Long-term unmet needs and associated factors in stroke or TIA survivors

An observational study

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ABSTRACT

Objective: To extensively investigate long-term unmet needs in survivors of stroke or TIA and to identify factors associated with these unmet needs.

Methods: Community-dwelling adults were invited to participate in a survey ≥2 years after discharge for stroke/TIA. Unmet needs were assessed across 5 domains: activities and participation, environmental factors, body functions, post-acute care, and secondary prevention. Factors associated with unmet needs were determined with multivariable negative binomial regression.

Results: Of 485 participants invited to complete the survey, 391 (81%) responded (median age 73 years, 67% male). Most responders (87%) reported unmet needs in ≥1 of the measured domains, particularly in secondary prevention (71%). Factors associated with fewer unmet needs included older age (incident rate ratio [IRR] 0.62, 95% confidence interval [CI] 0.50–0.77), greater functional ability (IRR 0.33, 95% CI 0.17–0.67), and reporting that the general practitioner was the most important in care (IRR 0.69, 95% CI 0.57–0.84). Being depressed (IRR 1.61, 95% CI 1.23–2.10) and receiving community services after stroke (IRR 1.45, 95% CI 1.16–1.82) were associated with more unmet needs.

Conclusions: Survivors of stroke/TIA reported considerable unmet needs ≥2 years after discharge, particularly in secondary prevention. The factors associated with unmet needs could help guide policy decisions, particularly for tailoring care and support services provided after discharge. *Neurology*® 2017;89:68–75

GLOSSARY

CI = confidence interval; **GP** = general practitioner; **IRR** = incident rate ratio; **STANDFIRM** = Shared Team Approach Between Nurses and Doctors for Improved Risk Factor Management.

Similar to other countries, survivors of stroke in Australia often experience long-term disability,[1,2] resulting in profound difficulties and needs after discharge.[3,4] In one recent study, 84% reported unmet needs at a median of 2 years after stroke.[3] This may significantly affect survivors' ability to carry out normal activities[5,6] or to cope with ongoing care needs, including routine review of post–acute care and secondary prevention.[7]

Previous surveys on long-term unmet needs were focused on needs resulting from functional deficits after stroke such as the management of body functions, participation in daily activities, or needs induced by new social/environmental factors.[3,4,8,9] Consequently, data regarding unmet needs specifically related to critical aspects of long-term management such as post–acute care and secondary prevention are scarce. These 2 aspects deserve serious consideration in the overall assessment of unmet needs in survivors of not only stroke but also TIA. Moreover, demographic factors and the presence of certain disabilities/health problems have been associated with long-term unmet needs.[3,4,8,9] However, opportunity exists to explore previously unreported factors, especially those related to care and support services provided to survivors after hospital discharge.

Supplemental data at Neurology.org

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Go to Neurology.org for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the article.

Table 1 Areas covered by the domains of needs assessed

Body functions[a]	Activities and[a] participation	Environmental[a] factors	Secondary prevention	Post-acute care
Urination and defecation	Mobility	Community organization services	Education on stroke	Organization of care
Sensation of pain	Speech	Home adaptation, design, and reconstruction	Use of medications	Individualization of care
Ingestion	Reading	Labor and employment services	Prevention of adverse events	Information to family or caregiver to support care
Fatigue	Recreation and leisure	Social support services	Goal setting	Participation in decision making
Emotion	Social and family relationships	Social Security services	Self-management	
Cognition	Intimate/sexual relationships	General support services	Diet control	
Memory				
Vision				

[a] Mapped to the International Classification of Function core sets for stroke and neurologic conditions for post-acute care.

In this study, we extensively investigated long-term unmet needs in community-dwelling survivors of stroke/TIA across several domains, including post–acute care and secondary prevention, at ≥2 years after discharge. We also identified factors associated with these unmet needs.

