

Association Between Social Support and Mental Health in Pre-Old and Old Age: Is It Different Depends on the Object? A Cross-Sectional Study

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Abstract

Background The association of social support with mental health for the older adults has been well documented; however, object-specific support was rarely discussed. This study examined the relationships of multiple aspects of social support, especially focusing on objects of social support, across different aging stages.

Methods We conducted a self-reported cross-sectional survey in Osaka, Japan in 2013. We analyzed 659 pre-old and 888 old age participants. SF-36v2 was used to measure mental health. Objects of social support was divided into 3 categories (kin, friends, community) with integrating sub-dimensions of social support such as instrumental / emotional social support (function) and provided / received social support (role). Ordinary least squares, controlled for covariates, was carried out to analyze the variation among three objects of social support on mental health in two age groups.

Results The results showed a positive association within the pre-old age group but not within the old age group. For the pre-old age group, either emotional or instrumental social support either provided to or received from a community neighbor had a positive association, while emotional social support provided to kin or friends and instrumental support received from friends didn't show any relation to mental health.

Conclusions The relationship between social support and mental health varied by objects and age groups.

1. Background

Successful mental health aging has become a topic worldwide, especially in aging countries. Fifteen percent of adults may suffer a mental disorder [1]. Social support, as a positive type of social network [2], has a beneficial association with mental health in the older people. Social support has a positive link with happiness [3], depression [4, 5], life stress [6], reduced social isolation [7], and lower death risk or higher survival [8, 9]. In addition, there is a moderate relationship between mental status and risk factors [10, 11]. Making clear which kind of social support is more beneficial has become an important topic in epidemiology and a priority for community-based intervention policies.

The association between mental health and social support networks is more complicated when it comes to the aging progress. Graham and Pozuelo [12] illustrated a U-shaped curve relationship between age and mental health, with older people tending to be happier. On the other hand, changes of the personal network were common issues along with illness, or decreasing functional ability with aging [13]; for example, more connection with relatives [14], a reduction in social network [15], a decline in social support [16] or less help provided [17].

Social support is commonly subdivided into informal and formal support [18], perceived and received support [8, 11], and emotional and instrumental support [18–20]. However, previous reports overlooked the object-specific pattern. Previous studies attempted to show the effect of resources of social support [21–23]; however, the discussions were limited to: a) close relationships such as kin or friends, even though community already plays a role in health policies; b) a recipient view in a single-track supportive relationship that neglected samples as providers of social support, although discussion on reciprocity of both giving and taking also matter [24, 25].

Therefore, a dynamic view of mental health and social support especially focused on the differences among objects of social support in different aging stages is needed.

The present study aimed to investigate the relationship between social support and mental status based on the objects of social support in different aging stages by integrating sub-dimensions of support such as functions (instrumental / emotional) and roles (provider / receiver).

2. Methods

2.1. Design and participants

A cross-sectional community-based mail survey was conducted in the city of Hirakata, Osaka, Japan in 2013. Hirakata City has a population of 0.41 million of which approximately 23.4% of people were aged over 65 in Oct. 2013 [26].

General residents aged 65 to 89 years who were living in a Hirakata-city were randomly picked from the residential registration using quota sampling stratified by age, sex, and area. In total, 3600 community dwellers were mailed an anonymous questionnaire from Dec. 2013 to May 2014.

The protocol of the study was approved by the ethics committee at the Division of Health Sciences, Osaka University Graduate School of Medicine (approval number 271).

2.2 Measures

2.2.1. Social support

Objects of social support; the present study measured social support depending on different objects in daily supportive interaction. Given the lack of previous studies that operationalized the norms of social support by objects, proxemics about interpersonal distance [27] were used to divide the objects into three categories: intimate objects (family or relatives), personal objects (friends), social objects (community neighbors).

