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**Preparedness for caregiving among family caregivers of stroke survivors:
A cross-sectional study**Nor Nadiya Ab Ghani¹, Aniawanis Makhtar² , Nik Nawal Nik Roseli³**Author information**¹ Department of Nursing, SEGi College Kuala Lumpur, Malaysia² Department of Special Care Nursing, Kulliyah of Nursing, International Islamic University Malaysia, Malaysia³ Flower Home Nursing Centre, Kelantan, Malaysia aniawanis@iium.edu.my <https://doi.org/10.31603/jhns.v13i2.16329>**Abstract**

Many family caregivers of stroke survivors feel unprepared for their role due to limited knowledge, skills, and support, potentially increasing their burden. However, research on family caregivers' preparedness to care for relatives who have experienced a stroke remains limited in the literature. Therefore, this study aimed to examine caregiving preparedness and its associated factors among family caregivers of stroke survivors in Malaysia. A cross-sectional online study was conducted among 264 family caregivers of stroke survivors recruited through convenience sampling. Sociodemographic data, preparedness for caregiving, and caregiver burden were collected. Associations between preparedness for caregiving and selected variables were analysed using independent t-tests, one-way ANOVA, Pearson correlation, and multiple linear regression analysis. Bivariate analysis revealed a significant negative correlation between preparedness for caregiving and caregiver burden ($r=-0.32$, $p<0.01$). Significant differences in preparedness were observed according to gender, presence of chronic illness, receipt of caregiving training, age, marital status, occupation, income level, relationship with the stroke survivor, and duration of caregiving (all $p<0.05$). In the multiple linear regression, gender ($\beta=0.167$, $p=0.001$) and caregiver-stroke survivor relationship ($\beta=0.167$, $p=0.005$) were significant positive associated factors of preparedness, while caregiver burden ($\beta=-0.211$, $p=0.021$) and receipt of caregiving training ($\beta=-0.237$, $p<0.001$) were significant negative associated factors of preparedness. Preparedness for caregiving among Malaysian stroke caregivers is multidimensional, influenced by personal, relational, and caregiving factors. Beyond skills, preparedness reflects culturally embedded family roles and role acceptance. The findings underscore the need for preparedness assessment and interventions across the stroke care continuum to support sustainable family-based care.

Keywords: Caregivers, caregiver burden, cross-sectional, preparedness for caregiving, stroke**Introduction**

Stroke remains a leading cause of long-term disability and neurological impairment worldwide (Feigin et al., 2025). Globally, it is the second leading cause of death and the third leading cause of disability, with its burden expected to rise, particularly in low- and middle-income countries (Michael et al., 2025). In Malaysia, stroke is the third leading cause of mortality and disability, with an estimated 40,000–52,000 new cases reported annually (Tan & Venketasubramanian, 2022). The increasing incidence of stroke, associated with population ageing and lifestyle-related risk factors, continues to impose substantial strain on individuals, families, and healthcare systems (Tian et al., 2025). Stroke leads to persistent physical, cognitive, communication, and emotional impairments that compromise survivors' functional independence and quality of life, thereby increasing reliance on family caregivers for ongoing support (Damaiyanti et al., 2023; Xu et al., 2024). Consequently, many stroke survivors require ongoing assistance with daily activities, rehabilitation, medication management, and the prevention of recurrent complications (Gobeze et al., 2026). Family caregivers often assume these responsibilities after hospital discharge, despite having limited preparation or experience in managing the complex needs of stroke survivors (Babkair et al., 2026). Therefore, assessing caregiver preparedness is essential to identifying support needs and delivering nursing interventions that promote home-based care. Family caregivers are individuals such as patients' spouses, children, siblings, and other relatives who provide unpaid care to family members with physical, psychological, cognitive, or other impairments (Chan et al., 2022). Following hospital discharge, many survivors

require sustained and holistic support to manage activities of daily living, mobility limitations, self-care needs, and psychosocial challenges (Michael et al., 2025).