METHODS

Study design and participants. The present study was an exit survey conducted in participants who completed participation in the Shared Team Approach Between Nurses and Doctors for Improved Risk Factor Management (STANDFIRM), a randomized controlled trial of risk factor management in survivors of stroke/TIA. Details of the trial design, including participant recruitment, have been described previously.[10] Briefly, participants were recruited from 4 tertiary referral hospitals in Melbourne, Australia, between January 2010 and November 2013. Eligible participants were adults (age ≥18 years) hospitalized for stroke/TIA. Exclusion criteria were enrollment in another trial, admission from/discharge to a nursing home, or presence of cognitive disorder or worsening health condition. Participants who completed 2 years of follow-up in the STANDFIRM trial were eligible for the present study; thus, participants who died or were lost during follow-up were excluded.

Standard protocol approvals, registrations, and patient consents. Ethics approval was obtained (Human Research Ethics Committee No. 2011000331), and written informed consent was provided by all participants. The STANDFIRM trial is registered with the Australian New Zealand Clinical Trials Registry (ACTRN12608000166370).

Questionnaire design. A 48-item semistructured, self-administered questionnaire was developed to assess unmet needs. The expected time of completion was ≤20 minutes. Approximately 70% of items in this questionnaire aligned directly with a prior Australian study,[3] with questions developed by an expert advisory group and reviewed by survivors of stroke, stroke researchers, and representatives from Australia's Stroke Foundation and general practice. These questions had good content validity[3] and great consistency with those asked in a previous UK study.[4] The remaining items (30%) were developed by the STANDFIRM investigators and were specifically targeted at domains of need related to post–acute care and secondary prevention.

Data collection. Questionnaires were mailed to eligible participants with the use of a modified Dillman[11] protocol. Briefly, the questionnaire was posted as part of a package that also contained a certificate of participation, a letter of thanks for participating, and an invitation to participate in the exit survey. A postage-paid return envelope was attached to facilitate return of the questionnaire. Participants were advised to contact our research office if they preferred to complete the survey by telephone.

If there was no response within 3 weeks after the survey was sent, participants were sent a second follow-up letter, together with the questionnaire and a postage-paid return envelope. Attempts were made to contact participants via telephone if there was still no response within 3 weeks of sending the second questionnaire. During the follow-up call, participants were asked whether they would prefer being sent another survey or completing the survey by telephone. If a participant was unable to be contacted at the initial telephone follow-up, another attempt was made within the following 2 weeks, after which no further attempts were made. Nonresponders successfully contacted by telephone were not contacted again.

Demographic information and details of stroke, including preexisting comorbidities and discharge destination, were obtained from medical records at baseline. At the 24-month follow-up, trained assessment nurses obtained self-reported data on living status and details of care and services received after discharge. Nurses also undertook standardized assessment of cardiovascular risk[12] and mental and functional status.[13,14] Baseline and 24-month data were collected separately as part of the STANDFIRM trial.

Outcome measure. The main outcome was the total number of unmet needs self-reported at ≥2 years after discharge. An unmet need was defined in a context similar to previous studies as "a need of something or help from someone (that would help overcome some of the effects of stroke and resulting difficulties) that is not being met."[3,4] Overall, 30 unmet needs were assessed across 5 domains. Twenty unmet needs were mapped to domains of management of body functions, activities and participation, or

Table 2 Characteristics of the study cohort who responded to survey and those who did not respond