The sub-dimensions of social support: 1) function (emotional social support / instrumental social support), 2) role (provider / receiver of social support). 1)Function; considering the widely accepted definition of social support as “the emotionally or instrumentally sustaining quality of social relationships” [28], emotional social support (ESS) and instrumental social support (ISS) were used as the functional facets of social support [29]. ESS was measured by two items: caring for people and listening to people’s feelings or troubles. ISS was evaluated by three items: taking care of people who got sick with mild or heavy symptoms and caretaking. 2)Role; all five specific questions were asked two times to separately assess situation-specific outcomes as the participants have the role of a provider or a receiver in an interpersonal connection. All items were binary variables with 1 representing having social support and 0 representing no social support. Each participant who answered positively for any of the items of each sub-dimension were viewed as having social support.

Participants were asked whether the ESS or ISS they received came from family/relatives, friends or community neighbors; or whether they gave their ESS or ISS to family/relatives, friends or community neighbors.

2.2.2. Mental health

A Mental Component Summary (MCS), was collected by SF-36 (MOS 36-Item Short-Form) Japanese version 1.2 to quantify mental health. SF-36 is a widely used scale in more than 170 countries for health outcomes [30]. The Japanese version has been proved with high validity and reliability [31, 32].

In the present study, MCS was adopted as a part of a three-component model (MCS, PCS, and RCS) which is suggested to be used in Japan [33]. The score was a 0-100 score calculated by five subscales: General Health (five items), Role Emotional (five items), Bodily Pain (two items), Vitality (four items), and Mental Health (five items). Each relevant item was a 5- or 6-point scale. A higher MCS score meant better mental health status.

All the scoring, coping with missing values, and calculation of MCS were conducted following the published guidelines [34].

2.2.3. Age Groups

The two age groups were defined as pre-old age (65 to 74 years old) group and old age (75 to 89 years old) group, using the definition by the Joint Committee of Japan Gerontological Society and the Japan Geriatrics Society [35], which has been accepted by the government of Japan as the standard.

2.2.4. Independent variables

Demographic variables included gender, equivalent income, present chronic illness, and physical function as covariates [36]. The variables of having child/children and living arrangement were also taken into account to control for potential support.

2.3. Statistical analysis

Descriptive statistics were conducted to show the basic characteristics. Then, the demographics and features of social support were compared between the two age groups by chi-square test. Multiple liner regression was carried out to assess the relationship between mental health and objects of specific sub-dimensions of social support (received ESS, provided ESS, received ISS, provided ISS) by enrolling each of the three object categories (kin, friends, community neighbors) respectively. All regression models were adjusted by gender, equivalent income, present illness, long-term care need, living status and having children. All the data were conducted with SPSS v24.0 with a level of significance at 0.05.

3. Results

3.1. Demographic characteristics

The response rate was 43.0% (n = 1547). Table 1 shows the demographic characteristics between the two age groups.

We analyzed 659 pre-old age individuals and 888 old age participants. Overall, the old age group had better mental health outcomes than the pre-old age group ($p = 0.007$); however, both groups showed similar numbers to the national standard (52.3 ± 9.2 for people in their 60 s and 53.5 ± 9.5 people in their 70 s in 2007) [34]. The analytic sample contained more males, especially in the old age group ($p = 0.006$). Most of the

participants had chronic illness while the old age group had a higher proportion ($p = 0.000$); however, most respondents did not require long-term care, especially in the pre-old groups ($p = 0.000$).

