)	1	12
		Sometimes	7 (14)	1	6
		Never	19 (37)	3	16
7.	Do caregivers receive information about possible cognitive problems?	Always	13 (25)	0	13
		Mostly	23 (44)	4	19
		Sometimes	15 (29)	3	12
		Never	1 (2)	0	1
8.	Reasons for referral to specialised care‡	Cognitive complaints	36 (69)	5	31
		Clinical suspicion of cognitive disorders	36 (69)	5	31
		Abnormal screening results	30 (58)	3	27
		Abnormal results during neuropsychological examination	14 (27)	2	12
9.	Who is the treating physician for cognitive problems?‡	Neurologist	35 (67)	4	31
		Resident in neurology	3 (6)	1	2
		Nurse practitioner or physician assistant	23 (55)	3	20
		Rehabilitation physician	30 (58)	5	25
		Psychologist	6 (12)	0	6
		Geriatrician	8 (15)	1	7
		Nursing home doctor	6 (12)	1	5
		General practitioner	16 (31)	2	14
		Occupational therapist	5 (10)	0	5
10.	Does your hospital have a protocol or guideline for follow-up care for cognitive problems?	Yes	12 (23)	2	1
		No	39 (75)	5	44
		Missing	1 (2)	0	

*Items 2 and 4 were only asked if item 1 had been marked 'always', 'mostly' or 'sometimes'.
†Item 3 was only asked when item 2 had been marked 'yes'.
‡These items allowed multiple answers and were analysed accordingly, see the 'Statistical analysis' section; consequently, the sum of the percentages is not 100%.
§Other screening instruments included the Cambridge Cognitive Examination (n=1), the Symbol Digit Modalities Test (n=1), the Assessment tool for long-term Consequences After Stroke (n=1) and a neuropsychological examination (n=1).
CLCE-24, Checklist for Cognitive and Emotional Consequences following Stroke; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; TIA, transient ischaemic attack.

Table 2 Screening for emotional problems after TIA and ischaemic stroke

	Item	Answer options	n (%)	University hospital	General hospital
1.	Are patients screened for emotional problems?	Always	10 (19)	1	9
		Mostly	19 (37)	3	16
		Sometimes	20 (39)	3	17
		Never	3 (6)	0	3
2.	Are validated screening instruments used?*	Yes	31 (63)	6	25
		No	18 (37)	1	17
3.	Which screening instrument(s) is / are used?†‡	HADS	27 (87)	6	21
		CLCE-24	4 (13)	0	4
		HDRS	1 (3)	0	1
		BDI	1 (3)	0	1
		SIGEB	2 (6)	0	2
4.	When does screening take place?*‡	During hospital admission	14 (29)	0	14
		<1 week after discharge	1 (2)	0	1
		1–4 weeks after discharge	13 (27)	4	9
		4–8 weeks after discharge	21 (43)	1	20
		>8 weeks after discharge	12 (25)	2	10
5.	Do patients receive information about possible emotional problems?	Always	11 (21)	1	10
		Mostly	21 (40)	3	18
		Sometimes	18 (35)	3	15
		Never	2 (4)	0	2
6.	Do patients receive written information about possible emotional problems?	Always	9 (17)	0	9
		Mostly	12 (23)	2	10
		Sometimes	12 (23)	3	9
		Never	19 (37)	2	17
7.	Do caregivers receive information about possible emotional problems?	Always	8 (15)	0	8
		Mostly	13 (25)	3	10
		Sometimes	12 (23)	2	10
		Never	19 (37)	2	17
8.	Reason for referral to specialised care‡	Emotional complaints	37 (71)	5	32
		Clinical suspicion of emotional disorders	31 (60)	4	27
		Abnormal screening results	14 (27)	2	12
9.	Who is the treating physician for emotional problems?‡	Neurologist	30 (58)	5	25
		Resident in neurology	3 (6)	1	2
		Nurse practitioner or physician assistant	27 (52)	4	23
		Rehabilitation physician	23 (44)	3	20
		Psychiatrist	1 (2)	0	1
		Psychologist	14 (27)	1	13
		Geriatrician	5 (10)	1	4
		General practitioner	16 (31)	1	15
10.	Does your hospital have a protocol or guideline for follow-up care for emotional problems?	Yes	9 (17)	2	7
		No	42 (81)	5	37
		Missing	1 (2)	0	1

*Items 2 and 4 were only asked when item 1 had been marked 'always', 'mostly' or 'sometimes'.
†Item 3 was only asked when item 2 had been marked 'yes'.
‡These items allowed multiple answers and were analysed accordingly, see the 'Statistical analysis' section; consequently, the sum of the percentages is not 100%.
.BDI, Beck Depression Inventory; CLCE-24, Checklist for Cognitive and Emotional Consequences following Stroke; HADS, Hospital Anxiety and Depression Scale; HDRS, Hamilton Depression Rating Scale; SIGEB, Assessment tool for long-term Consequences After Stroke; TIA, transient ischaemic attack.[30]