	Nonresponders (n = 94), n (%)	Responders (n = 391), n (%)	p Value
Demographics			
Age ≥65 y at stroke onset	43 (46.2)	247 (63.3)	0.003
Male	60 (63.8)	262 (67.0)	0.560
Born in Australia	57 (60.6)	245 (62.7)	0.717
Married/living with partner	60 (63.8)	265 (67.8)	0.468
Vocational/higher education	52 (55.3)	207 (52.9)	0.678
High socioeconomic position[a]	42 (44.7)	198 (50.6)	0.299
Medical history at baseline			
Type of stroke			
Ischemic stroke	74 (78.7)	308 (78.8)	0.821
Intracerebral hemorrhage	8 (8.5)	27 (6.9)	
TIA	12 (12.8)	56 (14.3)	
Recurrent stroke	13 (13.8)	51 (13.0)	0.841
Length of hospitalization for stroke			
Median (Q1, Q3), d	4 (2, 6)	3 (2, 6)	0.082
≤3 d of hospital stay	52 (55.9)	170 (43.6)	0.032
≥2 Comorbidities[b]	50 (53.2)	205 (52.4)	0.894
Discharged to rehabilitation	35 (37.6)	120 (30.7)	0.207
Health and living status at 24 mo			
Median Framingham CVD risk (Q1–Q3)	17.7 (10.6–28.5)	22.2 (12.2–34.4)	0.192
Disability, median LHS score (Q1–Q3)	0.83 (0.67–0.97)	0.89 (0.79–1.00)	0.003
Depressed (HADS score >7)	17 (18.1)	44 (11.3)	0.085
Anxious (HADS score >7)	20 (21.3)	52 (13.4)	0.063
Living alone	16 (17.0)	83 (21.2)	0.355

Abbreviations: CVD = cardiovascular disease; HADS = Hospital Anxiety and Depression Scale; LHS = London Handicap Scale; Q = quartile.
Data are expressed as frequency and proportion unless otherwise stated.
[a] Determined with Australian Socio-Economic Indexes for Areas using postal codes.
[b] Comorbidities include history of diabetes mellitus, hypertension, dyslipidemia, or atrial fibrillation.

environmental factors on the basis of the International Classification of Function core sets for stroke and neurologic conditions for post–acute care (table 1).[15] The remaining 10 unmet needs were mapped to 2 other domains: management of post–acute care and secondary prevention.

Possible responses to close-ended questions (example: "Have you been given enough help/information regarding [a particular need]?") included the following: (1) yes, definitely; (2) yes, to some extent; (3) no, but I would have liked to; (4) no, I did not want help/information; and (5) I did not need/have [a particular need]. A need was coded as unmet when the participant responded 2 or 3 and as met when the response was 1, 2, or 5. Some close-ended questions were supplemented by an open-ended question so that participants could clarify the kind of need/help they wanted.

Statistical analyses. Participants characteristics were compared with the Wilcoxon rank-sum test (continuous variables) and χ^2 test (categorical variables). To investigate the construct validity of survey questions, factor analyses were undertaken with Kaiser criterion.[16] For the main outcome analyses, participants with ≥10% of outcome data missing were excluded. Participants with ≥30% of outcome data missing in a domain were excluded from analyses of that domain. Manual backward stepwise multivariable-negative binomial regression analyses were used to determine factors associated with unmet needs because this regression model shows a better fit (than Poisson regression model) for over-dispersed outcome data.[17] Variables tested for inclusion in the model were those obtained at baseline (demographic factors, details of stroke, and preexisting comorbidities) and at 24 months (living status, measures of health status, and care and services received after discharge). Time between hospitalization for stroke and return of survey and use of a care/management plan (the STANDFIRM intervention) were also incorporated. Variables were systematically eliminated until a suitable model was obtained. Apart from age and sex, only variables with a value of $p < 0.05$ were retained in the final models. To investigate any potential bias arising from the exclusion of missing outcome data, 3 separate multivariable models (sensitivity analyses) were undertaken, including multiple imputation of missing data and replacing missing observations with extreme values of 0 or 1. Potential interactions between logical combinations of variables were investigated by inserting interaction (cross-product) terms into multivariable models and checking any differences between models with or without interaction terms, based on a value of $p < 0.05$ in likelihood-ratio tests. All analyses were conducted with STATA IC (12.0; StataCorp, College Station, TX). A 2-sided p value <0.05 was considered statistically significant.

