CLINICAL REHABILITATION

Actor–partner effects of wellbeing, hope and self-esteem on depression in stroke survivor–caregiver dyads: A randomized controlled trial

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Abstract

Background: Stroke is a disabling, long-term condition that challenges the mental and physical health of stroke-survivors concurrently with their primary family-caregivers (dyad). However, there has been a lack of emphasis on this dyadic need. Thus, this study aims to investigate the impacts of two interventions on hope, self-esteem and hedonic wellbeing on depression among the stroke-survivor–caregiver dyad.

Methods: This randomized-controlled-trial applied the actor–partner interdependence model to 100 randomly-selected dyads ($N = 200$) of stroke-survivors, mean (SD) age was 73.63(7.22) and family-caregivers, mean (SD) age was 62.49(14.44) years, recruited from Hong Kong hospitals and rehabilitation centres. The intervention was eight-weekly two-hour narrative therapy group sessions ($n = 54$ dyads), compared with the current model of psychoeducational group to each dyad as needed. Outcomes were collected via questionnaires and interviews, at four time-points: baseline (T_1), during-intervention (T_2) (1-month), immediately post-intervention (T_3) (2-months) and follow-up (T_4) (6-months).

Results: The results demonstrated that there are actor effects on stroke-survivors ($\beta = -0.353$, $p < 0.05$) and caregivers ($\beta = -0.383$, $p < 0.05$), where higher levels of hedonic wellbeing were associated with fewer depressive symptoms. Partner effects were observed as caregivers' depressive symptoms were possessing a significant negative relationship with stroke survivors' wellbeing ($\beta = -0.387$, $p < 0.05$). Those stroke survivors in the intervention group had a significantly higher level of self-esteem associated with lower levels of depression ($\beta = -0.314$, $p < 0.05$).

Conclusions: Improving hope, self-esteem and wellbeing through narrative therapy significantly mediates depressive symptoms, strengthening the dyadic support of stroke survivors and family caregivers.

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Introduction

In Hong Kong, cerebrovascular disease, also known as stroke, is the fourth leading cause of death and a leading cause of long-term disability[1]; both the devastating and, conversely, familial strengthening impacts of stroke have been well-stated among all ethnic groups, and there has been a worldwide focus over the last decade on developing best practice early interventions. This has contributed to a significant global decrease in stroke-induced mortality and morbidity,[2, 3] but not to the long-term physical and psychosocial poststroke sequelae, which require extended rehabilitation to assist them in adjusting to their new sense of self.[3] Stroke-related depression is an important psychological outcome that cannot be ignored.[4] Studies have also found that both stroke survivors and family caregivers mutually nfluenced each other's depressive symptoms.[5] In Hong Kong, there are limited poststroke services available and only individuals with high rehabilitation potential for physical recovery are transferred to rehabilitation facilities. Most stroke survivors are discharged directly to home, where local services might at best provide limited daytime homecare support and respite, with no provision in psychological care. The primary caregiving role for Hong Kong stroke survivors is taken on by stroke survivors' family members (usually the spouse and/or adult-child) yet minimal attention has been paid to studying the dyadic effects on survivors' and caregivers' wellbeing and their ongoing management of post-stroke sequelae.

Traditional Chinese marital philosophy reinforces this lifelong commitment to care for a partner as a primary caregiver.[6] For children, caregiving comes from filial piety, where stronger expressions of filial obligation are associated with lower levels of depression.[7] Yet, long-term caregiving has become more emotionally taxing, when traditional Chinese values and behaviour underpin the increasing circumstance where caregivers' are not capable of providing the high level of health care services needed for stroke survivors, weighing down the entire family unit.[8]

Caregiving also places a significant economic burden on Hong Kong and international societies vis-à-vis families: adult child caregivers (i.e., son or daughter who has reached adulthood) have to reduce their work hours to accommodate caring responsibilities, while retired caregivers are compelled to use their savings without an income to replenish them.[9] And, despite its difficulties, positive aspects of caregiving such as improved social support and a sense of fulfilment have been reported by researchers around the world.[8, 10] Although evidence supports a positive mutual influence between survivor–caregiver dyads,[11] research has only been focussed on either stroke survivors or the caregivers independently.