Table 1
Demographic and social economic characteristics between two age groups

Characteristic	Pre-old (n = 659)	Old (n = 888)	p value ^a
Mental health, meas \pm SD ^b	52.8 \pm 9.2	54.2 \pm 9.2	0.007
Sex, n(%)			0.006
male	344(52.2)	526(59.2)	
female	315(47.8)	362(40.8)	
Equivalent income, n(%)			0.271
< 100	49(8.2)	77(10.0)	
100–199	253(42.4)	345(44.9)	
200–299	188(31.5)	212(27.6)	
300–399	35(5.9)	56(7.3)	
400–499	49(8.2)	48(6.2)	
> = 500	22(3.7)	31(4.0)	
Present illness, n(%)			0.000
No recent illness	139(21.9)	87(10.4)	
Having present illness	497(78.1)	751(89.6)	
Physical function, n(%)			0.000
Not need long-term care	642(98.6)	773(89.6)	
Need long-term care	9(1.4)	90(10.4)	
Dwelling condition, n(%)			0.000
Living alone	74(11.4)	152(17.9)	
Not living alone	576(88.6)	695(82.1)	
Children, n(%)			0.984
No child/children	53(8.3)	70(8.3)	
Having child/children	589(91.7)	775(91.7)	
^a P-value is the comparison between pre-old groups and old age groups using Chi-square test or T-test (mental health);			
^b SD, standard deviation			

Most people were not living alone; however, there were more people living alone in the old age group ($p = 0.000$), even though most of them had children. The two age groups' equivalent incomes showed they weren't disadvantaged and were consistent with national data (medium of 244) [37].

3.2. Social support characteristics

Table 2 shows the social support based on the objects between the two age groups. Social support is divided by the sub-dimensions (functions and roles).

Table 2
Sub-dimensions of social support between the two age groups

Characteristic, n(%)				Pre-old (n = 659)	Old (n = 888)	p value ^a
SS ^b	Functions	Roles	Objects			
Having social support	Emotional social support	Receiver	Family or relatives	542(87.4)	660(84.8)	0.166
			Individual friends	358(57.7)	323(41.5)	0.000
			Community neighbors	148(23.9)	187(24.0)	0.943
		Provider	Family or relatives	521(85.0)	566(77.5)	0.001
			Individual friends	336(54.8)	273(37.4)	0.000
			Community neighbors	159(25.9)	182(24.9)	0.673
	Instrumental social support	Receiver	Family or relatives	569(92.4)	696(90.5)	0.221
			Individual friends	116(18.8)	96(12.5)	0.001
			Community neighbors	115(18.7)	129(16.8)	0.358
		Provider	Family or relatives	522(86.4)	529(76.7)	0.000
			Individual friends	144(23.8)	101(14.6)	0.000
			Community neighbors	120(19.9)	119(17.2)	0.225
No social support				11(1.8)	18(2.3)	0.502
4. ^a P-value is the comparison between pre-old groups and old age groups using Chi-square test;						
5. ^b SS: social support;						

Most participants were either a provider or a receiver. About 2% of respondents were not in a social supportive interaction. Emotional social support was provided by or to family or relatives (more than 80%) and individual friends (more than 50%) rather than community neighbors (approximately 25%). When we investigated instrumental social support, family or relatives became the major object (almost 90% in a provided social support context; about 80% in a received social support context).

As shown in Table 2, differences between the two age groups were found on all the sub-dimensions of social support with individual friends. Compared to the old age group, pre-old age people were more connected with friends when it comes to ESS or ISS (received ESS: $p = 0.000$; provided ESS: $p = 0.000$; received ISS: $p = 0.001$; provided ISS: $p = 0.000$) and provided more emotional or instrumental social support to their family or relatives (ESS: $p = 0.001$; ISS: $p = 0.000$). No significant differences were found on social support with community neighbors.

5.2. Relations between mental health and social support based the objects in two age stages

Table 3 to Table 6 (see Additional file 1,2,3,4) show the results of multiple regression models, which represent the associations between mental health and social support (ESS and ISS) based on the objects in the pre-old and the old age groups stratified by the roles (receiver / provider). Each table contains 6 models; Models 1 to 3 illustrate results in the pre-old age group while Models 4 to 6 show the results in the old group. Models 1 and 4, Models 2 and 5, Models 3 and 6 depict the results of social support with kin, friends, and community, respectively. Each model in each table was adjusted by gender, equivalent income, present illness, physical function, dwelling condition, children.

