

Formal and informal sources of social support and their differential associations with intervention outcomes for depressive and anxiety symptoms among older adults

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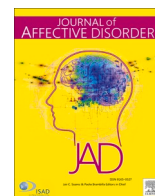
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Research paper

Formal and informal sources of social support and their differential associations with intervention outcomes for depressive and anxiety symptoms among older adults

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ABSTRACT

Background: Previous studies have highlighted social support as an important protective factor for depression and anxiety. Yet, little is known about how different dimensions of social support would be differentially associated with the prognosis of intervention outcomes.

Objective: We examined the influences of different sources of emotional support and the quantity of emotional and instrumental support *pre-intervention* on the prognosis of depressive and anxiety symptoms among older adults.

Methods: Data were prospectively collected from 4002 adults aged ≥ 60 years from a collaborative stepped-care intervention programme for depressive symptoms in Hong Kong. Source of emotional support and quantity of emotional and instrumental support were assessed *pre-intervention*. Depressive and anxiety symptoms were assessed using Patient Health Questionnaire–9-item (PHQ-9) and Generalized Anxiety Disorder–7-item (GAD-7) *pre- and post-intervention*. Linear mixed models were used to examine the prognostic effects of social support on mental health symptoms, adjusting for loneliness, living status, and sociodemographics.

Results: Preference for formal support was associated with greater reductions in depressive symptoms ($b = -0.52$, $CI = -1.05-0.01$), whereas preferences for informal family and community support was associated with greater reductions in anxiety symptoms ($b = -0.51$, $CI = -0.94$ to -0.07 ; $b = -0.46$, $CI = -0.91$ to -0.0004 , respectively). More instrumental support *pre-intervention* was associated with a greater magnitude of increase in both depressive and anxiety symptoms.

Conclusions: Determining the preferences and availability of various dimensions of social support *pre-intervention* may provide insights into the potential prognosis of mental health outcomes, and thereby guide clinical decisions in treatment selection. Future studies can further elucidate the mechanisms underlying these associations.

1. Introduction

Predictions suggest that 2.1 billion people in the world will be aged 60 years or above by 2050, doubling the global population in 2020 (World Health Organization, 2023a). Aside from chronic physical health conditions, depression and anxiety are two of the most common and

increasingly prevalent conditions in this age group (Arokiasamy et al., 2017; Balsamo et al., 2018). These common mental disorders (CMDs) not only have major implications for quality of life, and cognitive and physical health (Bai et al., 2023; Luo et al., 2020) but are also leading causes of suicide deaths in older adults (Péquignot et al., 2019), altogether contributing substantially to the global burden of disease (GBD

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Diseases 2019 Injuries Collaborators, 2020). With the rapidly ageing global population, CMDs represent an ever-pressing public and global health concern.

A core facilitator of early intervention and treatment is timely professional help-seeking. Despite this, prior work has consistently shown that most people prefer seeking informal help for emotional needs (e.g., from family or friends) (Mojaverian et al., 2013; Wong et al., 2023). Informal supporters, such as family and friends, may provide personal and intimate support, whereas formal supporters may offer more structured and specialised support for severe mental health problems (Thoits, 2011; Cohen and Wills, 1985). Of note, emerging evidence has highlighted the dynamic interactions between these various forms of support, with informal networks potentially acting as a factor that facilitates formal help-seeking (Teo et al., 2022; Brown et al., 2014).

Theoretically, people reach out for support from their social networks according to their relative importance (Cantor, 1979). As such, it is only when support from family, friends, and community networks is no longer sufficient or available that one would seek formal support. Indeed, studies on older adults have shown that those who seek formal support tend to present more severe symptoms and health needs (Chu and Sue, 2011) and have less informal support (Penning, 1990; Shi et al., 2020). The availability of informal support from non-spouse family and friends has also been shown to be associated with fewer depressive symptoms in older adults, with no such association observed for informal support (Muramatsu et al., 2010). Earlier definitions of social support have therefore often been limited to those provided by informal sources, including in studies that examined the protective effects of different sources of support (Gariépy et al., 2016).

Particularly among older adults from a collectivist culture (e.g., Asia), the preference for seeking family members for support can be even more pronounced. Whereas the dominant view of individuals is ‘independent’ among individualistic societies (wherein expression of one’s beliefs and acting towards one’s person goals are prioritised), individuals are viewed as ‘interdependent’ among collectivistic societies (wherein social harmony is prioritised and personal beliefs and goals are secondary) (Kim et al., 2008). Previous research has shown that people from collectivistic societies are less likely to seek external social support for coping with stressful life events and tend to view help-seeking more negatively (Kim et al., 2008). Notably, these individuals are also more influenced by the expectations of caring for their family members (Fung et al., 2008). The perceived disruption to social harmony within families due to external help-seeking (which may be interpreted as inadequacy or dysfunctions among family members) has been suggested to play a role in hindering professional help-seeking among older Asian adults (Mojaverian et al., 2013).