To understand the dyadic relationships between survivor–caregiver on stroke rehabilitation, this paper aims to study the impacts of two interventions (narrative therapy versus psychoeducational therapy) on hope, self-esteem and hedonic wellbeing on depression among stroke survivor–caregiver dyads. Narrative therapy, has proven effective in facilitating stroke survivors' rehabilitation, by assisting dyads to rediscover meaning in their life and reduce depression.[12, 13]

This study utilized a randomized controlled trial and, to our knowledge, is the first research to apply the Actor–Partner Interdependence Model[14] to a clinical data set of Chinese stroke survivor and caregiver dyads. The model can be considered a multilevel model because of similarities among members of the same group in our study, using a dyad data set. We tested four hypotheses:

H1: stroke survivors have higher levels of depression than caregivers.

H2: both stroke survivors and caregivers have an actor effect, with their levels of hope, self-esteem and hedonic wellbeing affecting their levels of depression.

H3: there are partner effects, with wellbeing and self-esteem affecting the other's depressive symptoms.

H4: Narrative therapy is more effective for the dyads to cope with stroke compared to structured psychoeducation.

Methodology

Ethics approval was obtained from the Hong Kong Hospital Authority (Kowloon Central and Kowloon East Cluster) Ethics Committee (KC/KE-10-0077/ ER-2). We initially sought a sample of Chinese-Hong Kong older adults (aged 60 years or older) who had suffered a stroke within the past two years. Recruitment was based on the following inclusion criteria: (a) had completed either hospital or day rehabilitation programmes; (b) were ambulatory (with or without walking aids); (c) could perform minimal daily functions (mRs scored 4 (moderately severe disabled, required walking aids),[15] and (d) had Cantonese Chinese Mini-Mental State Examination scores greater than, or equal to, 18 (reflecting moderate to high cognitive function). Exclusion criteria included were (1) currently experiencing an acute crisis with severe stress, (2) intellectually impaired, have a diagnosis of a personality disorder, no active psychotic symptoms (hallucinations, delusions) and have a record of suicide attempts or violent behaviours. Eligible stroke survivors also required a caregiver who had been taking care of them since the onset of their stroke. Sample size ($N = 200$) was calculated on APIM power (actor: 99.6%; partner: 96.6%), estimating the variability in response to the actor effect size as 0.22, effective size of partner effect as 0.18, correlation of Actor and Partner variables as 0.30 and alpha = 5%.

The stroke survivors were recruited from the stroke registries of five regional clusters of the Hong Kong Hospital Authority (Kowloon East, Kowloon West, New Territories West, New Territories East and Hong Kong Island), as well as from patient resources centres, community rehabilitation network and district elderly community centres during 2012–2013. The unit of randomization in the trial was a dyad, and in this study, a single dyad was comprised of a stroke survivor and the survivor's caregiver.

Trial procedures

Outcome measures: Questionnaires tested personal wellbeing, hope, self-esteem and depression at four-time points: baseline (T_1), within-intervention (T_2) (1 month), immediately post-intervention (T_3) (2 months) and follow-up (four months after intervention) (T_4) (6-months). See CONSORT table (Figure 1) and *Measures* for instruments. Questions were included on personal demographics. *Intervention allocation:* After providing informed consent, dyads were assigned randomly to the intervention or control arms by Jensen's computerized method of minimization for matched pairs by the research team.[16] To minimize uneven distributions of known variables, randomization occurred after stratification, following prognostic factors: stroke survivors into age categories (60–70, 71–80, 80+), gender (male or female), type of stroke (cerebral ischemia or haemorrhage) and side of hemiplegia (right or left). The intervention and control groups ran parallel to each other with a 1:1 allocation ratio. The trial was double-blind as both participants and interviewers were blinded after assignment to interventions. *Compliance and dropout rates*: In order to foster participants' compliance with group attendance and participation, a research assistant was assigned to each group to address their concerns during the group. The project also provided transport subsidy to both stroke survivors and caregivers (HK $20 per each participant per each session). The dropout rate was low for both groups: for the *Train of Life* narrative therapy (Treatment) groups, the dropout rates ranged from 1.6% to 6.9%; and for the *Treatment as Usual* (Control) psychoeducational groups, the dropout rates ranged from 8.3% to 8.0% (see Figure 1).

This paper reports on data comparing baseline (T_1) and follow-up (T_4), to account for the time taken for

the intervention to achieve maximum effectiveness. The allocation, enrollment and assigning of participants were done by research staff. However, trained research assistants who conducted the face-to-face interview for data collection were blinded to the allocation.

Treatment arms: The intervention was eight consecutive weeks of 2-hour Narrative Therapy group sessions. Two counsellors, both with prior narrative therapy training, were recruited to conduct the treatment groups. The principal investigator who is an experienced narrative practitioner provided pre-group training and briefing prior to each group session. She also observed and provided feedback to both counsellors throughout their first group. Bi-weekly supervision meetings were scheduled to review the group practice thereafter together.