Table 3 (see Additional file 1) shows the relationship between received ESS and mental health based on the age groups. ESS from family or relatives, friends, and community neighbors had a positive association with mental health status in the pre-old age group (Models 1 to 3). Support from community neighbors ($\beta = 0.146$, $p = 0.001$) was stronger than individual friends ($\beta = 0.126$, $p = 0.007$) and kin ($\beta = 0.090$, $p = 0.048$), also explained the most variation ($R^2 = 0.052$). In terms of provided ESS (Table 4; see Additional file 2), only support to community neighbors yielded a positive coefficient ($\beta = 0.112$, $p = 0.015$). Variance among different objects in received or provided ESS were not found in the old age group (Models 4, 5 and 6 in Table 3 and Table 4).

Table 5 (see Additional file 3) shows the results of received ISS. The pre-old age people who were receiving ISS from family or relatives ($\beta = 0.202$, $p = 0.000$) and community neighbors ($\beta = 0.147$, $p = 0.001$) had better mental health outcomes; received ISS from kin explained more

variation ($R^2 = 0.068$). For the old age group (Models 4, 5, 6), ISS with different objects showed a positive association; however, this was not statistically significant.

In terms of provided ISS (Table 6; see Additional file 4), we found positive association with mental health among all of the three types of objects in the pre-old group (Models 1, 2, 3). The relative higher numbers were the results of support provided to family or relatives ($\beta = 0.152, p = 0.001$) and individual friends ($\beta = 0.145, p = 0.001$). The variable of giving social support to community dwellers also showed a significant relationship ($\beta = 0.115, p = 0.011$), even with a lower variance explanation ($R^2 = 0.044$). A significant coefficient for objects in the old age group wasn't found (Models 4, 5, 6).

Tables 3–6 show a negative relationship between chronic illness and mental health in both age groups. For the old age group, long-term care status showed similar results in all four tables.

Table 3. Multiple liner regression analysis modeling for objects of received emotional social support

		Pre-old (n = 659)				Old (n = 888)							
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value
Adjusted variables	Female	-0.048	0.276	-0.080	0.084	-0.070	0.119	0.043	0.336	0.040	0.374	0.048	0.284
	Equivalent income	0.105	0.018	0.089	0.047	0.110	0.013	0.070	0.116	0.065	0.144	0.074	0.094
	Having present illness	-0.165	0.000	-0.165	0.000	-0.166	0.000	-0.113	0.010	-0.114	0.009	-0.109	0.013
	Need long-term care	0.008	0.861	0.017	0.710	-0.006	0.901	-0.127	0.004	-0.123	0.006	-0.127	0.004
	Not living alone	-0.041	0.376	-0.010	0.818	-0.016	0.725	-0.020	0.652	-0.019	0.678	-0.029	0.521
	Having child/children	0.058	0.208	0.062	0.176	0.059	0.198	0.068	0.121	0.067	0.131	0.067	0.129
Objects	Family or relatives	0.090	0.048					0.004	0.927				
	Individual friends			0.126	0.007					0.030	0.495		
	Community dwellers					0.146	0.001					-0.059	0.185
	R2 ^b	0.039		0.045		0.052		0.03		0.031		0.033	
	N	497		497		497		520		520		520	
	F	3.88		4.372		4.901		3.281		3.349		3.542	

a β , standardized coefficients;
b R2, adjusted coefficient of determination;

Table 4. Multiple linear regression analysis modeling objects of provided emotional social support