Despite the general preferences for informal help-seeking, it has been argued that professionals also serve a core role in the social network of help-seeking individuals and thus need to be similarly accounted for (Lauzier-Jobin and Houle, 2022). For instance, a qualitative study among people in recovery from mental health problems has shown that, whereas their relationships with informal supporters were viewed as more reciprocal with fewer set boundaries, formal supporters were viewed as ‘outsiders’ with less emotional attachment; yet, this was considered rather helpful in cultivating ‘a sense of safety and freedom’ that was beneficial for intervention (Lauzier-Jobin and Houle, 2022). How individual preferences for emotional support from informal and formal sources may differentially affect intervention outcomes among help-seeking older adults remains unclear.

With the aims of improving treatment outcomes and overall well-being, having the parameters before an intervention indicative of who may be more or less responsive can be crucial to aid clinical decision-making (e.g., recommendation for an intervention for specific individuals or adjusting care plans for others) (Tunvirachaisakul et al., 2018). To date, the majority of existing studies investigating predictors of depression treatment outcomes among older adults have focused on individual sociodemographics, pre-treatment clinical characteristics (e.

g., baseline depressive symptom severity, comorbid anxiety symptoms), and physical health conditions (Tunvirachaisakul et al., 2018). Little consideration has been given to the availability of social resources pre-intervention as a potential prognostic factor, which has been shown to improve the rate of clinical recovery and treatment outcomes across several studies (Buckman et al., 2021; Wang et al., 2018; Woods et al., 2021).

Building on existing research, we aimed to examine in greater depth how various dimensions of social support *pre-intervention* among older adults may influence their prognosis of depressive and anxiety symptoms following a collaborative stepped-care intervention in Hong Kong, with a specific focus on differentiating between the influences of informal and formal support. With reference to prior work, we anticipated that those who preferred seeking informal emotional support would show greater symptom improvements following the intervention than those without any emotional support. Given the significance of family ties in a collectivistic Chinese society like Hong Kong (Lam et al., 2012), we anticipated that those who sought support from their families would exhibit the greatest improvements after the intervention, followed by their community networks and professionals. As the availability of emotional support has been shown to be a critical protective factor against life stressors on depressive and anxiety symptoms (Choi et al., 2023; McLean et al., 2022), we anticipate that those with more emotional supporters would also predict greater improvements in both symptom outcomes, whereas the need for more instrumental support may be related to fewer improvements or poorer outcomes due to the feelings of dependence and loss of autonomy it may induce (Glass and Maddox, 1992; Gur-Yaish et al., 2013).

2. Methods

2.1. Study setting and population

Participants were recruited from the JC JoyAge II (“Jockey Club Holistic Support Project for Elderly Mental Wellness–Phase II”), which is a territory-wide community-based stepped-care intervention programme in Hong Kong for older adults aged 60 years or above with subclinical depressive symptoms (Liu et al., 2022; Wong et al., 2024). The JoyAge programme adopts the well-established stepped-care intervention model (e.g., Clark, 2018) but with adaptations to the local context, with psychological interventions delivered in the social care setting and by trained social workers under the supervision of clinical psychologists, with assistance from trained peer supporters. From 2020 to 2023, the programme involved a total of 49 social care centres for older adults, operated by non-profit organisations and funded by the government, across all 18 districts of Hong Kong.

In line with the goal of early intervention in the community, the programme targeted those who presented mild-to-moderately severe symptoms of depression (Patient Health Questionnaire–9-item [PHQ-9] = 5–19). Those with major neurocognitive disorders (e.g., dementia), Parkinson’s disease, or a known history of schizophrenia spectrum disorder, bipolar disorder, autism spectrum disorder, or intellectual disability were excluded and were provided with alternative services. Aside from its stepped-care nature, a triage system was in place, such that older adults presenting mild symptoms (Patient Health Questionnaire [PHQ-9] = 5–9) were offered lower-intensity intervention as the first step (i.e., six intervention sessions with two booster sessions), while those presenting moderate-to-moderately severe symptoms (PHQ-9 = 10–19) were offered higher-intensity intervention (i.e., eight intervention sessions with two booster sessions). Participants can be stepped up or down from the service depending on their depressive symptom severity after the first trial of intervention. Cognitive behavioural therapy was the main intervention modality, with alternative protocols provided according to participant needs (e.g., acceptance and commitment therapy for chronic pain). To ensure its scalability and sustainability, the programme was designed to be time-limited (up to 9

months), protocol-driven, and largely group-based. Further details related to the content of the interventions have previously been described (e.g., Wong et al., 2024).