The control was *Treatment as Usual*, a structured psychoeducation group, facilitated by a trained practitioner and supervised by a clinical practitioner for fidelity, also delivered for two hours each week for eight consecutive weeks. In each session, participants reviewed and discussed common topics on stroke rehabilitation (e.g., rehabilitation exercises, stroke knowledge and prevention of stroke relapse). Both control and intervention were interactive group-based practices. The duration and number of sessions of *Treatment as Usual* were mirrored for the treatment arm. Both participants were measured by the same battery of questionnaires. See programme protocol of both narrative therapy treatment and Psychoeducational group (refer to Supplemental Materials)

Measures

Personal wellbeing was assessed using the Personal Wellbeing Index (PWI) (7-item scale rated on an 11-point satisfaction scale) (0 = No satisfaction at all, 10 = Completely Satisfied). The PWI has been translated into Cantonese, which was appropriate for our purposes, as most participants were older adults with limited English proficiency. The Cantonese language version of the scale showed good evidence of internal reliability in Hong Kong Chinese (Cronbach's *a* 0.80).[17]

Hope was measured using the 12-item Herth Hope Index (HHI), which measures multiple aspects of hope using a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). A higher score denotes higher levels of hope. HHI showed strong evidence of reliability (Cronbach's *a* 0.89) in Chinese patients with heart failure.[18]

Self-esteem: The Rosenberg Self-esteem Scale (RSE) was applied. The scale has 10 items rated with a 4-point Likert scale (1 = strongly disagree, 4 = strongly agree). The higher cumulative score represents higher attitudes towards self. RSE has been tested in stroke survivors, with a Cronbach's *a* of 0.83.[19]

Depression: This was the dependent variable measured using the 15-item self-report Chinese Geriatric Depression Scale (GDS-SF). Users responded Yes/No to indicate positive and negative reactions to questions. The validated Chinese version of the GDS reports an internal consistency of 0.86 (alpha) and test–retest reliability of 0.85 (alpha).[20]

Data Analysis: Sociodemographic characteristics of stroke survivor–caregiver dyads were summarized using descriptive statistics (means and standard deviations). Pearson's correlations were used to determine the bivariate relationships among all variables.

The APIM estimated the effect of actors' wellbeing, self-esteem and hope on depression (actor effect) on themselves and their partner, simultaneously and interdependently. A total of four APIMs were performed to test the interactive effects of hedonic wellbeing and positive motivational state measures (i.e., wellbeing, self-esteem and hope) on depression among actor, partner and dyad. These models further evaluated the effectiveness of narrative therapy on stroke survivors and caregivers. In the APIMs, the age and gender of stroke survivor and caregivers were treated as confounding variables. The APIMs were tested using multilevel modelling computed by IBM SPSS 26.0 and R's lavaan (see Figure 2).