In Malaysia, the responsibility of providing care at home is primarily assumed by family members who serve as the primary source of long-term care (Zubaidi et al., 2020). Their responsibilities include medication management, rehabilitation exercises, care coordination, and emotional support (Nordin et al., 2025; Tziaka et al., 2024). This multidimensional role places significant practical and psychosocial demands on caregivers. Consequently, caregivers experience physical strain, emotional distress, financial pressure, and heightened caregiving burden, which may compromise their well-being and caregiving capacity (Pucciarelli et al., 2022; Uhm et al., 2023). Similar multidimensional challenges have been reported among Malaysian caregivers supporting stroke survivors at home. Despite their central role, many caregivers continue to feel inadequately prepared due to limited knowledge, insufficient caregiving skills, and inadequate support systems, all of which represent significant barriers to effective caregiving and optimal patient recovery (Gutierrez-Baena & Romero-Grimaldi, 2022). Family caregivers' preparedness refers to their perceived ability or readiness to assume and continue the caregiving role, including providing physical and emotional care, as well as other services and support (Archbold et al., 1990). The level of preparedness is influenced by multiple factors, including caregiver burden and sociodemographic characteristics such as age, gender, marital status, income, occupational status, relationship to the patient, and duration of illness (Liu et al., 2020). More importantly, insufficient preparedness has been consistently associated with adverse outcomes, including heightened caregiver burden, depressive symptoms, reduced quality of life, poorer functional recovery, and increased risk of hospital readmission among stroke survivors (Fauzia et al., 2024; Petrizzo et al., 2023). Outside individual caregiver distress, these compounding adverse outcomes place a substantial financial and operational strain on healthcare systems through preventable emergency visits and prolonged rehabilitation. This burden highlights the urgency of integrating caregiver readiness evaluations into routine post-stroke clinical workflows. Prioritizing comprehensive caregiver preparation represents a cost-effective strategy to optimize both patient recovery trajectories and healthcare resource allocation.

Most studies on preparedness for family caregiving have been conducted in Western contexts (Hagedoorn et al., 2020; Turner et al., 2023). In Malaysia, evidence remains limited despite the country's distinct healthcare system, socio-cultural expectations, religious values, and strong reliance on family members in providing post-stroke care. Existing local studies have examined selected aspects of stroke caregiving. For example, a study reported that Malaysian stroke caregivers experienced unmet needs related to caregiving skills, emotional support, and financial assistance, indicating potential gaps in caregiver preparedness (Mohd Zawawi et al., 2023). Similarly, another study found a high level of caregiver burden among Malaysian stroke caregivers, with duration of caregiving and lack of training identified as significant contributing factors (Nordin et al., 2025). However, limited evidence is available on caregiving preparedness among family caregivers of stroke survivors in Malaysia, particularly studies that use a validated scale to quantify preparedness and comprehensively examine its associated factors. Although previous research has explored caregiver burden, psychological distress, and caregiving challenges, these outcomes do not necessarily reflect caregivers' readiness to manage the practical, emotional, and clinical demands of caring for stroke survivors. Caregiving preparedness encompasses the knowledge, skills, and confidence required to provide daily care, manage medications, support rehabilitation, recognize complications, and cope with emotional challenges. This gap is particularly relevant in Malaysia, where caregiving practices may be shaped by expectations, gender roles, religious beliefs, family obligations, and access to formal healthcare services. Although family members are often expected to care for relatives with chronic conditions, these expectations do not necessarily ensure that they are adequately prepared to meet complex care needs. Differences in access to post-discharge rehabilitation, community nursing services, caregiver education, and social support may further influence preparedness. Understanding these factors is therefore essential to identifying caregivers who may require additional education, practical training, and professional support. It is expected that this study may contribute to the international evidence base on family caregiving after stroke by providing insights from Malaysia and the Southeast Asian context, where families may assume substantial responsibility for long-term care. The findings may inform nursing practice by supporting the integration of caregiver preparedness assessments into discharge planning and post-discharge follow-up, alongside structured education, practical caregiving training, and referrals to appropriate support services. Such approaches may help healthcare professionals identify unmet needs, strengthen caregivers' competence and confidence, and promote safer transitions from hospital to home. Therefore, this study aims to examine the level of preparedness for caregiving and identify its associated factors among family caregivers of stroke survivors in Malaysia. The results may guide interventions and contribute to international efforts to strengthen family caregivers' readiness to manage the long-term consequences of stroke.

Method

This study used a cross-sectional design to examine associations between preparedness for caregiving and selected caregiving-related factors among family caregivers of stroke survivors. The design was appropriate for addressing the study objectives because it enabled assessment of relationships between variables at a single point in time (Capili, 2021). The study was conducted across three recruitment settings such as a tertiary hospital in Kuantan, Pahang; community-based stroke support and rehabilitation centres; and online caregiver support groups accessed through WhatsApp, Facebook, and Telegram. The tertiary hospital was selected as an acute care setting where stroke survivors receive initial treatment, early rehabilitation, and discharge planning. The community-based stroke support and rehabilitation centres represented post-discharge and long-term rehabilitation settings, where stroke survivors continue to receive support during the recovery and maintenance phases. Online caregiver support groups were also included to reach family caregivers who may not be actively engaged with formal healthcare services but seek information, emotional support, and peer interaction through digital platforms. Recruiting participants from these diverse settings enabled the study to capture the experiences of family caregivers at different stages of the caregiving trajectory, ranging from the early post-discharge period to long-term community-based care and informal peer-supported caregiving.