Table 3 Characteristics of respondents and non-respondents

Characteristic	Respondents, n=52	Non-respondents, n=26
Female sex (%)	19 (37)	–
Age, median (IQR)	45 (40–57)	–
Neurologist (%)	49 (94)	–
Nurse practitioner or physician assistant at the neurology department (%)	3 (6)	–
Type of hospital		
University (%)	7 (15)	1 (4)
Large general (%)	44 (87)	25 (96)
Small general (%)	1 (2)	0 (0)

the most commonly used instruments were the MoCA (n=35; 83%), the MMSE (n=21; 50%) and the Checklist for Cognitive and Emotional Consequences following Stroke (CLCE-24) (n=6; 14%). The timing of screening for cognitive problems varied greatly among the hospitals: 31 (62%) screened during hospital admission and 19 (38%) at a follow-up visit between 4 and 8 weeks after TIA or ischaemic stroke. Fourteen (27%) stated that they screened at multiple time points. According to the participants, the majority of patients received some form of information about possible cognitive problems after TIA or ischaemic stroke during admission or at follow-up visits, but 19 (37%) reported that no written information was provided at all. When cognitive problems were observed, it was the local neurologist, nurse practitioner or physician assistant, or the rehabilitation physician, who acted as the treating physician in most cases. Thirty-nine of the participants (75%) stated that they did not have a guideline or protocol for follow-up care in case of cognitive problems after TIA and ischaemic stroke. The reasons for referral to specialised care varied considerably among the hospitals: 36 (69%) referred patients based on cognitive complaints, 36 (69%) based on cognitive disorders, 30 (58%) based on positive screening results and 14 (27%) based on deviant results during a neuropsychological examination. All respondents from university hospitals (100%) reported to use validated screening instruments when a screening was performed, whereas 35 respondents from general hospitals (83%) reported to use validated screening instruments when screening was performed. Apart from the use of validated screening instruments, screening for cognitive problems after TIA and ischaemic stroke was overall comparable between university and general hospitals.

Screening for emotional problems after TIA and ischaemic stroke

Table 2 shows the survey responses for the items about screening for emotional problems. According to 29 (56%) of the participants, patients were mostly or always screened for emotional problems after TIA or ischaemic stroke at their hospital. When patients were screened, 31 (63%) used validated screening instruments. When screening instruments were used, the most commonly used instrument was the HADS (n=27; 87%). Screening for emotional problems was performed at variable time points, but mostly during the hospital admission (n=14; 29%) or at a follow-up visit between 4 and 8 weeks after discharge (n=21; 43%). Fifteen per cent of the participants reported that patients were screened at multiple time points. According to 42 (61%) of the participants, information about the possible emotional sequelae was given to most or all patients, and according to 21 (40%), written information was mostly or always given. According to the respondents, 42 (81%) of the hospitals had no guideline or protocol for follow-up care for emotional problems after TIA and ischaemic stroke. When emotional problems arose, it was mostly the neurologist who acted as the treating physician (n=30; 58%), followed by the nurse practitioner or physician assistant (n=27; 52%), the rehabilitation physician (n=23; 44%) or the patient's general practitioner (n=16; 31%). Indications for referral to specialised care were emotional complaints (n=37; 71%), clinical suspicion of an emotional disorder (n=31; 60%) and positive screening results (n=14; 27%). Apart from the timing of screening, screening for emotional problems after TIA and ischaemic stroke was overall comparable between university and general hospitals.

DISCUSSION

Our nationwide survey in the Netherlands found a wide variety as regards screening at neurology departments for cognitive and emotional problems in patients after TIA or ischaemic stroke. While a small majority of the participants reported screening for cognitive and emotional problems was performed in most or all patients who had a TIA or an ischaemic stroke, the others did so only sometimes, or never. When patients were screened, the most commonly used instruments for cognitive problems were the MoCA and the MMSE, and for emotional problems the HADS. Screening for cognitive and emotional problems was performed at various time points, and information provision was highly variable. The vast majority of respondents indicated that their hospital lacked a protocol or a guideline for follow-up care for cognitive and emotional problems after stroke. These results were comparable between university and general hospitals.