Results

Descriptive Statistics: Table 1 reports the means (SD) of the study variables for stroke survivors
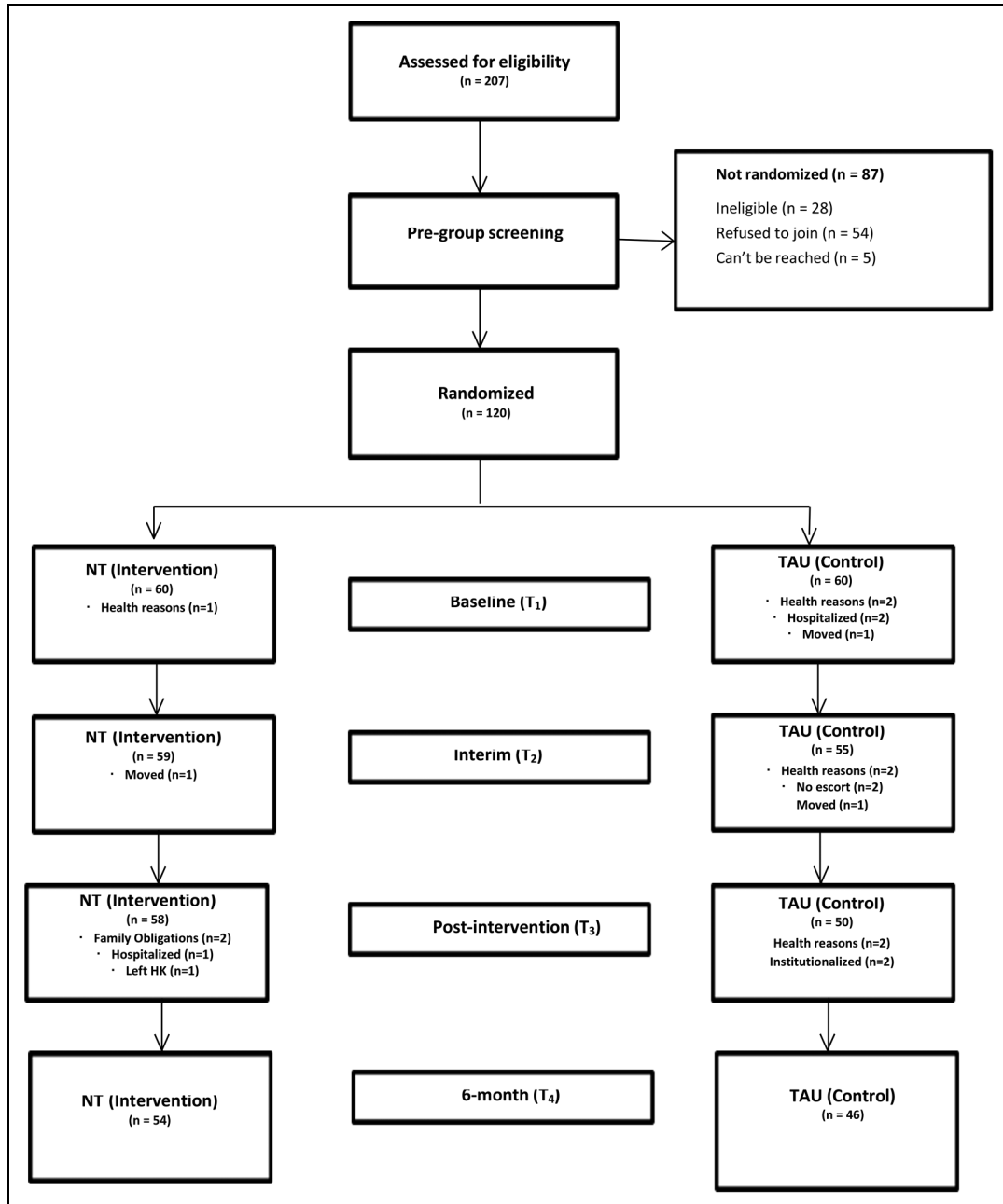
Figure 1. Randomized control design of the present study (*N* = 120).
NT: narrative therapy; TAU, treatment as usual (psychoeducational) group.

and caregivers. The majority of stroke survivors (67%) were males, yet just a quarter of caregivers were men. The mean (SD) age of stroke survivors

and caregivers was younger (73.72 (7.25) years and 62.49 (14.44) years respectively) than anticipated. The majority of caregivers were spouses
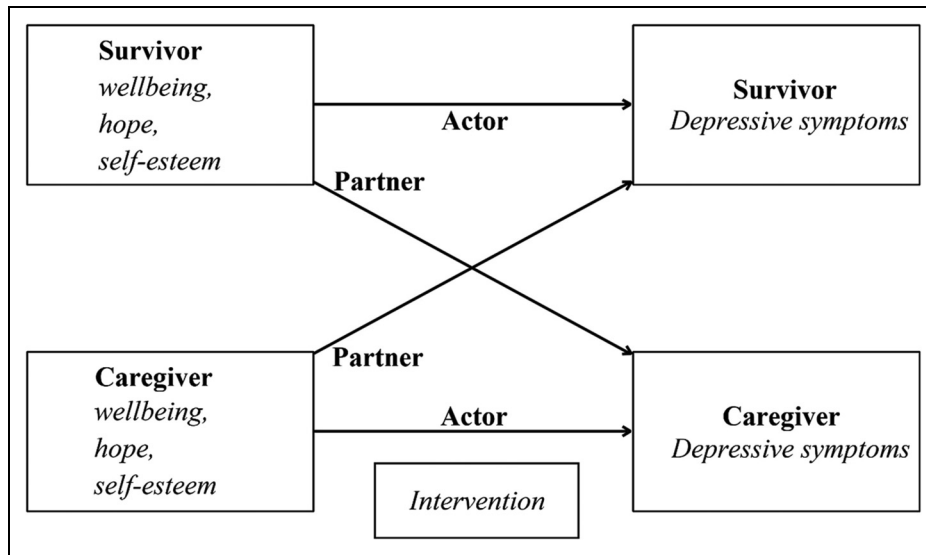
Figure 2. Graphical representation of the actor–partner interdependence model.
Note: Same model was estimated between the T_1 and T_4 for the three measures, that is, wellbeing, hope and self-esteem on the dependent variable depressive symptoms. Although not shown, age and gender were controlled and intervention was included for comparison.