This multi-setting recruitment approach enhanced the heterogeneity of the sample and strengthened the relevance of the findings across the stroke care continuum in Malaysia. Family caregivers of stroke survivors were recruited using a convenience sampling approach. The inclusion criteria were: being designated by the stroke survivor or family as the primary caregiver, currently providing care to a stroke survivor at the time of the study, being 18 years of age or older, and having literacy skills, defined as the ability to read and write. The exclusion criteria were unwillingness to participate or provide informed consent through the online form, self-reported mental or psychological illness that could affect the ability to complete the questionnaire, and prior caregiving experience that may have substantially influenced responses beyond the current caregiving role. The sample size was calculated using the sample size calculator (Arifin, 2025), based on the outcome parameters (Aydın & Karabacak, 2024), who identified a mean score of 19.47 and a standard deviation (σ) of 7.40. Using a 95% confidence level ($Z=1.96$) and a margin of error (d) of 1.0, the required sample size was 211 participants. To account for an anticipated dropout rate of 20%, the sample size was increased to 264 participants.

Data were collected using structured questionnaires to obtain quantitative information on key variables, including preparedness for caregiving, caregiver burden, and sociodemographic characteristics, which were subsequently analysed using statistical methods. The sociodemographic questionnaire consisted of 13 questions related to caregivers' age, gender, ethnicity, marital status, education level, occupation, household income, chronic illness status, relationship to the stroke survivor, caregiving duration in months, hours of care per day, provision of care to other dependents, and receipt of caregiver training. The Preparedness for Caregiving Scale (PCS) was used to assess family caregivers' perceived readiness to provide care for stroke survivors (Archbold et al., 1990). The PCS is an eight-item self-administered instrument that evaluates preparedness across key caregiving domains, including provision of emotional and physical support, arrangement of health and social services, management of emergencies, and coping with caregiving-related stress. Each item is rated on a five-point Likert scale ranging from 0 (not at all prepared) to 4 (very well prepared), yielding a total score between 0 and 32, with higher scores indicating greater perceived preparedness. In this study, the Malay version of the PCS was used. The translation and cultural adaptation of the PCS from English to Malay followed the standard forward-backward translation procedure recommended for cross-cultural adaptation of research instruments (Beaton et al., 2000). The original English version was independently translated into Malay by two bilingual translators. The first translator was a senior lecturer in nursing with a PhD and clinical experience in stroke care, while the second was a certified medical translator with experience in health-related translation. Both translators were native Malay speakers and fluent in English. The two forward-translated versions were then compared and synthesized by a consensus panel comprising the two translators and the principal investigator. Discrepancies in wording and meaning were discussed and resolved through consensus to produce a synthesized Malay version. The synthesized Malay version was subsequently back-translated into English by an independent bilingual translator who had no prior knowledge of the original scale and was blinded to the study objectives. The back-translated English version was compared with the original PCS by an expert panel consisting of nursing academics with experience in stroke care, a healthcare professional familiar with caregiver support, and a language expert. The panel assessed semantic, conceptual, and cultural equivalence. Minor wording refinements were made to improve clarity and cultural suitability. For example, the item referring to handling caregiving-related stress was revised to better reflect the emotional demands experienced by caregivers when caring for stroke survivors. Similarly, wording related to physical care was refined to improve clarity for Malay-speaking respondents. The final Malay version was pilot tested among 30 family caregivers of stroke survivors who were not included in the main study. The pilot test assessed clarity, comprehensibility, and face validity. Participants

reported that the items were easy to understand, and no further major revisions were required. In the present study, the Malay PCS demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of 0.93. Permission to use and translate the Preparedness PCS was obtained directly from P. G. Archbold, the original instrument developer, prior to the forward-backward translation process.

Another instrument used in this study is The Zarit Burden Interview (ZBI). The tool is one of the most widely used instruments for assessing caregiver burden, particularly among family caregivers of chronically ill or disabled individuals (Zarit et al., 1980). The original version consists of 22 items, each rated on a 5-point Likert scale ranging from 0 (Never) to 4 (Nearly Always). Total scores range from 0 to 88, with higher scores indicating greater perceived burden. According to established cut-off values, scores of 0–20 reflect little or no burden, 21–40 mild to moderate burden, 41–60 moderate to severe burden, and 61–88 severe burden (Zarit et al., 1980). In this study, the previous validated Malay version of the ZBI (Shim et al., 2017), which showed good reliability (Cronbach's $\alpha=0.89$), was used, and no further translation was undertaken. Permission to use the Malay ZBI was obtained via the Mapi Research Trust. In this study, Cronbach's α was 0.94.