		Pre-old (n = 659)				Old (n = 888)							
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value
Adjusted variables	Female	-0.050	0.263	-0.063	0.165	-0.075	0.103	0.033	0.480	0.026	0.581	0.033	0.476
	Equivalent income	0.099	0.029	0.100	0.025	0.112	0.012	0.074	0.103	0.070	0.123	0.074	0.105
	Having present illness	-0.165	0.000	-0.166	0.000	-0.162	0.000	-0.110	0.014	-0.112	0.012	-0.110	0.014
	Need long-term care	0.005	0.903	0.008	0.853	0.003	0.940	-0.132	0.003	-0.125	0.006	-0.131	0.003
	Not living alone	-0.028	0.538	-0.019	0.684	-0.020	0.669	-0.016	0.736	-0.016	0.724	-0.017	0.711
	Having child/children	0.062	0.174	0.062	0.177	0.056	0.218	0.051	0.257	0.048	0.286	0.051	0.259
Objects	Family or relatives	0.060	0.183					-0.008	0.854				
	Individual friends			0.087	0.055					0.041	0.375		
	Community dwellers					0.112	0.015					0.001	0.983
	R ² ^b	0.035		0.038		0.043		0.027		0.029		0.027	
	N	494		494		494		499		499		499	
	F	3.535		3.824		4.161		3.013		3.125		3.008	

a β , standardized coefficients;b R², adjusted coefficient of determination;

Table 5. Multiple liner regression analysis modeling objects of received instrumental social support

		Pre-old (n = 659)				Old (n = 888)							
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value
Adjusted variables	Female	-0.051	0.248	-0.053	0.244	-0.055	0.214	0.037	0.420	0.032	0.486	0.037	0.415
	Equivalent income	0.086	0.050	0.108	0.016	0.104	0.020	0.065	0.146	0.058	0.192	0.064	0.151
	Having present illness	-0.174	0.000	-0.168	0.000	-0.171	0.000	-0.112	0.011	-0.112	0.010	-0.111	0.011
	Need long-term care	-0.003	0.945	0.002	0.966	0.008	0.854	-0.128	0.004	-0.127	0.004	-0.128	0.003
	Not living alone	-0.070	0.131	-0.017	0.714	-0.005	0.917	-0.020	0.663	-0.013	0.777	-0.019	0.685
	Having child/children	0.041	0.364	0.056	0.219	0.049	0.277	0.071	0.116	0.069	0.117	0.071	0.111
Objects	Family or relatives	0.202	0.000					0.001	0.990				
	Individual friends			0.069	0.125					0.053	0.227		
	Community dwellers					0.147	0.001					0.007	0.867
	R2 ^b	0.068		0.035		0.052		0.029		0.032		0.029	
	N	494		494		494		515		515		515	
	F	6.138		3.577		4.861		3.216		3.434		3.221	

a β , standardized coefficients;
b R2, adjusted coefficient of determination;

Table 6. Multiple liner regression analysis modeling objects of provided instrumental social support

		Pre-old (n = 659)						Old (n = 888)					
		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
		β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value	β^a	p value
Adjusted variables	Female	-0.044	0.318	-0.071	0.120	-0.065	0.156	0.010	0.838	0.007	0.888	0.012	0.793
	Equivalent income	0.084	0.062	0.110	0.013	0.105	0.019	0.078	0.092	0.075	0.102	0.081	0.078
	Having present illness	-0.169	0.000	-0.165	0.000	-0.162	0.000	-0.121	0.008	-0.121	0.008	-0.120	0.008
	Need long-term care	-0.026	0.563	-0.024	0.586	-0.027	0.552	-0.115	0.013	-0.107	0.021	-0.113	0.014
	Not living alone	-0.037	0.422	-0.005	0.907	-0.018	0.694	-0.007	0.886	-0.014	0.769	-0.018	0.697
	Having child/children	0.038	0.413	0.048	0.292	0.045	0.328	0.045	0.325	0.046	0.319	0.046	0.316
Objects	Family or relatives	0.152	0.001					-0.031	0.527				
	Individual friends			0.145	0.001					0.035	0.443		
	Community dwellers					0.115	0.011					-0.035	0.447
	R ² ^b	0.053		0.052		0.044		0.025		0.025		0.025	
	N	489		489		489		479		479		479	
	F	4.941		4.798		4.232		2.762		2.79		2.788	
a β , standardized coefficients;													
b R ² , adjusted coefficient of determination;													

