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Family Cues to Action in Caring for Stroke Patients at Home

Señales familiares para la intervención en el cuidado de pacientes con accidente cerebrovascular en el hogar

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SUMMARY

Background: *Stroke is a leading cause of long-term disability, often requiring family members to become the primary caregivers at home. However, many families struggle to provide consistent and effective care. The Health Belief Model (HBM), specifically the Cues to Action construct, offers a framework for understanding how families are motivated to adopt more effective caregiving behaviors. This study aimed to determine whether a meaningful linear relationship existed between the predictor variable, cues to Action, and the behavioral response variables for families caring for stroke patients at home.*
Methods: *This study employed a quantitative cross-sectional design involving 120 family members who cared for stroke patients. The research instrument was a questionnaire developed based on the HBM, covering cues-to-action variables and caregiving behaviors. Data analysis was performed using descriptive statistics and linear regression.*
Results: *The mean value of Cues to Action was 4.12 (SD = 0.54), and care behavior was 4.03 (SD = 0.61), indicating high exposure and engagement. The regression analysis showed a significant positive relationship between Cues to Action and care behavior ($\beta = 0.62$, $p < 0.001$).*
Discussion: *These findings confirm that cues or triggers, both internal (emotions, concerns) and external (education, information from healthcare providers), play a significant role in encouraging and maintaining caring behaviors. Cues to Action serve as motivational drivers that bridge the gap between knowledge and concrete actions in caring for patients at home.*
Conclusion: *Integrating Cues to Action into family-based health education can improve the quality and sustainability of stroke patient care at home. Healthcare*

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systems must develop interventions that incorporate educational cues and social support to optimize the family's role in the stroke patient's recovery.

Keywords: *Stroke, family nurses, cues to action, health belief model, care behavior, health education.*

RESUMEN

Introducción: *El accidente cerebrovascular es una de las principales causas de discapacidad a largo plazo y a menudo requiere que los familiares se conviertan en los principales cuidadores en el hogar. Sin embargo, muchas familias tienen dificultades para brindar una atención consistente y eficaz. El Modelo de Creencias en Salud (MBS), específicamente el constructo de Señales para la Acción, ofrece un marco para comprender cómo se motiva a las familias a adoptar conductas de cuidado más eficaces. El objetivo de este estudio fue determinar si existía una relación lineal significativa entre las variables predictoras de las Señales para la Acción y las variables de respuesta conductual de las familias que cuidan a pacientes con accidente cerebrovascular en el hogar.*
Métodos: *Este estudio empleó un diseño transversal cuantitativo con 120 familiares que cuidaron a pacientes con ictus. El instrumento de investigación fue un cuestionario desarrollado con base en el HBM (Health Belief Model), que abarcó variables sobre estímulos para la acción y conductas de cuidado. El análisis de datos se realizó mediante estadística descriptiva y regresión lineal.*
Resultados: *El valor medio de las señales para la acción fue de 4,12 (DE = 0,54) y el de la conducta de cuidado fue de 4,03 (DE = 0,61), lo que indica una alta exposición y compromiso. Los resultados del análisis de regresión mostraron una relación positiva significativa entre las Señales para la Acción y la conducta de cuidado ($\beta = 0,62$, $p < 0,001$).*
Conclusión: *Integrar las claves de la acción en la educación sanitaria familiar puede mejorar la calidad y la sostenibilidad de la atención domiciliaria a pacientes con ictus. Los sistemas de salud deben desarrollar intervenciones que incorporen elementos educativos y de apoyo social para optimizar el papel de la familia en el proceso de recuperación del paciente con ictus.*

Palabras clave: *Accidente cerebrovascular, enfermeras de familia, señales para la acción, modelo de creencias sobre la salud, conducta de atención, educación para la salud.*

INTRODUCTION

Stroke is a leading cause of long-term disability globally and in Indonesia. In 2021, an estimated 93.8 million people were living with a history of stroke (prevalent), with 11.9 million new incidents per year globally, according to the Global Burden of Disease (GBD) (1). Stroke remains a significant global health burden, necessitating a comprehensive and innovative rehabilitation approach to optimize recovery outcomes (2). The quality of care and the role of the family after hospital discharge significantly contribute to patients' functional outcomes and quality of life (3). The role of the family as the primary caregiver is correlated with increased physical, psychological, and economic burdens, as well as limitations in home care knowledge and skills essential for recovery. Evidence from family support and education programs suggests the potential to reduce caregiver burden and improve the quality of care. Still, the need for systematic, ongoing, and culturally appropriate support for primary services remains inadequately met (4).