(70%), with the remainder being adult children as anticipated (29%). Both stroke survivors and caregivers were possessing basic literacy skills.

Table 1 also reports the baseline scores of the caregivers and stroke survivors in the PWI, HHI, RSE and GDS. The results indicated a positive impact on both caregivers and stroke survivors. Stroke survivors had higher mean GDS scores (5.26 ± 4.19) compared to caregivers (3.00 ± 3.89) at baseline, with both groups having a decrease in their depression post-intervention (stroke survivors 4.37 ± 4.0, caregivers 2.80 ± 3.20). This preliminary finding supports the first hypothesis (H1) that stroke survivors had higher levels of depression than caregivers. In addition, there were no significant differences between Intervention and Control groups for different types of dyads at baseline (Table 2).

Correlation: Correlations between variables are reported in Table 3 for baseline and 6-month post-intervention. Stroke survivors' and caregivers' PWI was consistently positively associated with self-esteem and hope. There were significant negative correlations between stroke survivors' depression

and wellbeing at baseline $(r = -0.484, p < 0.01)$ and post-intervention $(r = -0.432, p < 0.01)$. Similar patterns were found post-intervention, with a significantly negative relationship between stroke survivor depression at T_4, and PWI (T_1) $(r = -0.429, p < 0.01)$ and caregiver PWI (T_4) $(r = -0.285, p < 0.05)$. While depression was negatively correlated with other variables, there was a significant positive relationship between stroke survivor and caregiver depression scores at baseline $(r = -0.264, p < 0.01)$ and post-intervention $(r = -0.386, p < 0.01)$. Self-esteem and hope were scientifically positively correlated for both stroke survivors and caregivers. There is no issue related to overlaps of constructs of measurements used in this study.

Table 3 reports the actor effects on stroke survivors $(\beta = -0.353, p < 0.05$ in Model 1; $\beta = -0.364, p < 0.05$ in Model 2) and caregivers $(\beta = -0.383, p < 0.05$ in Model 3; $\beta = -0.384, p < 0.05$ in Model 4) where a higher level of hedonic wellbeing was associated with fewer depressive symptoms. The results from Table 3 and Table 4 validate the second hypothesis (H2) that both stroke survivors

Table 1. Descriptive statistics of the participants ($N =$ 200).

	Mean (SD) or N (%)	
	Stroke survivor	Caregiver
Gender, male	68 (67%)	25 (25%)
Age	73.72 (7.25)	62.49 (14.44)
Education level		
No formal education	9 (9%)	5 (5%)
Some literacy	10 (10%)	3 (3%)
Old-style private school	4 (4%)	0 (0%)
Primary education	40 (40%)	41 (41%)
Lower secondary	18 (18%)	20 (20%)
Upper secondary	13 (13%)	16 (16%)
Undergraduate	3 (3%)	6 (6%)
Post-graduate	3 (3%)	7 (7%)
Missing	0 (0%)	3 (3%)
Relationship of caregiver to patient		
Spouse	N/A	74 (73%)
Adult children	N/A	26 (26%)
Missing	N/A	1 (1%)
Type of stroke		
Ischemic	74 (73%)	N/A
Haemorrhagic	20 (20%)	N/A
Mixed	1 (1%)	N/A
Missing	5 (5%)	N/A
PWIT1	40.67 (10.40)	45.69 (11.45)
PWIT4	44.44 (11.93)	46.15 (9.97)
RSET1	25.89 (4.36)	28.79 (3.94)
RSET4	27.11 (4.25)	29.36 (3.01)
HHIT1	75.52 (15.97)	82.76 (17.67)
HHIT4	79.33 (18.65)	86.33 (15.12)
GDST1	5.26 (4.19)	4.0 (3.89)
GDST4	4.37 (4.0)	2.80 (3.20)
N	200	

Note: PWI: Personal Wellbeing Index; RSE: Rosenberg Self-Esteem; HHI: Herth Hope Index; GDS: Geriatric Depression Scale.

and caregivers had actor effects on their levels of self-esteem ($\beta = -0.314$, $p < 0.05$ in Model 3) and hedonic wellbeing affecting their levels of depression. Partner effects were found, as caregivers' depressive symptoms were negatively related to stroke survivors' wellbeing ($\beta = -0.387$, $p < 0.05$ in Model 3). This finding validates the hypothesis (H3) with partner effects on caregiver depression

and stroke survivor wellbeing. Stroke survivors in the intervention group had a significantly higher level of self-esteem associated with lower levels of depression ($\beta = -0.314$, $p < 0.05$ in Model 2). Also, Table 4 has authenticated the fourth hypothesis (H4), where models with narrative therapy had more positive effects on the dyads compared to those from the control group. While the relationship between hope and depressive symptoms of stroke survivors and caregivers are correlated, there was no significant relationship between hope, depressive symptoms, age and gender. None of the partner effects, nor the survivor–caregiver interaction effects, were significant. Moreover, no significant harms or unintended effects were noted in both the treatment and control group.