The target exit criterion was a reduction of depressive symptoms to no clear symptoms (i.e., PHQ-9 score of 5 with a total score of <2 for items on anhedonia and depressed mood). Since anxiety symptoms are often comorbid with depressive symptoms and have long-term implications for well-being and functioning (Dong et al., 2020), both depressive and anxiety symptoms were taken as primary outcomes.

The data used in this prospective study are from participants who were consecutively enrolled on JoyAge II from January 2020 to December 2023 (median service duration = 8 months [IQR = 6–11]). Measures of social support, loneliness and sociodemographic variables were collected at pre-intervention, while measures of depressive and generalised anxiety symptoms were collected at both pre and post-intervention timepoints. As the focus of the present study was to explore how different dimensions of social support pre-intervention are associated with the prognosis of depressive and anxiety symptoms, details concerning the overall effectiveness of the model will be reported elsewhere. This study was approved by the Human Research Ethics Committee (HREC) of the University of Hong Kong and was performed in compliance with the Helsinki Declaration of 1975, as revised in 2008. Written informed consent was obtained from all participants.

2.2. Measures

2.2.1. Social support and source of support

Two items, namely “Who would you turn to when you need help with trivial matters?” and “Who would you talk to when you feel unhappy or emotionally distressed?”, were used to assess the availability of instrumental and emotional supporters, respectively. A maximum of five people could be named for each of the items (range = 0–5), which were operationalised to reflect the quantity of instrumental and emotional supporters available.

Participants were also asked about their relationship with the emotional supporters they previously listed, which provided information about their preferred source of emotional support. A total of 13 options were provided, which were grouped under four overarching categories with reference to the Hierarchical Compensatory Model (Cantor, 1979) and the Convoy Model (Antonucci et al., 2014; Kahn and Antonucci, 1980): (1) *family* (including spouse, parent, child, sibling, grandchild, and other relatives); (2) *community* (including friend, neighbour, religious figure, colleague, and others); (3) *professionals* (including social workers and other professionals); and (4) *none* (i.e., no emotional supporter). These two models were utilised because they offer a structural and normative presentation for complex social relations, which may facilitate interpretation of their associations with treatment outcomes (Zhang and Bennett, 2024). The preferred source of emotional support was defined as the category in which the first emotional supporter listed belonged.

2.2.2. Depressive and generalised anxiety symptoms

Symptoms of depression and generalised anxiety disorder during the past two weeks were assessed using the PHQ-9 (Kroenke et al., 2001) and Generalized Anxiety Disorder–7-item scale (GAD-7) (Spitzer et al., 2006) pre- and post-intervention, respectively. Both the PHQ-9 and GAD-7 comprise items that correspond to the DSM-IV and DSM-V criteria for major depressive disorder and generalised anxiety disorder. Items were rated on a 4-point Likert scale (0 ‘not at all’ to 3 ‘nearly every day’) for both measures, with higher scores indicating more severe symptoms. Both the PHQ-9 and GAD-7 have been validated in Chinese older adults (Tong et al., 2016; Wang et al., 2014).

2.2.3. Control variables

Various control variables related to social support were assessed. First, loneliness has often been considered to be highly interrelated yet

distinct from social support (Ge et al., 2017). We therefore also assessed loneliness pre-intervention using the Chinese version of the 3-item UCLA Loneliness Scale (UCLA 3-item) that was locally adapted and validated among older adults in Hong Kong (Liu et al., 2020) and which is also widely adopted across Western and Eastern settings for assessing loneliness (Surkalim et al., 2022). In the locally validated version, all items of the UCLA 3-item were rated on a 4-point Likert scale (0 ‘never’ to 3 ‘often’—which aligns with the PHQ-9 and GAD-7), with a higher score representing greater loneliness. A cut-off of ≥ 3 has been shown to be reliable for detecting risk for mild or above depressive symptoms in community-dwelling older adults (Liu et al., 2020). Living status (living with others/alone) was also assessed in this study, given its relevance to the availability of social support, alongside other sociodemographics, including sex (male/female), age, and highest educational attainment.

2.3. Statistical analysis

Descriptive statistics of all variables were first conducted, followed by one-way analysis of variance and Chi-squared tests to compare differences in both pre- and post-intervention statistics across the four main preferred sources of emotional support. We then tested our hypotheses concerning the potential influences of the different dimensions of social support pre-intervention on symptom outcomes. Given the repeated-measures nature of the data, linear mixed models (LMMs) were used for our main analyses, which take into account random effects at the individual participant level and can accommodate multiple categorical and continuous predictor variables (Magezi, 2015). Two sets of LMMs were conducted to examine changes in depressive and anxiety symptoms, respectively.