A strength of this study is that neurologists in all Dutch hospitals with a neurology ward were invited to participate, and that a satisfactory percentage of invited clinicians actually completed the survey. A limitation of this study is its design as a survey, which might not accurately reflect current clinical practice, for example, due to social desirability. In addition, we focused on the views of the neurologists and their teams. This might underestimate the true screening rates for cognitive and emotional

problems, since part of this care might be provided by, for example, general practitioners or rehabilitation physicians. Besides, in the current questionnaire, no distinction was made between TIA and ischaemic stroke. While patients who had a TIA and an ischaemic stroke receive comparable follow-up treatment in the Netherlands, it is not known whether the results of the current paper differ between TIA and ischaemic stroke.

National guidelines recommend screening for cognitive and emotional problems in all patients who had a stroke.[12–15] Nevertheless, almost half of the respondents reported that they only sometimes, or even never, screened patients for cognitive and emotional problems after TIA or ischaemic stroke. Our findings focused on the clinical practice in the Netherlands and are in accordance with international studies, viz. from the UK and Canada, which also showed low compliance rates with guideline recommendations to screen for cognitive and emotional problems after stroke.[15–17 19 20] Since cognitive and emotional problems after stroke are universal, these low compliance rates might hinder optimal treatment of the consequences of stroke internationally. Therefore, it is important to identify and overcome barriers for screening. Studies have identified multiple barriers to the implementation of evidence-based guidelines in clinical practice.[21 22] With regard to screening for cognitive and emotional problems after stroke, multiple factors might explain the low rates of routine screening. First, there are numerous screening tools for cognitive and emotional problems, and they can be time-consuming and may be difficult to use for patients with language barriers or disabilities such as aphasia, hearing loss or vision loss.[23] Second, insufficient time, training and expertise of clinicians might further limit routine screening, as well as the lack of a protocol for follow-up care when a screening turns out to be positive.[19 21–23] Third, stroke care predominantly focuses on secondary prevention, which might overshadow the importance of screening for cognitive and emotional problems.

Remarkably, when screening for cognitive problems was performed, 50% of our respondents who used screening instruments reported using the MMSE. However, two reviews have demonstrated that the MMSE is not sufficiently sensitive to the cognitive consequences of stroke, as it was originally designed to screen for the presence of dementia.[15 24 25] It is recommended to use the MoCA as a screening instrument for cognitive disorders in patients who had a stroke.[15 25] When patients were screened for emotional problems after stroke, the vast majority of the respondents said they used the HADS, as has been recommended.[15]

Apart from screening, information provision and follow-up care for cognitive and emotional problems were also highly variable in our study, and most respondents reported that a protocol for follow-up care was lacking. Nonetheless, cognitive and emotional problems are very common after stroke, and a previous evaluation among patients identified information provision after stroke as a major target for improvement.[26] Moreover, patients' evaluations underline the importance of the cognitive and emotional sequelae, and patients even rated these consequences as among the top 10 of research priorities in stroke.[27] Fortunately, attention is increasingly being drawn to the cognitive and emotional consequences of stroke, and screening rates seem to be increasing.[28] Still, our results suggest that further improvement is possible and, in our opinion, desirable. Therefore, we recommend to perform screening for all patients after stroke for cognitive and emotional problems with validated screening instruments such as the MoCA and HADS, respectively. In our opinion, the additional use of stroke-specific patient-reported screening instruments that measure subjective cognitive complaints and a wider spectrum of emotional problems will provide even better and valuable insights into the consequences of stroke. An example of such an instrument is the CLCE-24. Additionally, we recommend that such screenings should be performed by healthcare professionals with experience in screening for cognitive and emotional problems, and with sufficient time to use appropriate screening instruments. In our opinion, these screenings can be performed in primary care, in hospitals or in rehabilitation centres. However, to ensure that all patients are actually screened, it is important to have clear agreements embedded in the collaborative network of stroke care. Furthermore, guidance for patients who had a stroke with proven cognitive and emotional problems can be further optimised by implementing local protocols for follow-up care. Follow-up care for cognitive problems can include referral to a rehabilitation physician for treatment such as cognitive rehabilitation.[29] With regard to follow-up care for emotional problems, psychoeducation, psychotherapy and pharmacotherapy can be considered.[15]

In conclusion, this study indicates that stroke care practice at neurology departments in the Netherlands is highly variable with regard to screening, information provision and follow-up care for cognitive and emotional problems in patients after TIA or ischaemic stroke. Almost half of the respondents reported that they only sometimes or never screened for cognitive and emotional problems after TIA and stroke. Therefore, in order to optimise stroke care, screening rates should be improved and should include suitable screening instruments and a protocol for follow-up care.

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Contributors RVdB-V, CvH, VK, JS and JV were involved in the conception of the study design. RVdB-V, VK and JS were involved in participant recruitment. JS was involved in researching the literature, gaining ethical approval and data analysis. JS wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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