Data were collected between March and June 2025. Data were collected using an online questionnaire administered via Google Forms, which took approximately 20 minutes to complete. Upon accessing the survey link, participants viewed an electronic information sheet outlining the purpose of the study, procedures, voluntary participation, confidentiality measures, inclusion and exclusion criteria, and the right to withdraw before submission. Electronic informed consent was obtained by requiring participants to select 'I agree to participate in this study' before proceeding to the questionnaire. To ensure that respondents met the eligibility criteria, several screening procedures were embedded in the Google Form before participants could access the main questionnaire. The first section required respondents to confirm that they were aged 18 years or above, were currently the primary family caregiver of a stroke survivor, were providing care at the time of the study, were able to read and understand the questionnaire, and had no self-reported mental or psychological illness that would affect their ability to participate. Respondents who did not meet the eligibility criteria were directed to the end of the form and were not included in the final dataset. Additional measures were taken to minimize duplicate and ineligible responses. The form restricted repeated submissions from the same account where possible, and the completed responses were screened for duplicate entries, inconsistent answers, incomplete responses, and unusually short completion times before analysis. These procedures were implemented to strengthen the validity of online recruitment and to ensure that the final dataset represented eligible family caregivers of stroke survivors.

The data were analyzed using SPSS software version 27. To assess the normality of the quantitative data, the distribution was evaluated for skewness and kurtosis. The assessment indicated acceptable normality, with skewness (0.51) and kurtosis (–0.32) values within recommended ranges. Descriptive statistics were calculated as means and standard deviations for continuous variables, and frequencies and percentages for categorical variables. Differences in caregiving preparedness in relation to the independent variables were examined using Pearson's correlation for continuous variables, and independent t-tests and one-way analyses of variance (ANOVA) for categorical variables. Multiple linear regression was used to identify factors influencing caregiving preparedness among family caregivers of stroke survivors. Ethical approval for this study was obtained from the Kulliyyah of Nursing Postgraduate & Research Committee (KNPGRC) (Ref: IIUM/313/DDPRRI/14/3/1), the IIUM Research Ethics Committee (IREC) (Ref: IIUM/504/14/11/2/IREC2024-347), and the research ethics committee of the participating tertiary hospital (Ref: IIUM/413/013/14/11/1/IISR25-03). In addition, formal permission to recruit participants was obtained from the community-based stroke support and rehabilitation centres prior to data collection.

Results

A total of 264 family caregivers of stroke survivors participated in this study. The majority were aged below 30 years (60.6%), female (56.8%), Malay (50.0%), and married (53.0%). Most caregivers had a bachelor's degree (66.3%) and were employed in the private sector (37.5%). More than half reported having a chronic disease (55.3%), and the majority had a household income below RM4850 (77.3%) (**Table 1**). In terms of caregiving characteristics, most caregivers were sons or daughters of the stroke survivor (38.3%), had been providing care for 7–12 months (37.9%), and spent more than six hours per day caregiving (36.4%). Slightly more than half did not provide care for other dependents (54.5%), and the majority had not received formal caregiver training (69.7%). Regarding caregiver burden, 45.5% reported moderate to severe burden, while 13.6% reported severe burden. The overall mean caregiving preparedness score was 11.92 (SD=6.62). Significant differences in preparedness were observed across several sociodemographic and caregiving variables. Age ($p=0.048$), gender ($p=0.009$), marital status ($p=0.005$), occupation ($p=0.007$), presence of chronic disease ($p=0.009$),

household income ($p=0.018$), relationship to the stroke survivor ($p=0.003$), duration of caregiving ($p<0.001$), and receipt of caregiver training ($p<0.001$) were significantly associated with preparedness. Female caregivers and those who had received training reported significantly higher preparedness scores. Caregivers providing care for 7–12 months demonstrated the lowest preparedness scores compared to other duration groups. Additionally, caregiver burden was negatively correlated with preparedness ($r=-0.32$, $p<0.01$), indicating that higher burden was associated with lower perceived preparedness (**Table 2**).

Table 1. Sociodemographic characteristics.