In these models, the preferred source of emotional support (family, community, professionals, or none), quantity of emotional support, quantity of instrumental support, and time (pre-/post-intervention) were entered as fixed effects, adjusting for the various control variables. Three social support X time interaction terms were added to examine how each of the three dimensions of social support would influence the prognosis of symptom outcomes, as in previous work (Boschloo et al., 2012).

Several additional sensitivity analyses were conducted to determine the robustness of the current observations. First, since the intervention included only participants with mild-to-moderately severe levels of depressive symptoms (PHQ-9 = 5–19), we applied the same analyses, excluding those with no or minimal generalised anxiety symptoms (GAD-7 < 5), to ensure the observations were not influenced by pre-intervention anxiety symptom severity. Another set of LMM was conducted to additionally adjust for multimorbidity (defined as having two or more chronic diseases, such as hypertension, diabetes, heart disease and cancer; (Skou et al., 2022)) and service duration, which are two factors that may affect the degree of responsiveness to intervention among older adults. Descriptive analyses were conducted in SPSS version 28, with LMMs conducted in R using the package *lme4* (Bates et al., 2015), and figures plotted using the packages *ggeffects* (Lüdtke, 2018) and *ggplot2* (Valero-Mora, 2010).

3. Results

Sample characteristics are shown in Table 1. Females comprised 84.2 % of the sample. The participants overall had a mean age of 73.6 years ($SD = 7.7$); 33 % were aged 60–69 years, 43.7 % were aged 70–79 years, and 23.3 % were aged 80 years or above. Nearly half (43 %) attained secondary education or above, while 40.2 % reported living alone.

Having at least one instrumental and emotional supporter was reported in 65.2 % and 68.4 % of the sample, respectively, with the average number being 0.9 ($SD = 0.8$) and 1.0 ($SD = 0.9$). Of those who had at least one emotional supporter, the majority ranked family as their main source of support (51.9 %; $n = 1421$), followed by community

Table 1
Sample characteristics at pre-intervention.

	Whole sample (n = 4002)
Sociodemographics	
Female sex	3371 (84.2 %)
Age, mean (SD) (range: 60–100)	73.6 (7.73)
Secondary education or above	1720 (43 %)
Lives alone	1608 (40.2 %)
Loneliness (UCLA-3 item), mean (SD) (range: 0–9)	3.91 (2.75)
Quantity of social support (range: 0–5)	
Instrumental support	0.86 (0.81)
Emotional support	0.99 (0.92)
Depressive symptoms (PHQ-9), mean (SD) (range: 0–27)	
Pre-intervention	9.59 (3.47)
Post-intervention	3.18 (2.46)
Generalised anxiety symptoms (GAD-7), mean (SD) (range: 0–21)	
Pre-intervention	6.82 (4.51)
Post-intervention	2.90 (2.92)

Note. All values are presented in the form of n (%) unless otherwise stated. GAD-7 = Generalized Anxiety Disorder–7-item scale; PHQ-9 = Patient Health Questionnaire–9-item; UCLA 3-item = 3-Item UCLA Loneliness Scale.

networks (39.1 %; n = 1071). Formal professional support was the least preferred source (9.1 %; n = 248).

In the whole sample, the severity of depressive symptoms (PHQ-9) significantly reduced from 9.59 (*SD* = 3.47) pre-intervention to 3.18 (*SD* = 2.46) post-intervention (*d* = 1.84, *p* < 0.001). Similarly, symptoms of generalised anxiety disorder (GAD-7) also significantly reduced from 6.82 (*SD* = 4.51) to 2.90 (*SD* = 2.92) (*d* = 0.93, *p* < 0.001). These reductions in depressive and anxiety symptoms were also observed within each of the emotional support subgroups (Supplementary Tables S1–2).

Across the four subgroups of the preferred source of emotional support, several differences were observed in their sociodemographic characteristics and symptom levels (Table 2). Those who sought professional support showed higher levels of depressive and anxiety symptoms at both pre- and post-intervention. Those who sought family support showed lower levels of loneliness (mean = 3.62, *SD* = 2.67) compared with those who did not seek emotional support (mean = 4.15, *SD* = 2.70).

Female participants were more likely to seek community support, while younger participants were more likely to seek professional help. Post-hoc comparisons are shown in Supplementary Table S6. All these variables were adjusted for as fixed effects in the subsequent LMMs, with

Table 2
Sample characteristics by the preferred source of emotional support pre-intervention.