RESULTS

Participant characteristics. Among 485 participants who completed the STANDFIRM trial, 391 (81%) responded to the exit survey, 77 (16%) were uncontactable, 4 (1%) were not interested, and 9 (2%) did not participate for other reasons (figure e-1 at Neurology.org). Responses were provided directly by participants (65%), their relatives (16%), or caregivers or friends/associates (1%), while for 18%, this information was not provided. Only 1 participant provided responses via telephone. Overall, 126 participants (33%) returned an incomplete survey. Responders had a median age of 73 (quartile 1, 63; quartile 3, 81) years, and 67% were male. The median time since stroke was 32 (quartile 1, 29; quartile 3, 40) months.

Compared with nonresponders, responders were more often ≥65 years of age at stroke onset (63% vs 46%, $p = 0.003$) and had less disability (median London Handicap Scale score 0.89 vs 0.83, $p = 0.003$) at 24 months (table 2).

Outcome analyses. Main outcome analyses included 376 responders (96%) with <10% of outcome data missing. Overall, participants reported a median of 5 (quartile 1, 1; quartile 3, 10) unmet needs; 87% reported unmet needs in at least 1 of the 5 domains (table 3), and 56% reported ≤5 unmet needs (figure e-2). Results were similar for ischemic stroke (88%), intracerebral hemorrhage (85%), and TIA

Table 3 Unmet needs at ≥2 years after discharge by stroke type

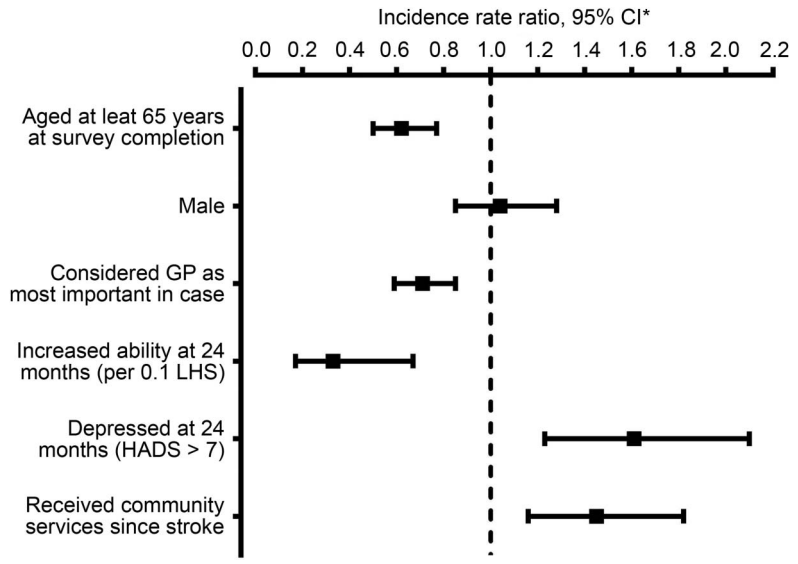
Domain of unmet needs	All cases (n = 391), n (%)	IS or ICH (n = 335), n (%)	IS (n = 308), n (%)	ICH (n = 27), n (%)	TIA (n = 56), n (%)	p Value[a]
Total	326 (86.7)	283 (87.6)	261 (87.9)	22 (84.6)	43 (81.1)	0.354
Post-acute care	192 (49.4)	169 (50.6)	154 (50.2)	15 (55.6)	23 (41.8)	0.416
Secondary prevention	276 (70.9)	242 (72.5)	224 (73.0)	18 (33.3)	34 (61.8)	0.228
Body functions	230 (59.7)	200 (60.6)	182 (59.9)	18 (69.2)	30 (54.6)	0.445
Activities and participation	185 (48.4)	164 (50.0)	151 (50.0)	13 (50.0)	21 (38.9)	0.315
Environmental factors	154 (40.8)	138 (42.7)	131 (44.1)[b]	7 (26.9)[b]	16 (29.6)[b]	0.040[b]

Abbreviations: ICH = intracerebral hemorrhage; IS = ischemic stroke.
[a] Difference among survivors of ischemic stroke, intracerebral hemorrhage, and TIA.
[b] $p < 0.05$.