Variables	Frequency (n)	Percentage (%)	Mean	SD	t or F or r (p)
Age					
< 30 years	160	60.6	12.66	5.70	3.07 / (0.048) ^{b)*}
31–59 years	92	36.0	10.55	7.67	
≥ 60 years	12	3.4	12.58	8.09	
Gender					
Male	114	43.2	10.74	5.74	-2.64 / (0.009) ^{a)*}
Female	150	56.8	12.83	7.10	
Ethnicity					
Malay	132	50.0	11.42	7.29	0.76 / (0.465) ^{b)}
Chinese	99	37.5	12.48	5.80	
Indian	33	12.5	12.24	6.08	
Marital status					
Single	120	45.5	12.77	5.93	5.36 / (0.005) ^{b)*}
Married	140	53.0	10.98	6.91	
Divorced/Widowed	4	1.5	19.75	8.50	
Education level					
Primary school	3	1.1	12.67	2.30	1.57 / (0.180) ^{b)}
Secondary school	44	16.7	11.77	8.30	
Certificate/Diploma	36	13.6	9.67	6.94	
Bachelor's degree	175	66.3	12.30	5.94	
Master's degree	6	2.3	15.17	9.39	
Occupation					
Student	48	18.2	13.15	5.55	3.63 / (0.007) ^{b)*}
Government worker	32	12.1	11.63	7.00	
Private sector employee	99	37.5	10.26	5.78	
Self-employed	52	19.7	13.04	6.86	
Unemployed	33	12.5	13.67	8.59	
Chronic disease					
Yes	146	55.3	12.90	5.65	2.63 / (0.009) ^{a)*}
No	118	44.7	10.71	7.49	
Household income					
< RM4850	204	77.3	12.22	6.10	4.09 / (0.018) ^{b)*}
RM4850–RM10970	42	15.9	12.31	8.10	
> RM10970	18	6.8	7.67	7.35	

Values are presented as number (%), mean±standard deviation; RM=Ringgit Malaysia; ^{a)}Independent-samples t-test;

^{b)}One-way ANOVA with Tukey HSD post hoc test; ^{c)}Pearson's correlation. * $p<0.05$, ** $p<0.01$.

The multiple linear regression analysis identified several factors independently associated with preparedness for caregiving among family caregivers of stroke survivors. Gender was a significant positive associated factor of preparedness ($\beta=0.167$, $p=0.001$), with female caregivers reporting higher preparedness for caregiving compared to male caregivers. Relationships with the stroke survivor were also a significant positive associated factor of preparedness ($\beta=0.167$, $p=0.005$), indicating that preparedness for caregiving varied according to caregivers' relational roles, such as

being a spouse or adult child. In contrast, receipt of caregiving training was significantly and negatively associated with preparedness for caregiving ($\beta=-0.237$, $p<0.001$). This finding suggests that caregivers who reported having received caregiving training perceived themselves as less prepared than those who had not received formal training. Additionally, caregiver burden demonstrated a significant negative association with preparedness ($\beta=-0.211$, $p=0.021$), indicating that higher levels of perceived burden were associated with lower preparedness for caregiving (**Table 3**).

Table 2. Caregiving characteristics.

Variables	Frequency (n)	Percentage (%)	Mean	SD	t or F or r (p)
Relationship to stroke survivor					
Spouse	45	17.0	11.40	7.11	3.78 / (0.003) ^{b)*}
Son/Daughter	101	38.3	10.07	6.89	
Son/Daughter-in-law	27	10.2	12.67	5.65	
Sibling	41	15.5	13.68	5.16	
Grandchild	36	13.6	14.44	6.46	
Non-family	14	5.3	13.93	5.48	
Duration of caregiving					
1–6 months	60	22.7	13.10	6.25	7.21 / (<0.001) ^{b)*}
7–12 months	100	37.9	9.62	5.61	
13–24 months	54	20.5	13.94	6.82	
>24 months	50	18.9	12.94	7.48	
Duration of care per day					
>6 hours/day	96	36.4	11.93	7.48	1.72 / (0.163) ^{b)}
2–6 hours/day	84	31.8	10.82	5.90	
1–2 hours/day	56	21.2	13.38	6.51	
<1 hour/day	28	10.6	12.32	5.25	
Provide care for others					
Yes	120	45.5	11.38	6.34	-1.23 / (0.219) ^{a)}
No	144	54.5	12.38	6.82	
Received caregiver training					
Yes	80	30.3	14.25	6.12	3.86 / (<0.001) ^{a)*}
No	184	69.7	10.91	6.58	
Caregiving preparedness (overall)					
Score	264	100	11.92	6.62	—
Caregiver burden					
No to mild	29	11.0	41.64	15.67	-0.32 / (<0.01) ^{c)**}
Mild to moderate	79	29.9			
Moderate to severe	120	45.5			
Severe	36	13.6			

Values are presented as number (%), mean±standard deviation; ^{a)}Independent-samples t-test; ^{b)}One-way ANOVA with Tukey HSD post hoc test; ^{c)}Pearson's correlation. * $p<0.05$, ** $p<0.01$.