The core problem lies not simply in a lack of education but in the absence of systematic design and measurement of culturally and operationally relevant cues to Action in Indonesian primary care that can foster consistent daily home care actions (5). Within the Health Belief Model (HBM) framework, cues to Action represent external and internal stimuli, such as professional reminders, timely educational materials, and recognition of signs and symptoms that trigger initiation among family caregivers (6). Theory-based interventions have shown that structured reminders and digital text messages can improve adherence to home health behaviors, so practically designed and context-sensitive cues to Action can potentially strengthen family caregiving behaviors (7).

Cues to Action encourage individuals to initiate or maintain healthy behaviors. Health education is expected to bridge the gap between Knowledge and practice (8). With timely information, concrete examples, or verbal encouragement from healthcare providers, families are more likely

to be active in the care process. Consequently, using cues to Action increases family or caregiver readiness and supports consistent, adaptive care. Building on this background, this study examines the role of family Cues to Action in HBM-based health education in influencing family behavior related to caring for stroke patients at home (9). This research is expected to contribute to the development of more effective educational interventions for family caregivers in community and primary healthcare settings.

The urgency of resolving this issue is high because, without integrated triggers for Action, inconsistent home care risks increasing medication non-adherence, delayed complication detection, and rehospitalization, which burdens families and primary care providers (10). However, quantitative evidence evaluating the association between HBM-based Cues to Action and family caregiving behaviors among stroke patients in Indonesia's community and primary care settings remains limited, indicating a significant knowledge gap and an opportunity to develop standardized educational interventions (11).

This gap study aims to assess the role of cues to Action in HBM-based health education on family caregiving behaviors among stroke patients at home, and to identify the cue-to-action domains most effective for daily care practices. Findings are expected to provide an empirical basis for designing effective and scalable family education interventions, including scheduled digital reminders, daily care cards, and demonstration-focused home visits, which can be widely implemented in family-based healthcare systems.

METHODS

Design and Setting

This study used an analytical cross-sectional design and was conducted in primary care settings in Jember Regency, East Java Province, Indonesia, from February to November 2024. Data were collected at the hospital using a screening tool to obtain primary data. Families willing to participate in the survey met the inclusion criteria, including those with blood ties to the patient, living in the same household as the patient, and caring for the patient for at least 1 month. The instrument was completed in person and online by trained enumerators using a structured questionnaire. For respondents unable to attend, interviews were conducted via telephone or video call at a scheduled time for 30-45 minutes. The cross-sectional design was chosen to estimate the relationship between exposure to cues to action (health information, professional reminders, motivational triggers) and family caregiving behavior.

Population and Sample

The target population of this study was family caregivers who were related by blood and lived in the same household as the patient. Inclusion criteria included: 1) age ≥18 years; 2) having provided care to a stroke patient at home for ≥1 month; 3) being able to communicate well; 4) expressing willingness to participate through informed consent. Exclusion criteria included: 1) non-family paid caregivers as the primary respondents; 2) having cognitive or psychiatric conditions that prevented them from completing the instrument. The sample was selected using purposive sampling and operationalized by screening post-discharge patient lists at primary care facilities within hospitals. The sample size was estimated using power analysis, assuming a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, and a power of $1-\beta = 0.80$. Considering the potential for nonresponse and missing data of approximately 20 %-25 %, the sample size was set at N=120.

Variables and Instruments

The main variables include (1) cues to Action (action triggers) based on the Health Belief Model framework and (2) family caregiving behavior (caregiving behavior). Both were measured using a structured Likert-scale questionnaire. Cues to Action encompasses three operational domains: (a) health information (exposure to educational materials, counselling, or trusted media), (b) healthcare professional reminders (structured reminders or advice from nurses, doctors, and facilities), and (c) motivational triggers (emotional support, modelling, or concrete examples of daily actions). Family caregiving behavior encompasses four operational dimensions: (a)

medication management (accurate dosage/ timing, adherence, monitoring for side effects), (b) symptom and vital signs monitoring (blood pressure, blood sugar if relevant, danger signs), (c) exercise and mobilization (range of motion, strength training or standing walking, fall prevention), and (d) complication prevention and basic care (positioning or position changes, skin care, nutrition and fluid intake). The caregiving behavior instrument contains 20 items.