(81%, $p = 0.354$). Health-related unmet needs (secondary prevention, body functions, and post–acute care) were the most commonly reported (table 3 and table e-1). The proportion of proxy respondents reporting unmet needs (94%) was greater than the proportion of direct respondents (84%, $p = 0.026$), but respondents with proxies had greater disability (table e-2).

For factor analyses, 4 uncorrelated factors, accounting for 66% of variations in outcome data, were extracted on the basis of eigenvalues ≥1. Structures of these factors showed 71% to 80% consistency with those proposed previously (table 1).[15] However, some factor loadings could not be explained, which limited the use of these analyses to support the survey questions.

Figure 1 Multivariable stepwise-negative binomial regression analysis of factors associated with total number of unmet needs at ≥2 years after discharge



CI = confidence interval; GP = general practitioner; HADS = Hospital Anxiety and Depression Scale; LHS = London Handicap Scale. *Model adjusted for all the variables listed in table e-2.

Univariable-negative binomial regression analyses of factors associated with unmet needs are presented in table e-3. In stepwise multivariable analyses, factors associated with fewer unmet needs at ≥2 years after discharge included being ≥65 years of age (incident rate ratio [IRR] 0.62, 95% confidence interval [CI] 0.50–0.77), greater functional ability (IRR 0.33, 95% CI 0.17–0.67), and reporting the general practitioner (GP) as the most important health professional involved in care (IRR 0.69, 95% CI 0.57–0.84; figure 1). In contrast, being depressed (IRR 1.61, 95% CI 1.23–2.10) and receiving community services after stroke (IRR 1.45, 95% CI 1.16–1.82) were associated with more unmet needs. These variables, along with educational attainment, were similarly associated with unmet needs across most of the domains (table 4). A trend was also observed between use of rehabilitation and more unmet needs (table e-4). There were no significant interactions of variables in multivariable models. Estimates from our sensitivity analyses, involving imputation of missing outcome data, were consistent with the unimputed model (data not shown).

DISCUSSION We report a comprehensive assessment of long-term unmet needs in survivors of stroke/TIA that specifically incorporates domains of needs related to critical aspects of long-term management of stroke such as post–acute care and secondary prevention. A major finding is that survivors of stroke/TIA have considerable long-term unmet needs after discharge. Indeed, a large proportion of our participants reported unmet needs in at least 1 of the 5 investigated domains. Unmet needs were most prominent in the domain of secondary prevention, an area of need rarely reported.

The proportion of participants reporting unmet needs (87%) is less than that (96%) in a previous Australian survey,[3] despite 70% of questions overlapping. However, similar to our study, unmet needs were more often reported in health-related domains

Table 4 Multivariable stepwise regression analysis of factors associated with unmet needs at ≥2 years after discharge according to the measured domains

	Post-acute care	Secondary prevention	Body function	Activities and participation	Environmental factors
Demographics					
Age ≥65 y at survey completion	0.69 (0.54–0.90)[a]	0.88 (0.72–1.09)	0.62 (0.47–0.80)[a]	0.56 (0.42–0.73)[a]	0.40 (0.29–0.55)[a]
Male	1.03 (0.80–1.32)	1.12 (0.91–1.37)	1.03 (0.81–1.32)	1.03 (0.78–1.36)	1.19 (0.89–1.58)
Born in Australia	0.77 (0.61–0.98)[a]	—	—	—	—
Vocational/higher education	1.31 (1.03–1.66)[a]	1.31 (1.08–1.60)[a]	—	1.35 (1.03–1.76)[a]	—
Medical history at baseline					
Recurrent stroke	—	—	—	—	0.61 (0.42–0.90)[a]
Increased no. of comorbidities	—	0.92 (0.84–1.00)[a]	—	—	—
Care and support after hospital discharge					
Discharged to rehabilitation		—	—	1.43 (1.09–1.88)[a]	—
Considered GP as most important in care	0.59 (0.47–0.75)[a]		0.78 (0.62–0.98)[a]	0.62 (0.48–0.80)[a]	0.62 (0.46–0.82)[a]
Used STANDFIRM care plan[b]		0.84 (0.70–1.01)			
Received community services since stroke	1.78 (1.34–2.35)[a]	1.33 (1.07–1.66)[a]	1.39 (1.08–1.80)[a]	—	1.76 (1.28–2.41)[a]
Received informal care over the last week	—	—	1.36 (1.03–1.78)[a]	—	—
Health and living status at 24 mo					
Increased ability at 24 mo (per 0.1 LHS)		—	0.35 (0.16–0.78)[a]	0.17 (0.07–0.40)[a]	0.17 (0.07–0.42)[a]
Depressed at 24 mo (HADS >7)	1.49 (1.09–2.03)[a]	1.71 (1.36–2.17)[a]	—	1.72 (1.24–2.40)[a]	1.62 (1.13–2.32)[a]
Anxious at 24 mo (HADS >7)	—	—	1.81 (1.39–2.37)[a]	—	—