Discussion

This study examined preparedness for caregiving and its associated factors among family caregivers of stroke survivors in Malaysia. Overall, caregivers reported a moderate level of preparedness, with a mean score of 11.92 within the possible range of 0–32. In the multivariable linear regression analysis, gender and caregiver–stroke survivor relationship were positive independent associated factors of preparedness for caregiving, though caregiver burden and receipt of caregiving training were negative independent associated factors. These findings suggest that caregiving preparedness is influenced by both caregivers' personal characteristics and their caregiving experiences, highlighting the need to consider these factors when assessing readiness to provide care (Ris et al., 2022). The negative associations with caregiver burden and receipt of caregiving training warrant further investigation or studies to clarify whether greater care demands and training among less-prepared caregivers may explain these relationships. The present study found that

family caregivers of stroke survivors generally reported a moderate level of preparedness for their caregiving responsibilities. This finding is consistent with previous studies reporting moderate preparedness among caregivers of stroke survivors (Aydın & Karabacak, 2024). Preparedness for caregiving is widely recognized as a dynamic and evolving construct that develops over time through caregiving experience, adaptation to changing care demands, and the gradual acquisition of knowledge, skills, and confidence (Dal Pizzol et al., 2024). From this perspective, a moderate level of preparedness may reflect a transitional phase in which caregivers have acquired basic caregiving competencies but have not yet achieved sustained confidence or role mastery. This interpretation is supported by the finding that most caregivers in the present study had been providing care for 7–12 months, a duration that may allow for initial skill development but remain insufficient for full role adaptation. Nurses are instrumental in supporting caregivers throughout this transitional period by providing structured education, practical training, and ongoing guidance to their specific needs. Regular assessment of caregiver preparedness, combined with discharge planning and post-discharge follow-up, may help identify persistent knowledge and skill gaps, strengthen caregiving confidence, and facilitate more effective adaptation to the caregiving role.

Table 3. Multiple linear regression analysis.

Items	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>
	B	Std. Error	Beta		
(Constant)	21.061	3.663		5.749	< 0.001
Gender	2.223	0.678	0.167	3.276	0.001
Relationship with the stroke survivor	0.682	0.239	0.167	2.850	0.005
Receive any caregiver training	-3.408	0.809	-0.237	-4.210	<0.001
Caregiver burden	-0.089	0.038	-0.211	-2.321	0.021

B=Unstandardized coefficient; SE=standard error; β =standardized coefficient; Model fit: $R^2=0.15$, $F(4, 259)=9.13$, $p<0.001$.

In the Malaysian context, cultural and religious values may play an important role in shaping how family caregivers perceive and report their preparedness. Within collectivist family structures, caregiving is often regarded as a moral, social, and familial responsibility rather than an individual choice (Sajali et al., 2025). This expectation may be particularly evident among spouses and adult children, who are commonly expected to assume caregiving responsibilities following a family member's illness. In addition, religious values may further influence caregivers' sense of role acceptance and coping. Among the predominantly Muslim population in Malaysia, Islamic teachings that emphasize patience (*sabr*), compassion (*rahmah*), and responsibility toward ill family members may help caregivers derive meaning from their caregiving role and sustain their commitment despite substantial caregiving demands (Anli, 2025). Therefore, the moderate level of preparedness observed in this study should be interpreted not only in terms of caregiving knowledge, skills, or experience, but also within the broader Malaysian context. Some caregivers may perceive themselves as prepared because they accept caregiving as a family duty or religious responsibility, even when they have limited formal training or technical caregiving competence. Conversely, others may feel less prepared when the practical and emotional demands of caregiving exceed the support available to them. Thus, caregiver preparedness in Malaysia should be understood as an embedded construct shaped by family expectations, gendered caregiving roles, religious beliefs, role acceptance, and access to formal and informal support systems. Recognizing these contextual influences is essential for developing nursing interventions that address caregivers' needs. Such an approach may help healthcare professionals promote caregiver education, support family and community, and improve preparedness for the long-term care of stroke survivors.