Statistical Analysis

Descriptive: respondent characteristics are presented as n (%) for categorical variables and as mean ± SD or median for continuous variables. Normality was assessed using the Shapiro–Wilk test. Tables present key demographic characteristics (age, gender, education, family relationships, employment status, and duration of caregiving). Inferential: A preliminary analysis used linear regression to examine the relationship between Cues to Action and caregiving behavior. Practical interpretations are provided: a 1-unit increase in the Cues to Action score is associated with a b-unit increase in the caregiving behavior score, after controlling for covariates," to facilitate clinical implications. Software: Analysis was performed using SPSS with a two-sided significance level of $\alpha = 0.05$.

Regression equation: Y=a+bX

Y = Carring Behavior (dependent variable)

X = Cues to Action (independent variable)

a = Intercept (constant)

b = Regression coefficient (shows the effect of X on Y)

Ethical considerations

The time tick of RSD (Relative Standard Deviation). The research permit letter for Soebandi Jember has been issued under the number 074/3367/415/2024. All respondents provided written consent after being informed of the research and maintained the confidentiality of their data, except for research purposes.

RESULTS

Family Characteristics

The following shows family characteristics, including gender, status, and length of care.

Table 1. Distribution of Family Characteristics

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	48	40.0
	Female	72	60.0
	Total	120	100.0
Status	Child	55	45.8
	Wife/Husband	65	54.2
	Total	120	100.0
Duration of Care (months)	1 – 3	20	16.7
	3 – 7	25	20.8
	8 - 12	30	25.0
	> 120	45	37.5
	Total	120	100.0

Table 1 provides information on family characteristics. The composition of respondents was dominated by women (72 people) (60.0 %), while 48 were men (40.0 %), reflecting the general pattern that women more often carry out the role of household caregiver. Relationship status shows that the majority are partners (husband/ wife) (65 people) (54.2 %), followed by children (55 people) (45.8 %). This relational closeness can influence the intensity of support and care decisions. The duration of care varies, with the most significant proportion being >12 months (45 people) (37.5 %), followed by 8-12 months (30 people) (25.0 %), 3-7 months (25 people) (20.8 %), and 1-3 months (20 people) (16.7 %). This pattern indicates that many families have progressed beyond the acute phase and are in the medium- to long-term care phase. These demographic findings are relevant for interpreting caregiving behaviors because partners' roles and the long duration of caregiving can increase the need for educational support, professional reminders, and strategies to prevent caregiver burnout.

Cues To Action

Table 2. Characteristics of the Cues to Action initiative on stroke patient care at home.

	Characteristics	Mean±SD
1.	Health Information	
a.	Counselling from health workers	2.81±1.37
b.	Educational posters or leaflets	3.17±1.51
c.	Educational videos/audios	3.21±1.41
d.	Stroke campaign social media	3.06±1.31
2.	Healthcare Professional Reminder	
a.	Home visit schedule	3.11±1,34
b.	Call/message from the health center	2.96±1.43
c.	Follow-up from nurses/doctors	3.01±1.37
3.	Emotional and Social Cues	
a.	Fear of losing patients	2.43±0.79
b.	Stories/experiences of other families	2.68±1.02
c.	Community support/support groups	2.80±1.01
d.	Involvement of other family members in care	2.90±0.98

Table 2 presents the results of a study on Cues to Action for home care of stroke patients provided by family members. The results of measurements of the cues to Action variable show that three main aspects influence family behavior in caring for stroke patients, namely health information, reminders from health professionals, and emotional and social cues:

Healthcare Professional Reminder

Health information exposure was in the low-to-moderate range; therefore, the existing materials did not consistently encourage daily home care. Counselling by health workers had the lowest score (2.81±1.37), indicating that face-to-face counselling was not evenly distributed and that the transfer of practical skills (e.g., checking blood pressure, medication regimens, and exercises) remained less systematic. Educational posters or leaflets (3.17±1.51) and educational videos or audio (3.21±1.41) were classified as moderate. Nevertheless, the significant standard deviation indicated that some families used them effectively. In contrast, others did not; the content may not have been sufficiently prescriptive or entirely appropriate for literacy levels. The stroke campaign's social media (3.06±1.31) indicated exposure to the online campaign. Still, the content tended to be general and less directly connected to the daily tasks families needed (what, when, how).