Discussion

This study has identified the importance of understanding the well-being, particularly mental health, of the stroke survivor–caregiver dyad. The findings of this study have: completely supported the first hypothesis (H1), partially supported the second one (H2) with both stroke survivors and caregivers demonstrating actor effects on self-esteem and hedonic wellbeing; partially supported the third one (H3) as dyads showed partner effects in wellbeing and support our final hypothesis (H4) that narrative therapy was more effective than psychoeducational therapy for stroke survivor–caregiver dyads. While the _Treatment as Usual_ group showed some positive development from T_1 to post-intervention, the narrative therapy group overall had a more significant impact on the dyads. Narrative Therapy was more effective in promoting personal wellbeing, self-esteem and reducing depression amongst stroke survivors. These findings are consistent with research that suggests that narrative therapy can reduce depressive symptoms, improve self-esteem and personal wellbeing.[21–23] Furthermore, as hypothesized, the study found that stroke survivors were more depressed than their caregivers. This can be attributed to emotional and metabolic alterations caused by the onset of stroke.[24–27]

Table 2. Mean differences between intervention and control group by measures.

	T1			T4		
	Control group (SD)	Experimental group (SD)	All (SD)	Control group (SD)	Experimental group (SD)	All (SD)
PWI	42.09 (10.64) (n = 45)	39.47 (10.14) (n = 53)	40.67 (10.40) (n = 98)	45.95 (11.19) (n = 41)	43.02 (12.55) (n = 44)	44.44 (11.94) (n = 85)
cPWI	46.98 (11.05) (n = 53)	44.57 (11.78) (n = 46)	45.69 (11.45) (n = 99)	46.21 (9.98) (n = 39)	46.10 (10.08) (n = 40)	46.15 (9.97) (n = 79)
RSE	26.22 (4.49) (n = 45)	25.61 (4.28) (n = 54)	25.89 (4.36) (n = 99)	27.11 (4.40) (n = 38)	27.11 (4.163) (n = 45)	27.11 (4.29) (n = 83)
cRSE	28.75 (3.90) (n = 44)	28.82 (4.02) (n = 55)	28.79 (3.94) (n = 99)	29.11 (3.19) (n = 38)	29.62 (2.84) (n = 38)	29.36 (3.01) (n = 76)
HHI	77.36 (15.91) (n = 44)	74.02 (16.01) (n = 54)	75.52 (15.97) (n = 98)	80.39 (16.56) (n = 41)	78.39 (20.462) (n = 46)	79.33 (18.65) (n = 87)
cHHI	84.83 (15.12) (n = 46)	81.04 (19.52) (n = 54)	82.76 (17.67) (n = 100)	89.33 (13.42) (n = 39)	83.40 (16.24) (n = 40)	86.33 (15.12) (n = 79)
GDS	4.82 (3.79) (n = 45)	5.62 (4.49) (n = 55)	5.26 (4.19) (n = 100)	4.51 (3.88) (n = 37)	4.26 (4.13) (n = 46)	4.37 (4.00) (n = 83)
cGDS	4.00 (3.95) (n = 45)	4.00 (3.88) (n = 55)	4.00 (3.89) (n = 100)	2.51 (3.01) (n = 37)	3.08 (3.40) (n = 37)	2.80 (3.20) (n = 74)

Note: PWI: Personal Wellbeing Index of the stroke survivor; cPWI: Personal Wellbeing Index of the caregiver; RSE: Rosenberg Self-Esteem of the stroke survivor; cRSE: Rosenberg Self-Esteem of the caregiver; HHI: Herth Hope Index of the stroke survivor; cHHI: Herth Hope Index of the caregiver; GDS: Geriatric Depression Scale of the stroke survivor; cGDS: Geriatric Depression Scale of the caregiver.