Bivariate analyses indicated significant differences in preparedness across a range of sociodemographic and caregiving characteristics. However, when these factors were examined simultaneously in the multiple linear regression model, only gender and relationship to the stroke survivor remained positively associated with caregiving preparedness. In contrast, caregiver burden and receipt of caregiving training were independently associated with lower levels of perceived preparedness. The present study identified gender, caregiver–stroke survivor relationship, receipt of caregiver training, and caregiver burden as factors independently associated with perceived preparedness. These findings are

consistent with literature showing that preparedness reflects not only a caregiver's personal circumstances but also knowledge, care demands, and access to support (Liu et al., 2020; Ris et al., 2022; da Rocha et al., 2022). However, the strength and direction of specific associations may differ across populations, measurement approaches, and care settings. Accordingly, the findings should be interpreted as context-specific associations rather than universal determinants of preparedness. The observed associations between gender, relationship to the stroke survivor, and caregiving preparedness may reflect the ways in which caregiving roles are constructed. In many families, caregiving responsibilities are more commonly assumed by women, who are often more directly involved in day-to-day care activities such as personal care, symptom monitoring, and coordination of healthcare needs. Evidence from other countries is mixed. A cross-sectional study of stroke caregivers reported that preparedness was associated with female gender (Aktepe & Öztürk Birge, 2026), and gender-related differences were also reported by Liu et al. (2020) and, in Türkiye, by Tuncay (2024). However, a meta-analysis of 13 studies, 11 of them from China, found no overall association between caregiver gender and preparedness, with substantial heterogeneity (Li et al., 2025). This suggests that the effect of gender depends on the caregiving context.

Ongoing engagement in these tasks may facilitate experiential learning, allowing caregivers to develop confidence and readiness through practice (Archbold et al., 1990; Dal Pizzol et al., 2024; Li et al., 2025). Similar patterns have been reported that gendered caregiving roles may influence preparedness across different cultural settings (Liu et al., 2020; Tuncay, 2024). Nursing interventions in Malaysia should address the specific needs of female caregivers while encouraging greater male involvement in caregiving. In a mixed-methods study of dementia caregivers in Australia, male carers reported burden similar to that of women but approached help-seeking differently, focusing on practical tasks and holding back emotional expression. The study suggested that support for men may engage them better when it starts with practical caregiving issues (Poisson et al., 2023). Similar male-friendly approaches could be tested for stroke caregivers in Malaysia. Similarly, preparedness varied according to the caregiver's relationship to the stroke survivor. Spouses and adult children may differ in caregiving experience, emotional closeness, co-residence patterns, and caregiving intensity, all of which may influence perceived preparedness. A possible reason for the variation in preparedness could be that spousal caregivers, who often provide continuous and intimate care, may report greater preparedness due to sustained involvement. Closeness between caregiver and care recipient (mutuality) has been linked to preparedness (Archbold et al., 1990), and caregiving experience was associated with preparedness among spouse caregivers in a pooled analysis, although that analysis included only two spousal studies (Li et al., 2025). Conversely, adult children balancing work and caregiving may experience fluctuating confidence due to competing demands, resulting in moderate preparedness. These relational dynamics underscore the importance of caregiver support to familial roles. Nurses should therefore assess caregivers' family responsibilities and competing demands when developing support plans (Becqué et al., 2021). Providing flexible education, practical caregiving guidance, and appropriate family support may help balancing caregiving with other responsibilities.

Caregiver burden was consistently associated with lower levels of preparedness and remained a significant negative associated factor in the multiple linear regression model. This finding aligns with previous evidence suggesting that high caregiving demands and sustained psychological strain can undermine caregivers' perceived ability to manage caregiving responsibilities effectively (da Rocha et al., 2022; Uhm et al., 2023). In the Malaysian context, where formal post-discharge support and respite services are limited, prolonged caregiving demands may further intensify burden and erode caregivers' emotional and physical resources. As a result, caregivers may feel less prepared for their role despite accumulating caregiving experience over time. Positive caregiving experiences, perceived meaning, and available support may help caregivers adapt to their role and may contribute to greater perceived preparedness (Teng et al., 2025). Therefore, routine assessment of caregiver preparedness and support needs is essential to strengthen caregivers' capacity to sustain their caregiving role. Interestingly, the results of this study suggest that receiving caregiving training was negatively associated with preparedness. The researcher did not identify other studies reporting this association. In a recent meta-analysis of caregivers of poststroke patients, training could not be analyzed as a separate correlate because most caregivers had received none (Li et al., 2025). Study in Ghana found that stroke survivors and their caregivers reported inadequate caregiver training and insufficient education before discharge (Ansong et al., 2026). Evidence from other countries is therefore scarce, and this finding needs confirmation in studies that record the timing, content and quality of training. This finding should be interpreted with caution and does not imply that training reduces preparedness. Rather, it may reflect reverse causation or increased awareness, whereby caregivers who perceive themselves as less prepared are more likely to seek or be referred for training. Exposure to training may also increase awareness of the complexity and challenges of stroke care, leading caregivers to assess their preparedness more critically. In the Malaysian context, caregiver training is often informal, brief, or inconsistently delivered, which may

further influence caregivers' perceptions of readiness and limit the immediate impact of training on perceived preparedness.