Healthcare Professional Reminder

Cues for Action from health workers are present but are still at a moderate level and not uniform across families: home visit schedules are considered to exist but are not routine enough or do not have clear objectives and follow-up plans (3.11±1.34), reminders via telephone or messages are at the lower limit of the moderate category with significant variations so that the content is likely not personal and less prescriptive (2.96±1.43), and nurse or doctor follow up after visits or controls is also only moderate and varied (3.01±1.37), therefore, a more prescriptive and scheduled reminder system (what, when, how), a clear communication channel, and a 48-72-hour post-discharge follow-up protocol are needed to increase the consistency of home care and maximize the effect of cues to Action.

Emotional and Social Cues

The Emotional and Social Cues domain indicates that emotional and social triggers that encourage caring behavior are generally weak, with all indicators falling within the low-to-moderate range. The results of the emotional and social cues subscale indicate that emotional-social triggers are still weak: fear of losing the patient is relatively low (2.43±0.79), exposure to other family stories is at a low-moderate level (2.68±1.02), community or peer group support is only moderate (2.80±1.01), and involvement of other family members is the highest but still inadequate (2.90±0.98); these findings imply that peer support and family involvement are not strong enough to trigger consistent daily care actions at home, so that it is necessary to strengthen structured experience sharing programs, activate support groups, and clearly divide family tasks so that emotional-social cues become more stable drivers of caring behavior.

Family Behavior

Table 3. Family Behavior in Caring for Stroke Patients at Home.

Characteristics	Mean±SD
1. Daily Care Consistency	
a. Medication schedule	2.40±0.60
b. Mobility assistance and physical exercise	2.30±0.65
c. Blood pressure check and other symptoms	2.25±0.70
2. Symptom Check and Nutritional Control	
a. Food & nutrition control	2.20±0.68
b. Monitoring of residual symptoms of stroke	2.15±0.75
3. Coordination with Health Workers	
a. Coordination with Health Workers	2.10±0.72
b. Cooperative during home visits	2.35±0.70
4. Emotional and Social Encouragement	
a. Patience and motivation for patients	2.50±0.65
b. Helping patients return to social activities	2.45±0.60

Table 3 explains the results of family behavior in caring for stroke patients at home. Based on the interpretation of the data using a Likert-scale assessment range of 1-5, the following conclusions are drawn for each dimension of family care behavior toward stroke patients at home.

Daily Care Consistency

In general, the consistency of daily care was in the low-moderate category across all three indicators, indicating that routine home practices were unstable and needed strengthening. A medication schedule adherence score of 2.40±0.60 indicated that delays or missed doses were common. However, the distribution was narrow; most families had not established a consistent daily medication regimen. Mobility assistance and physical exercise scored 2.30±0.65, indicating that exercise was not performed regularly or did not follow the recommended frequency and duration, potentially delaying functional recovery. Blood pressure and other symptom checks had the lowest score of 2.25±0.70, indicating that monitoring vital signs or warning symptoms remained infrequent and unsystematic; response variation was relatively greater, resulting in a group of families who rarely or consistently monitored their care. These findings underscore the need for task-specific Cues to Action interventions (scheduled medication reminders, daily blood pressure check step cards, and 10-15-minute micro-exercise guides) to improve home care behaviors. This

suggests that families have tried to maintain care routines but still need to improve in regularity and accuracy.

Symptom Check and Nutritional Control

The results show that the consistency of nutritional control and monitoring of stroke sequelae is in the low-moderate category, so that preventive and monitoring aspects at home are not optimal. The Food and Nutrition Control score of 2.20±0.68 indicates that meal planning (portion, type, salt, fat, sugar) has not been carried out regularly, and most families have not consistently followed post-stroke dietary recommendations. The monitoring of residual stroke symptoms (weakness, speech, pain, mood) is 2.15±0.75, the lowest, indicating that monitoring of these symptoms remains rare or unsystematic; the relatively large variation in responses suggests that some families monitor almost none of these symptoms. These findings emphasize the need for more prescriptive Cues to Action, such as a weekly symptom-checking schedule, a simple daily diet checklist, and scheduled reminders, to ensure that nutritional monitoring and early detection of deterioration become a consistent routine at home.