	Preferred source of emotional support				<i>F</i> / <i>X</i> ²	<i>p</i>
	None (n = 1262)	Family (n = 1421)	Community (n = 1071)	Professional (n = 248)		
Sociodemographics						
Female sex	1017 (80.6 %)	1202 (84.6 %)	949 (88.6 %)	203 (81.9 %)	29.27	<0.001
Age, mean (SD)	74.2 (7.8)	73.9 (7.9)	72.7 (7.4)	72.2 (7.5)	10.16	<0.001
Secondary education or above	555 (44 %)	573 (40.3 %)	485 (45.3 %)	107 (43.1 %)	6.93	0.074
Lives alone	566 (44.8 %)	456 (32.1 %)	475 (44.4 %)	111 (44.8 %)	60.06	<0.001
Loneliness (UCLA-3 item), mean (SD)	4.15 (2.70)	3.62 (2.67)	3.98 (2.87)	4.10 (2.86)	9.03	<0.001
Quantity of social support						
Instrumental support	0.61 (0.75)	1.07 (0.79)	0.91 (0.80)	0.83 (0.80)	78.72	<0.001
Emotional support ^a	–	1.45 (0.77)	1.44 (0.76)	1.39 (0.66)	0.75	0.475
Depressive symptoms (PHQ-9), mean (SD)						
Pre-intervention	9.69 (3.45)	9.35 (3.43)	9.58 (3.53)	10.40 (3.43)	7.16	<0.001
Post-intervention	3.49 (2.58)	2.85 (2.27)	3.14 (2.39)	3.61 (2.92)	17.94	<0.001
Generalised anxiety symptoms (GAD-7), mean (SD)						
Pre-intervention	6.78 (4.43)	6.67 (4.42)	6.88 (4.68)	7.68 (4.67)	3.63	0.012
Post-intervention	3.18 (2.97)	2.59 (2.80)	2.80 (2.88)	3.67 (3.27)	15.53	<0.001

Note. All values are presented in the form of n (%) unless otherwise stated. GAD-7 = Generalized Anxiety Disorder–7-item scale; PHQ-9 = Patient Health Questionnaire–9-item; UCLA 3-item = 3-Item UCLA Loneliness Scale.

^a The ‘no emotional support’ (none) group was excluded from this analysis.

participants treated as a random effect in the models.

3.1. Influences of emotional support source and the availability of support on intervention outcomes

Results from the LMMs showing the influences of pre-intervention social support on changes in depressive and anxiety symptoms following the intervention are shown in Table 3. In the first model for depressive symptoms, the preference for professional emotional support pre-intervention was associated with an overall elevation in symptoms following intervention (*b* = 1.03, *CI* = 0.16–1.90) as compared with those without any emotional support, while its interaction with time showed a trend of within-group reductions in depressive symptoms (*b* = –0.52, *CI* = –1.05–0.01) (Fig. 1a). The preference for informal emotional support pre-intervention showed no clear effect on symptom changes in the model. Meanwhile, in the second model, the preferences for informal family support and community network support pre-intervention were associated with significantly greater reductions in anxiety symptoms over time (*b* = –0.51, *CI* = –0.94–0.07; *b* = –0.46, *CI* = –0.91–0.0004, respectively) (Fig. 1b). The preference for professional support pre-intervention showed no clear effect on changes in anxiety symptoms. Adjusting for the sources of emotional support and other control variables, having more instrumental support pre-intervention was associated with greater increases in both depressive (*b* = 0.16, *CI* = 0.01–0.30) and anxiety (*b* = 0.28, *CI* = 0.11–0.45) symptoms over time, while no effect of emotional support quantity was observed (both *p* > 0.05).

3.2. Sensitivity analyses

The results of sensitivity analyses are shown in Supplementary Tables S3–5. The significance of emotional support found in the main analysis remained unchanged among those with mild-to-moderately severe generalised anxiety symptoms pre-intervention and after additionally adjusting for the presence of multimorbidity and service duration.