Abbreviations: GP = general practitioner; HADS = Hospital Anxiety and Depression Scale; LHS = London Handicap Scale; STANDFIRM = Shared Team Approach Between Nurses and Doctors for Improved Risk Factor Management.
All estimates are expressed as incidence rate ratio (95% confidence interval).
Full regression models consisted all variables listed in table e-2.
[a] $p < 0.05$.
[b] Comprised 3 nurse-education sessions and regular review of an individualized care plan by a multidisciplinary team.

in the previous survey. Our comparatively smaller proportion of participants reporting unmet needs may be explained by our recruitment of participants from a metropolitan region with better access to medical care. In contrast, recruitment in the prior study was from both metropolitan and rural areas.

In the United Kingdom, smaller proportions of community-based survivors of stroke reported unmet needs, 49% in older (average age 69 years)[4] and 70% in younger (average age 57 years) age groups.[18] It is important to acknowledge that our findings may not be directly comparable to these UK studies as a result of differences in survey items, definition/categorization of unmet need, and time of assessment. However, despite these limitations in comparability, these findings highlight a consistent, clear need for systems that could better support survivors in the community.

The observed similarity in unmet needs across stroke type potentially reflects the full context of conditions of survivors of stroke/TIA. Although functional deficits are largely influenced by stroke type, other factors such as comorbidities may contribute to the spectrum of needs after stroke/TIA.[19] Indeed, preexisting comorbidities appeared similarly common between our survivors of stroke and survivors of TIA (table e-5), thereby justifying our approach to combine these groups in outcome analyses.

Another major finding was the considerable unmet needs reported in the domain of secondary prevention. We were unable to detect an association between the use of the STANDFIRM intervention and unmet needs of secondary prevention. This is surprising because the STANDFIRM intervention comprised robust strategies for secondary prevention, including 3 tailored nurse-education sessions, and regular multidisciplinary review of the care plan.[10] Clearly, more effective interventions are needed to address unmet needs related to secondary prevention.

We further report rare data on factors associated with long-term unmet needs in survivors of stroke/TIA, especially those related to care and support services available to survivors after discharge. Report of

a GP being the most important health professional involved in care was associated with fewer unmet needs in each of the 5 domains. This could be attributed to the presence of policy options in Australia that facilitate better engagement of GPs in coordinating services to support continuing recovery of patients with complex needs such as stroke.[20] Similarly, receiving community services after stroke was associated with more unmet needs overall and in most of the measured domains, indicating that available services may not be specifically or sufficiently meeting needs of survivors.

The observed association between educational attainment and more unmet needs may reflect greater expectations of well-educated patients regarding treatment outcomes/general recovery,[21] with attendant disappointment when expectations are unmet. Our finding on the association between depression and more unmet needs was also unsurprising. Mood disorders are often inadequately assessed in hospital settings,[22] and access to psychological services is usually limited after acute care.[23]

Our observed trend between use of rehabilitation after stroke and more unmet needs could be explained by the greater level of disability among participants having rehabilitation. Similarly, greater level of disability at 24 months could also explain the observed greater unmet needs among proxy respondents than direct respondents (table e-2).