Coordination with Health Workers

Both indicators fall within the low-to-moderate category, indicating that family coordination with home care health workers is suboptimal and requires strengthening. Coordination with Health Workers had a mean of 2.10±0.72, the lowest value in this domain, indicating that families do not have a clear communication channel or are not regularly informed about care progress and issues; moderate variation suggests that a small number of families have coordinated well, but the majority have not. Cooperative during home visits (2.35±0.70) indicates that cooperation is present but still sporadic; the purpose of the visit, the list of questions, and the post-visit follow-up appear to be unstructured, resulting in suboptimal family involvement. Practical implications include establishing a single communication channel (WhatsApp number for the coordinating nurse), a standardized short message format (SBAR), a visit agenda with a checklist of household tasks, and scheduling. Family involvement in coordinating with health workers, including during home visits, is not optimal.

Emotional and Social Encouragement

The Emotional and Social Encouragement results indicate that family emotional and social support for patients remains low to moderate and inconsistent at home. The patient's score of 2.50±0.65 on the Patience and Motivation scale suggests that families have not consistently provided motivational encouragement. However, moderate variability in responses indicates that some families have performed better. The Helping patients return to social activities score of 2.45±0.60 confirms that family involvement in facilitating the return to social activities is still limited, for example, inviting them to participate in light activities, visiting relatives, or community activities, even though this aspect is essential for mood, compliance, and functional recovery. The implication is that support programs must include specific, measurable weekly targets, guidelines for empathetic communication, and family reminders to provide positive feedback on little progress, so that emotional support becomes a daily habit.

Regression Analysis

A linear regression analysis examined the relationship between Cues to Action and care behaviour (Table 4).

Table 4. Mean scores for Cues to Action and Care Behaviours

Predictor	β	T statistic	P value
Cues to Action	0.62	7.89	< 0.001

The regression analysis results indicate that the cues-to-action variable significantly influences family caregiving behaviour for stroke patients. The regression coefficient (β) of 0.62 suggests

that every one-unit increase in Cues to Action will be followed by a 0.62-unit increase in family caregiving behaviour, assuming other variables are constant. The t-value = 7.89 and the p-value < 0.001 indicate that this effect is highly statistically significant. This shows strong evidence that Cues to Action, such as health information, reminders from medical personnel, and other motivational triggers, significantly increase family involvement in caring for stroke patients at home. These results strengthen the role of the Cues to Action construct within the Health Belief Model (HBM) framework as an external factor that encourages individuals or families to take more active and consistent health actions. These findings support the hypothesis that informational, emotional, or social cues play a crucial role in motivating and sustaining caregiving efforts within the home environment.

DISCUSSION

Most stroke caregivers are women and their partners. Hence, action cues need to be home-friendly, brief, scheduled, and easy to follow to maintain adherence to medication, blood pressure monitoring, and daily exercise. Consistent blood pressure control with a clear systolic target and daily check cards is key to relapse prevention, as systolic reduction and a target of <130 mmHg is associated with a reduced risk of cardiovascular events and recurrent stroke (12). Longer caregiving durations of more than 12 months require repeated cues and social support; structured, repeated Health Belief Model (HBM)-based programs can enhance cues to Action and self-efficacy, while digital reminders are effective when they are frequent, of sufficient duration, interactive, and not one-way. Hospitals need to systematically assess families' educational needs to tailor materials to their literacy and skill levels, which aligns with the principles of Family Centre Care, which emphasize the family-healthcare provider partnership (2).

A long caregiving duration increases the risk of physical and emotional exhaustion and caregiver burden, so ongoing education is needed on medication scheduling, mobilization, and health monitoring. Evidence suggests that supportive interventions for caregivers reduce caregiver burden and stress, although they do not always increase survivors' independence. Educational interventions for caregivers comprise four main components: education and training in daily care and physical rehabilitation; priority identification and problem-solving; emotional support; and social support. The nurse plays a central role, but the use of educational media (posters, videos, online resources) varies and requires standardization. Peer support groups also improve mental functioning and social participation in survivors and caregivers, strengthening the resilience of the stroke community (10).