Several limitations should be considered when interpreting these findings of the study. First, the cross-sectional design precludes causal inference. The observed associations do not establish temporal directionality between caregiver burden and preparedness. Studies with extended follow-up periods are needed to clarify whether changes in caregiver well-being or support availability precede changes in preparedness over time. Second, data were self-reported and collected online, which may introduce bias or social desirability effects. Although eligibility screening procedures were used to verify participants' suitability, eligibility was ultimately based on self-report. Therefore, the possibility of response misclassification or participation by ineligible respondents cannot be completely excluded. However, eligibility screening questions, electronic informed consent, duplicate response checks, and data cleaning procedures were implemented to minimize this risk. Third, the use of convenience sampling may limit generalizability beyond similar caregiving contexts in Malaysia. Furthermore, most published evidence on caregiver preparedness after stroke comes from a few countries; in a recent meta-analysis, 11 of 13 studies were from China (Li et al., 2025). Because cultural, religious and health-system factors differ between countries, the findings may not transfer directly to other settings. Nevertheless, this study adds evidence from a multi-ethnic Southeast Asian setting, where family-based post-stroke care is common and formal support services may be limited. The use of validated scales also facilitates comparisons with findings from other countries.

Conclusion

The findings demonstrate that caregiving preparedness among family caregivers of stroke survivors is multidimensional and strongly shaped by caregiver burden, gender, family relationships, and caregiving support. In Malaysia, preparedness reflects caregivers' skills, knowledge that embedded family roles, a duty, and role acceptance. Preparedness for caregiving is influenced by a combination of personal, relational, and caregiving-related factors. These findings highlight the importance of holistic nursing interventions that are sensitive to caregivers' needs and integrated across the stroke care continuum. In Malaysia, such interventions should prioritize reducing caregiver burden and providing structured, timely training to enhance preparedness and support sustainable family-based stroke care. Future research should employ longitudinal or mixed method designs to explore dynamic changes in preparedness across different stages of stroke recovery. Investigating additional contextual variables, such as stroke severity, mutuality, and social support networks, may further explain variability in preparedness. Multi-country studies using the same measures are needed to test whether the associations identified here hold in other contexts.

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AI statements

The authors used Grammarly, QuillBot, and ChatGPT to enhance spelling, grammar, language, and punctuation during manuscript preparation. The tools were not used for data collection, analysis or interpretation. The authors reviewed and edited all output and take full responsibility for the content.

Author's declaration

All authors contribute to the research process, manuscript writing, and publication stages.

Availability of data and materials

All data supporting the findings of this study are available from the authors upon reasonable request for legitimate academic purposes.

Competing interests

All authors do not have competing interests.

Ethical clearance

Ethical approval for this study was obtained from the Kuliyah of Nursing Postgraduate & Research Committee (KNPGRC) (Ref: IIUM/313/DDPRI/14/3/1), the IIUM Research Ethics Committee (IREC) (Ref: IIUM/504/14/11/2/IREC2024-347), and the research ethics committee of the participating tertiary hospital (Ref: IIUM/413/013/14/11/1/IIS25-03).

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Publishers and journal's note

Preparedness to provide daily care for stroke survivors is essential, as inadequate caregiver preparation may contribute to suboptimal care and potentially increase the risk of recurrent stroke. The findings of this study present baseline evidence to promote the evaluation and follow-up of stroke survivors after hospital discharge, including the assessment of caregivers' readiness to manage their ongoing care needs at home.

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Authors' insight

Key points

- Assessing family caregivers' readiness to provide physical, emotional, and practical care for stroke survivors at home.
- Identifying potential factors influencing caregiver preparedness, such as educational background, caregiving experience, social support, and stroke survivors' care needs.
- Informing the development of nursing interventions, caregiver education, and support programs to improve caregiving confidence and the quality of home-based stroke care.

Emerging nursing avenues

- What is the level of preparedness among family caregivers of stroke survivors, and which aspects of caregiving do they feel least prepared to manage?
- What sociodemographic, clinical, and caregiving-related factors are associated with preparedness among family caregivers of stroke survivors?
- How can nurses develop targeted educational and support interventions to improve family caregivers' preparedness and facilitate the transition from hospital-based to home-based stroke care?

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