In Australia, support services are available to community-dwelling survivors. These include services provided by community health centers, GPs, and stroke organizations.[24] Interventions provided include counseling, monitoring of treatment and recovery, and improving self-management. However, these services are limited by lack of proper coordination to achieve optimal and sustainable benefits, poor individualization of intervention, and poor accessibility to survivors.[25] Lack of accessible and individualized services, especially for young survivors and those with complex disability, potentially explains our finding and that of others[3] on the association of younger age (<65 years) and greater level of disability with more unmet needs.

Lack of a coordinated approach could be addressed by providing more comprehensive services that encourage close working relationships among stakeholders involved in care. GPs are well placed to coordinate these services.[26] This may be particularly beneficial to those at risk of unmet needs such as survivors of stroke/TIA who are young and have greater educational attainment and those with functional disability and mood disorders. Moreover, providing information on local support services (e.g., peer support) at discharge could also benefit these subgroups.[7]

A major limitation of this study is the potential for nonresponse bias in that responders had less disability and potentially fewer unmet needs at the 24-month follow-up than nonresponders. However, this bias would have been limited by our good response rate (81%). Another potential nonresponse bias could arise from the large proportion of participants (33%) returning an incomplete survey. We limited this bias by excluding participants with ≥10% of missing outcome data. The observed similarities between models in which missing data were imputed and the unimputed model indicate that this bias is minimal. The observed greater proportion of proxy respondents (than direct respondents) reporting unmet needs suggests that our estimates may have been biased by extreme proxy response, a common phenomenon among caregivers of survivors.[27] Moreover, recruitment of participants from a clinical trial from one region of Australia limited the generalizability of our findings. However, characteristics of our cohort were similar to those of the general stroke population in Australia.[28] Generalizability of our results is also limited to countries with similar healthcare systems (e.g., United Kingdom, Canada). Lastly, our questionnaire has not been previously validated in an Australian population, and its construct validity has not been directly ascertained. However, 90% of items in a questionnaire that was validated in the United Kingdom are consistent with those in our survey.[29] In addition, most of our survey items have good content validity and consistency with those in previous studies.[3,4]

The main strength of our study is the extensive assessment of unmet needs and incorporation of rare data on survivors of TIA and data on critical aspects of long-term management of stroke. Moreover, compared to previous studies, our assessment of needs followed a more structural approach.[15] Another strength is the report of rare data on factors associated with unmet needs in survivors of stroke/TIA. Adjusting for these factors in the regression models helped improve the robustness of our estimates.

Our study corroborates findings from previous studies demonstrating considerable long-term unmet needs in survivors of stroke after discharge. These unmet needs were most prominent in the domain of secondary prevention. We also identified factors associated with more unmet needs in survivors of stroke/TIA, especially those related to care and support services available after discharge. Future research should be focused on investigating effective community-based interventions that could help ameliorate these needs. This could help guide policy decisions on how best to support survivors of stroke/TIA in the community.

AUTHOR CONTRIBUTIONS

M.T.O.: conceptualization and design of the study, collection of data, analysis and interpretation of data, literature review, and drafting of the manuscript. D.A.C. and J.K.: conceptualization and design of the study, interpretation of data, and critical revision of manuscript for intellectual content. M.R.N.: conceptualization and design of the study and critical revision of manuscript for intellectual content. V.K.S.: conceptualization and design of the study and revision of manuscript for intellectual content. N.E.A.: contribution to the design of the study, analysis and interpretation of data, and critical revision of manuscript for intellectual content. C.F.B., R.P.G., S.M.F., T.P., and J.F.: conceptualization and design of the study and revision of manuscript for intellectual content. A.G.T.: conceptualization and design of the study, supervision of the study, interpretation of data, and critical revision of manuscript for intellectual content. Coinvestigators: Data and Safety Monitoring Committee: Colin Johnston, Julie Bernhardt, Richard Macdonell, and Leonid Churilov.

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DISCLOSURE

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