4. Discussion

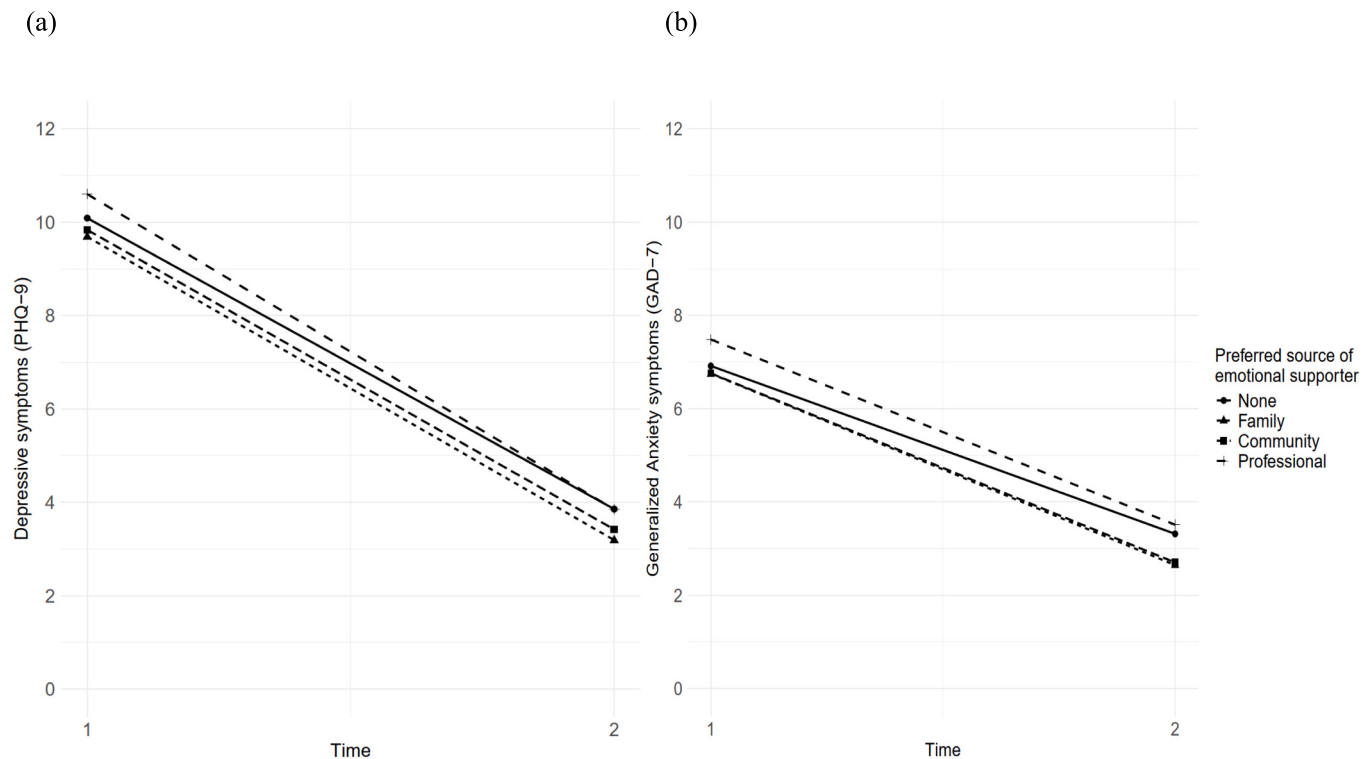
Using data from a large sample of older adults from a community-based stepped-care intervention programme in Hong Kong, our findings offered novel insights into the prognostic influences of different dimensions of social support on depressive and anxiety symptom outcomes. Specifically, we found that the preference for formal emotional

Table 3

Prognostic effects of the preferred source of emotional support pre-intervention on symptom outcomes.

	Post-intervention outcomes					
	Depressive symptoms (PHQ-9)			Anxiety symptoms (GAD-7)		
	Estimate	95 % CI	<i>p</i>	Estimate	95 % CI	<i>p</i>
Intercept	16.00	15.14–16.86	<0.001	12.31	11.26–13.36	<0.001
Time (intervention effect)	–6.30	–6.51 to –6.09	<0.001	–3.77	–4.02 to –3.51	<0.001
Female sex	–0.09	–0.29–0.11	0.365	0.23	–0.02–0.47	0.068
Age	–0.01	–0.02 to –0.00	0.036	–0.05	–0.06 to –0.03	<0.001
Secondary or above education	–0.26	–0.41 to –0.11	0.001	0.20	0.01–0.38	0.039
Lives alone	–0.34	–0.49 to –0.18	<0.001	–0.76	–0.95 to –0.57	<0.001
Loneliness (UCLA 3-item)	0.29	0.26–0.32	<0.001	0.47	0.44–0.51	<0.001
Preferred source of emotional support						
None	(Ref)			(Ref)		
Family	–0.14	–0.73–0.46	0.654	0.34	–0.38–1.06	0.355
Community	–0.07	–0.69–0.55	0.831	0.30	–0.45–1.05	0.437
Professionals	1.03	0.16–1.90	0.020	0.94	–0.12–1.99	0.081
Quantity of emotional support	0.22	–0.07–0.51	0.133	0.32	–0.04–0.67	0.078
Quantity of instrumental support	–0.30	–0.53 to –0.07	0.011	–0.62	–0.90 to –0.34	<0.001
Preferred source of emotional support × time						
None × time	(Ref)			(Ref)		
Family × time	–0.26	–0.63–0.10	0.154	–0.51	–0.94 to –0.07	0.024
Community × time	–0.18	–0.56–0.19	0.337	–0.46	–0.91 to –0.00	0.050
Professionals × time	–0.52	–1.05–0.01	0.054	–0.37	–1.01–0.27	0.256
Quantity of emotional support × time	–0.07	–0.25–0.11	0.447	–0.07	–0.29–0.14	0.499
Quantity of instrumental support × time	0.16	0.01–0.30	0.032	0.28	0.11–0.45	0.002

Note. All predictors of the models were collected pre-intervention. GAD-7 = Generalized Anxiety Disorder–7-item scale; PHQ-9 = Patient Health Questionnaire–9-item; UCLA 3-item = 3-Item UCLA Loneliness Scale.