Table 3. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Personal wellbeing																
PWIT1	-															
PWIT4	0.582**	-														
cPWIT1	0.249*	0.178	-													
cPWIT4	0.157	0.335**	0.620**	-												
Geriatric depression																
GDST1	−0.484**	−0.432**	−0.166	−0.206	-											
GDST4	−0.494**	−0.660	−0.162	−0.285*	0.618**	-										
cGDST1	−0.179	−0.232	−0.559**	−0.471**	0.264***	0.201	-									
cGDST4	−0.215	−0.420**	−0.475**	−0.604**	0.203	0.386**	0.599**	-								
Self-Esteem																
RSET1	0.429**	0.449**	0.167	0.200	−0.605**	−0.454**	−0.222*	−0.204	-							
RSET4	0.401**	0.592**	0.232*	0.290*	−0.404**	−0.661**	−0.247*	−0.390	0.444**	-						
cREST1	0.206*	0.257*	0.572**	0.455**	−0.085	−0.115	−0.464**	−0.330	0.240*	0.274*	-					
cREST4	−0.031	0.12	0.373**	0.451**	0.024	−0.189	−0.309**	−0.316**	0.024	0.367***	0.275*	-				
Herth Hope																
HHIT1	0.513**	0.548**	0.173	0.194	−0.549**	−0.444**	−0.127	−0.242*	0.631**	0.494**	0.145	0.066	-			
HHIT4	0.450**	0.709**	0.304**	0.376**	−0.389**	−0.613**	−0.152	−0.385**	0.409**	0.509**	0.260*	0.156	0.472**	-		
cHHIT1	0.222*	0.291**	0.770**	0.601**	−0.157	−0.202	−0.513**	−0.525**	0.137	0.310***	0.569**	0.410***	0.285**	0.278**	-	
cHHIT4	0.066	0.274*	0.600**	0.685**	−0.060	−0.099	−0.346**	−0.495**	0.177	0.11	0.423**	0.365**	0.169	0.425**	0.663**	-

Note: PWI: Personal Wellbeing Index of the stroke survivor; cPWI: Personal Wellbeing Index of the caregiver; RSE: Rosenberg Self-Esteem of the stroke survivor; cRSE: Rosenberg Self-Esteem of the caregiver; HHI: Herth Hope Index of the stroke survivor; cHHI: Herth Hope Index of the caregiver; GDS: Geriatric Depression Scale of the stroke survivor; cGDS: Geriatric Depression Scale of the caregiver.
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Table 4. Actor and partner effects on depressive symptoms.

Predictors	Model 1 Survivor	Model 2	Model 3 Caregiver	Model 4
	SB	SB	SB	SB
Wellbeing				
Survivor (baseline)	−0.111	−0.113	0.119	0.120
	(−0.836)	(−0.846)	(0.793)	(0.786)
Survivor (T4)	−0.353*	−0.364*	−0.387*	−0.387
	(−2.043)	(−2.046)	(−2.030)	(−1.953)
Caregiver (baseline)	−0.084	−0.082	−0.142	−0.142
	(−0.499)	(−0.482)	(−0.746)	(−0.740)
Caregiver (T4)	−0.080	−0.075	−0.383*	−0.384*
	(−0.522)	(−0.480)	(−2.343)	(−2.311)
Hope				
Survivor (baseline)	0.104	0.098	0.71	0.73
	(0.722)	(0.664)	(0.436)	(0.436)
Survivor (T4)	−0.278	−0.268	−0.38	−0.41
	(−1.841)	(−1.726)	(−0.238)	(−0.245)
Caregiver (baseline)	−0.076	−0.085	−0.277	−0.274
	(−0.403)	(−0.439)	(−1.260)	(−1.217)
Caregiver (T4)	0.325	0.312	0.070	0.073
	(1.821)	(1.692)	(0.387)	(0.381)
Self-esteem				
Survivor (baseline)	−0.048	−0.044	0.085	0.084
	(−0.352)	(−0.323)	(0.551)	(0.537)
Survivor (T4)	−0.317	−0.314*	−0.023	−0.024
	(−2.195)	(−2.146)	(−0.141)	(−0.144)
Caregiver (baseline)	0.105	0.110	0.163	0.161
	(0.805)	(0.831)	(1.163)	(0.265)
Caregiver (T4)	−0.083	−0.078	0.147	0.146
	(−0.699)	(−0.640)	(1.104)	(1.068)
Intervention				
Survivor	–	−0.38	–	–
		(−0.323)		
Caregiver	–	–	–	0.010
				(0.073)
Age				
Survivor	0.117	0.108	−0.015	−0.013
	(1.197)	(1.054)	(−0.141)	(−0.113)
Caregiver	−0.031	−0.043	0.215	0.219
	(−0.307)	(−0.395)	(1.844)	(1.722)
Gender				
Survivor	−0.181	−0.193	0.019	0.022
	(−1.341)	(−1.365)	(0.114)	(0.125)
Caregiver	0.015	0.002	−0.201	−0.197
	(0.103)	(0.012)	(−1.128)	(−1.049)
R^2 adjusted	0.516	0.506	0.372	0.357
N	58	58	59	59