Educational media and visual information are powerful Cues to Action; those grounded in behaviour theory tend to be more effective than those not grounded in theory in improving behaviour and quality of life. Family support models that combine information, booklets, home visits, telephone follow-up, practical training, family participation in exercises, emotional support, and counselling demonstrate a mutually reinforcing relationship between components and reduce caregiver burden. Family applications or mHealth can improve knowledge of relapse prevention and medication adherence, including risk factor management (e.g., blood pressure, blood glucose, and cholesterol), when accompanied by a clear follow-up protocol 48-72 hours post-discharge.

Consistency of daily care in many families remains low to moderate, adherence to medication schedules is unstable, mobility exercises are not routinely administered according to dosage, and blood pressure and residual symptom monitoring are infrequent and unsystematic. Self-management interventions for secondary prevention emphasize risk factor management, increased Knowledge and self-efficacy, and medication adherence. In patient-caregiver dyads, medication adherence tends to be higher when medication administration is performed directly by the patient or spouse rather than by other family members, underscoring the importance of prescriptive task allocation at home. Strengthening communication with healthcare providers requires standardized protocols, such as SBAR, and a single coordination channel for structured monitoring and the prompt addressing of emerging issues.

The effectiveness of educational media and visual information as cues to Action is substantial: a self-management intervention program integrating the health belief model and planned behaviour theory significantly improved self-management behaviour and quality of life among middle-aged stroke patients. The study showed that interventions guided by behavioural theory were more effective than those without theoretical guidance (12). A family-based program that included education, skills training, family support therapy, and stress management through home visits and telephone calls improved family functioning and reduced caregiver burden. The program provided caregivers and family members with opportunities to discuss emotions and issues that arise during caregiving (13). Found that caregivers rated patient mood issues (depression, loneliness, anxiety), memory issues, and physical care as the most stressful. This demonstrates the importance of interventions that address the perceived benefits of caregiving, with over 90 % of caregivers reporting that caregiving enabled them to appreciate life more.

An integrated approach that combines all three aspects of Cues to Action is needed to optimize family caregiving behaviour. The effectiveness of mobile health education using the Family Care on Recurrent Stroke Prevention (RSP) application was investigated for improving family caregivers' Knowledge regarding recurrent stroke prevention (14). Developed a family support model for stroke patients, including information packages, booklets, home visits, telephone follow-up, hands-on training, family participation in exercises, emotional support, and counselling. This model demonstrates the mutually reinforcing relationships among the components of family support. The findings of this study are consistent with the framework developed (15). Identified that caregivers act as communicators and help maintain the patient's health, but face significant challenges, such as a lack of knowledge about stroke and a lack of attention from the family. To optimize cues to Action, a comprehensive approach is needed that includes: 1) Standardization and personalization of educational materials with prescriptive content appropriate to the patient's literacy level; 2) Implementation of a structured reminder system from healthcare professionals with clear follow-up protocols; and 3) Strengthening emotional-social support programs through peer groups and organized family task sharing.

Peer stroke support groups significantly improve mental functioning through emotional and social support and promotion of social participation among stroke survivors and their caregivers. This program provides holistic support that promotes resilience and well-being within the stroke community by providing a safe environment for expressing emotions without judgment.

Patience and motivation for patients indicate that families have not provided regular motivational encouragement. Helping patients return to social activities shows that family involvement in facilitating this process remains limited. Caregiver engagement is an active partnership between patients, families, and healthcare providers at various levels to improve health outcomes through information seeking, consultation, and involvement in decision-making (14). Families who received the intervention demonstrated improved medication adherence and management of key risk factors, such as better blood pressure control. Caregivers who received mobile phone-based educational videos demonstrated improved medication adherence and better management of risk factors, including blood pressure, blood sugar, and cholesterol (16).

Limitations

The study design was cross-sectional. Given the current results, it is recommended that future research expand the study design to include experimental studies with control and treatment groups, and, for example, develop educational programs for families caring for stroke patients at home.