**Fig. 1.** Effects of the sources of emotional support pre-intervention on the prognosis of depressive and anxiety symptoms in older adults.

Note. Figures showing the changes in (a) depressive symptoms and (b) anxiety symptoms by preferred source of emotional support pre-intervention. Time 1 represents pre-intervention, and time 2 represents post-intervention. GAD-7 = Generalized Anxiety Disorder–7-item scale; PHQ-9 = Patient Health Questionnaire–9-item.

support predicted improvements in depressive symptoms, whereas preferences for informal emotional support from family or community networks predicted greater improvements in anxiety symptoms. The number of emotional supporters, in contrast, showed no clear effects on intervention response, whilst having a bigger instrumental support

network predicted poorer outcomes in both symptom dimensions.

The categorisation of older adults' preferred source of emotional support into three core tiers based on the hierarchical compensatory and convoy models provided a guiding framework to explain our current observations. Accordingly, the Hierarchical Compensatory Model

postulates that individuals tend to seek support from their social network according to the level of relative importance: from informal support of the same kin (i.e., close family) to non-kin (i.e., friends, community networks), then formal support. Each of these respectively maps to the closest (i.e., family), closer (i.e., community), and close (i.e., healthcare professional) circles of the Convoy Model, reflecting the strongest to weakest ties for older adults. Aside from potential influences of the collectivistic Asian cultural background, these two models provide a plausible explanation for why the majority of older adults might have preferred seeking family support (closest circle, kin relationships), followed by community networks (closer circle, non-kin relationships), and lastly professional support (close circle, external formal support). Notably, nearly 32 % reported a preference for not seeking any support for emotional needs, which might be a reflection of a perceived lack of closed others whom one can turn to for emotional support (e.g., social isolation) or the tendency of older adults to delay help-seeking and attempt to self-manage their conditions, particularly in Asian societies (Teo et al., 2022). Both of these speculations have implications for mental health outcomes.

Building on a previous meta-analysis that found an association between higher levels of perceived social support pre-treatment and greater improvements in depressive symptoms among adults in the primary care setting (Buckman et al., 2021), our present study provided additional information concerning whether the preferred source of emotional support and availability of different forms of support may affect intervention symptoms outcomes of two major CMDs. Our findings suggest that formal and informal sources of social support might serve partially different functions and have different implications for the course of depression and anxiety; the notion that depression and anxiety represent two closely related yet distinct constructs is thus supported (Vink et al., 2008).

Our hypothesis that informal emotional support would predict greater intervention response was maintained only for anxiety but not depressive symptoms. Meanwhile, formal—rather than informal—emotional support was associated with greater reductions in depressive symptoms. One of the reasons for this observation may relate to the nature of the present study, which was based on a time-limited stepped-care intervention for depressive symptoms delivered by trained social workers. It is possible that those who preferred seeking professionals for emotional support may be more open to receiving formal services and, hence, benefit more from the intervention. Indeed, previous work has shown that treatment expectancies contribute to greater clinical response in people with major depressive disorder (Sotsky et al., 2006). Whether these patterns of observations would remain in other intervention contexts (e.g., anxiety-specific or trans-diagnostic interventions) would be important to determine the generalisability and applicability of the present findings.

Particularly for those with greater and more complex mental health needs, timely formal support by professionals with the knowledge in clinical assessments and formulations, personalising care plans according to individual needs, as well as coordination with other multidisciplinary teams and services, is arguably crucial (Ran et al., 2023; Reynolds 3rd et al., 2022). Nevertheless, the availability of emotional support from family and friends may also offer mental health benefits beyond the treatment of symptoms. For instance, it has been shown that the interactions with children and siblings among older adults can contribute to improvements in mental health via reduced sense of loneliness (Li et al., 2024). Informal support from family and friends in this age group has also been shown to improve mental well-being via increased access to medical services and capacity for social participation (Dong et al., 2020). In the present study context of older Chinese adults as part of a stepped-care intervention for depression, it is possible that the availability of emotional support from their 'closest' and 'closer' social ties during this period contributed to refuting their fears of disrupting the social harmony within their families and thereby reduced anxiety levels. Further work is needed to test these postulated pathways.

It would be helpful to build on our current work to examine the perceived contributions of professionals, family, and community networks, respectively, to the improvements of depressive and anxiety symptoms directly from older adults' perspectives, as well as the specific actions of informal supporters considered facilitative of their recovery process, to inform more specific future intervention recommendations.