Note: SB = standardised coefficient, *t* value in bracket, * = < 0.05

The APIM identified actor effects on the personal wellbeing of stroke survivors and caregivers. The partner effects (where caregivers' depressive symptoms were negatively associated with stroke survivors' wellbeing) are supported by previous studies, which reported that caregiver depression was associated with the severity of the stroke and the recovery process of the stroke survivor.[28, 29] It appears that the stroke survivors who received narrative therapy had higher self-esteem and lower depressive symptoms. These findings concurred with an earlier study using the actor–partner interdependence model.[30] This study was the first one to provide narrative therapy intervention prior to analysing these constructs. The findings show both actor and partner effects for post-intervention stroke survivor–caregiver dyads, providing cogent evidence on the effectiveness of dyadic interventions.

Clinical Implications: Healthcare practitioners should consider dyads as a unit when considering the best approaches to treat depressive symptoms or other mental health concerns, especially among Chinese cohorts globally. Due to the limited number of therapists and Chinese culture emphasis on community, group practice may be more efficacious than individual intervention. Moreover, this study demonstrated the effectiveness of narrative therapy compared with psychoeducational therapy in improving individual and dyadic mental health. Further research is needed on this intervention, especially with the added variable of coronavirus disease 2019 (COVID-19). The virus has heightened the isolation and negative effects on those whose lifestyles were already restricted by managing chronic diseases and disabilities at home. A recent study has shown COVID-19 induced-quarantine can threaten stroke survivor–caregiver relationships, particularly increasing the risk of stroke survivors becoming victims of physical and verbal abuse globally. For many caregivers, COVID-19 experiences have worsened emotional distress and physical exhaustion. As a result, we recommend further research using narrative therapy to help

dyads suffering from such intense, stressful circumstances. Narrative, as with other therapies, could be adapted to be delivered virtually, whilst losing none of its effectiveness. Chinese people comprise the world's largest ethnic group, as they live around the globe. Their filial piety caregiving philosophy has been well documented in other cities around the world.

Policy Implications: This study celebrates the dyad of stroke survivors and their caregivers, whose input is essential to future-proof Hong Kong aged care with evidence-based, effective policies and practices. The Hong Kong Government is already struggling to fund sufficient formal resources to support older community dwellers in dealing with the daily ramifications of disability and ageing. As it is unlikely that more resources will become available to support the increasing number of older people who wish to live independently in the community, it is essential that expanding and supporting innovative care are put in place now by learning from those with first-hand experience. We postulate that stroke survivor–caregiver dyads are the 'problem-solvers' who hold the key to effective, cost-efficient, acceptable formal services in Hong Kong in the next decade. Policies should be founded on resilience-strength-based models underpinned by older adults' life experiences.

Limitations: There are some limitations to this study. First, replication of the study requires specific and contextually relevant training to conduct narrative therapy sessions. Secondly, the study findings are from a sample of Hong Kong-based Chinese stroke survivor–caregiver dyads, thus the results may not be generalizable to non-Chinese dyads, or to people with other illnesses. Thirdly, we recruited any family caregiver (adult-children, spouses and other family members), and we could not determine which caregiver had the most or least influence on their stroke survivor. Finally, further research needs to be conducted on the different types of caregivers' and their mental health needs, and their impact on stroke survivors, to ensure that they are provided with the most appropriate interventions.

Clinical messages

- Narrative Therapy is feasible and effective in mediating depressive symptoms and improving the stroke survivor–family caregiver dyad.
- Medical and para-medical experts should consider the dyadic influence of stroke survivors and caregivers on each other when planning and implementing a treatment method.
- Caregiving is complex – both mentally supportive and mentally draining; hence caregivers require equal amounts of mental rehabilitation attention as stroke survivors.

Ethical Approval

This study was approved by the Research Ethical Committee of the City University of Hong Kong and Hong Kong Hospital Authority. Its procedure was in compliance with the Declaration of Helsinki guidelines.

Informed consent

All of the participants gave written consent prior to the study.

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Supplemental material

Supplemental material for this article is available online.

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