CONCLUSION

Cues to Action are crucial for enhancing family caregiving behaviours for stroke patients at home by increasing readiness, motivation, and adherence. Family-focused health education

that integrates structured reminders, such as audiovisual materials, social media campaigns, home visit schedules, and clinical follow-ups, has been shown to improve medication adherence, mobilization, blood pressure monitoring, and coordination with healthcare professionals, all of which remain suboptimal in many families. Consistent with evidence from web-based and home-based interventions, reminders, feedback, and ongoing support strengthen adherence and self-care. Priority intervention targets include coordination with health professionals, symptom monitoring, nutritional management, physical activity, and blood pressure monitoring. Psychoeducational and self-management programs that combine information, psychological support, behavioural regulation, and scheduled cues effectively improve caregiver competence and patient outcomes. Community and digital support further enhance engagement and continuity of care. Strong exposure to Cues to Action significantly predicts consistent family caregiving behaviour, underscoring that strengthening these cues within a Health Belief Model–based educational approach effectively improves family skills, engagement, and quality of home care for stroke patients.

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REFERENCES

1. Feigin VL, Brainin M, Norrving B, Martins SO, Pandian J, Lindsay P, et al. World Stroke Organization: Global Stroke Fact Sheet 2025. Int J Stroke. 2025;20(2):132-144.
2. Li X, He Y, Wang D, Rezaei MJ. Stroke rehabilitation: From diagnosis to therapy. Front Neurol. 2024;15:1-21.
3. Nooreddini A, Sadeghian E, Borzou SR, Ghiasian M, Sotanian A. Family Caregivers' Perception of Resilience in Caring for Stroke Patients: A Qualitative Research. Iran J Nurs Midwifery Res. 2025;30(4):561-571.
4. Chen H, Makhdzir N, Loh WC, Wang L. Quality of life of family caregivers of stroke patients: A systematic review of qualitative research. Pakistan J Med Sci. 2025;41(4):1211-1218.
5. Wiyarta E, Hidayat R, Kurniawan M, Sinaga GHP, Budiman RA. Factors associated with prehospital and in-hospital delays in acute ischaemic stroke care in Indonesia: A systematic review. BMJ Open. 2025;15(3):e095845.
6. Anuar H, Shah SA, Gafor H, Mahmood MI, Ghazi HF. Usage of Health Belief Model (HBM) in health behavior: A systematic review. Malaysian J Med Heal Sci. 2020;16(6):201-209.
7. Taft K, Laing B, Wensley C, Nielsen L, Slark J. Health promotion interventions post-stroke for improving self-management: A systematic review. JRSM Cardiovasc Dis. 2021;10.
8. Saucedo-Pahua G, Caetano GM, Jiménez-González M de J, Fhon JRS. Home-based educational interventions for family caregivers of older adults after stroke: a scoping review. Rev Esc Enferm USP. 2024;58:e20230339.
9. Eli Kosasih C, Punthmatharith B, Boonyasopun U. Indonesia. 2 PhD., Srisavarindhira Thai Red Cross Institute of Nursing. 2020;10(3):47-56.
10. Kumar A, Yadav AK, Singh VK, Pathak A, Chaurasia RN, Mishra VN, et al. Caregiver burden in caregivers of stroke survivors. Ann Indian Acad Neurol. 2022;25(6):1092-1098.
11. So J, Park M-H. Family's Caregiving Status and Post-Stroke Functional Recovery During Subacute Period from Discharge to Home: A Retrospective Study. J Clin Med. 2024;13(22):6923.
12. Deepradit S, Powwattana A, Lagampan S, Thiangtham W. Effectiveness of a family-based program for post-stroke patients and families: A cluster randomized controlled trial. Int J Nurs Sci. 2023;10(4):446-455.
13. Li Y, Zhang S, Song J, Tuo M, Sun C, Yang F. Effects of Self-Management Intervention Programs Based on the Health Belief Model and Planned Behavior Theory on Self-Management Behavior and Quality of Life in Middle-Aged Stroke Patients. In: Tan S., editor. Evidence-Based Complement Altern Med. 2021.p.1-12.
14. Halling Ullberg O, Toivanen S, Tillander A, Bälter K. Workplace health promotion to facilitate physical activity among office workers in Sweden. Front Public Health. 2023;11(8).
15. Deepradit S, Powwattana A, Lagampan S, Thiangtham W. Effectiveness of a family-based program for post-stroke patients and families: A cluster randomized controlled trial. Int J Nurs Sci. 2023;10(4):446-455.
16. Yaqoob E, Khan S, Sahitia N, Barkatullah Z, Abbas Zaidi D, Ali Khan S, et al. Caregiver burden in stroke care. Ann Med Surg. 2025;87(6):3458-3463.