Whereas the number of emotional supporters available showed no clear associations with the prognosis of symptom outcomes (possibly due to adjustments for the source of emotional support), relying on more instrumental support pre-intervention was associated with poorer outcomes, even in a sample with no major neurocognitive disorders and after adjusting for chronic physical health conditions. This observation is in line with previous work that suggested older adults who required more instrumental support may diminish their sense of capability and autonomy (Glass and Maddox, 1992; Gur-Yaish et al., 2013). While the present study could not pinpoint whether alternative interventions may be more effective for those with lower functional abilities, understanding the needs of each older adult and fostering a sense of self-efficacy can be helpful for improving their quality of life (Cudris-Torres et al., 2023).

4.1. Implications

This work has implications for future mental health practice, policy, and research. First, assessing the availability of various forms of social support *before* interventions can inform more personalised care plans. For example, alternative treatment approaches may be suggested for those without any form of emotional support and those requiring more instrumental support pre-intervention. Doing so will also be in line with patients' perspectives of the relevance of social support in determining their health outcomes (Smith et al., 2015). Further, fostering stronger ties among older adults and their families, as well as community networks, can serve as a 'safety net' for managing comorbid anxiety symptoms in older adults with depressive symptoms. This will also contribute to the increasing call for leveraging individuals' family and community networks in community-based mental health awareness and intervention programs (Horgan et al., 2024). Particularly for those with more severe and comorbid symptoms, integrated care models combining professional expertise with sustained family support, alongside psychosocial care for family caregivers to prevent burnout, may be considered (Aass et al., 2022; Schulz et al., 2020).

At the same time, since informal support is typically the first source of support that older adults seek, ensuring those in the 'closest' and 'closer' social circles (e.g., family, friends) have adequate knowledge and capacity in handling emotional and mental health needs can be critical. Given sufficient training, building a stronger force of family and peer supporters could also be helpful in overcoming the challenge of insufficient manpower observed in the mental health field globally (Reynolds 3rd et al., 2022). The incorporation of informal supporters as part of future psychological treatments may help further enhance treatment efficacy and outcomes. Meanwhile, facilitating older adults in developing greater openness in receiving formal support may also be crucial to facilitate their process of mental health recovery.

4.2. Limitations and future directions

While the present study examined the roles of different sources of emotional support, as well as the availability of both emotional and instrumental support in the prognosis of two major CMD symptom outcomes, one of the limitations was that we did not examine other dimensions of support, such as the frequency of contact, diversity of support networks, and their quality. The purpose of the present study was to identify pre-intervention indicators of intervention response, although we also recognise that the preference for emotional support and the size of support networks could change over the course of the intervention (Antonucci et al., 2014), which would also be worthwhile for future investigation to determine the implications of social

interventions (e.g., social network and social capital interventions). Similar to other mental health intervention studies, our sample was composed mostly of females, which might have limited the generalisability of our findings. Since females may be more willing to seek help for emotional support, particularly among informal networks (Moitra et al., 2022), it remains to be explored the degree to which the present findings may be applicable to males. We also note that the prospective association of professional emotional support with improvements in depressive symptoms post-intervention was marginal. It would be worthwhile for future studies to test the replicability of the present findings.

5. Conclusion

Overall, our study revealed that preferences for formal and informal emotional support played differential roles in the improvement of depressive and anxiety symptoms following a stepped-care intervention for older adults, respectively. Aside from the continued need to increase the accessibility and availability of formal mental health services, prioritising the engagement of family members and community networks, such as peer supporters, to optimise treatment efficacy is also crucial. Building on our work, future research should aim to elucidate the pathways that underlie the prognostic influences of different dimensions of social support on the two symptom outcomes, which will help better inform the design of more personalised treatment and care plans and facilitate the recovery of older adults with mental health needs.

CRediT authorship contribution statement

Eric Kwok Lun Yiu: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Stephanie Ming Yin Wong:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Dara Kiu Yi Leung:** Writing – review & editing, Project administration, Methodology. **Tianyin Liu:** Writing – review & editing, Project administration, Methodology. **Wai Chi Chan:** Writing – review & editing, Project administration, Investigation. **Gloria Hoi Yan Wong:** Writing – review & editing, Project administration, Investigation, Funding acquisition. **Terry Yat Sang Lum:** Writing – review & editing, Resources, Project administration, Investigation, Funding acquisition.

Ethics declaration

Ethical approval was granted by the Human Research Ethics Committee (HREC) of the University of Hong Kong.

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Declaration of competing interest

The authors declared no potential conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jad.2025.119696>.

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Data availability

The data and analytical codes used to support the findings of this study are available upon reasonable request to the corresponding author.

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