6. Discussion

In this study, we investigated whether the association between social support and mental health varied in different aging stages in relation to objects by integrating sub-dimensions of support such as functions and roles. Our results demonstrated different patterns within three categories of objects; either ESS or ISS from or to community neighbors showed a positive relationship with mental health whereas supportive interaction with kin or friends, as the main objects in a supportive social network among the older people, may lose its positive relation with mental health when it comes to specific subscales of social support (kin: provided ESS; friends: provided ESS or received ISS). Association between social support and mental health varied by the two age groups suggesting social support potentially related to the mental health status of pre-old age rather than the old age respondents. Our analysis showed a different association between specific objects and mental health, which was a novelty of our investigation for filling the blank of existing literature, considering available present publications barely discussed the social supports from the view point of those objects. We will discuss our findings regarding the three object categories respectively as follows.

Firstly; Models 1 in Table 3, Table 5 and Table 6 illustrated beneficial results from social supportive interaction with family and relatives, especially in terms of instrumental social support. Previous reports have shown that perceived support from family has a positive relationship [22], especially one's spouse for married people and children for people living without a spouse [21, 23]. Secondly; our analyses demonstrated that a supportive connection with friends had a positive result on mental health (Models 2 in Table 3 & Table 6), which was in accordance with previous researches [7, 23]. However, our results show that the relationship only happened when it was received ESS or provided ISS, which suggests a preference for taking less and giving more to friends. This may be influenced by Japanese culture which values being modest and not bothering others; however, further research is needed to clarify the mechanism.

Thirdly; while previous reports were limited to the level of friends or family, our results show that supportive interaction with community dwellers had a positive relationship with mental health (Models 3 in Table 3, 4, 5, 6). The social supports from or to community dwellers were almost the same in the two age groups (Table 2); however, they were only related with better mental health in the pre-old age adults, especially in terms of ESS. This suggests that promoting community-level interaction from the pre-old stage is important. Cornwell [38] reported weak ties, like contacts with acquaintances or neighbors help with keeping independence for the older people and Stahl et al. [39] reported the beneficial effect of neighborhood social quality on depression for elderly people living alone. Given that family or relatives are connected by marriage or blood and individual friends need time to build and maintain, community dwellers as public resources are available to each community dweller. Our result suggests a feasible low-cost public health intervention by promoting community participation.

Although we hadn't got a clear figure on the effects of social support during the real old age stage, Models 4, 5, and 6 in Table 3 to Table 6 demonstrated a negative pattern of being in long-term care only in the old-age group. The result is supported by some previous studies that indicated that low functional ability or disability was connected with a high incidence rate of depression [40, 41]. In addition, the present research verified the interaction of functional ability and social support and showed that providing family or relatives instrumental social support may mediate the negative relationship between low functional ability and mental health (Figure A1; see Additional file 5). This suggests that an intervention focused on disadvantaged older people groups could be introduced, which values provided social support within the family.

Taken together, our results confirmed the earlier finding [42] about an inward turn to close relationship in terms of social support in later life, as expected for the shrinking social networks documented in earlier findings [43–45]. In contrast, our data of association between mental health and social support suggested a potentially beneficial meaning of supportive interaction with community people. Given the shrinking social networks along with the natural aging process implies fewer interactions with not-so-close relationships like community neighbors or acquaintances, the older people are potentially at risk of losing availabilities of community-based mental-health-friendly support as time goes on. The intervention of community-based support is suggested to be discussed in the future.

Our investigation illustrated beneficial results of being a provider or a receiver of ESS or ISS on mental health, which echo previous studies [18, 46]; but the positive associations were only among pre-old respondents. An available paper revealed a similar outcome of a more significant association on well-being in the younger-old group [47]. A dynamic view of the aging process is suggested here; while the reasons about age-based differences on social support and mental health haven't been well documented. Our data depicted a positive association of total received ESS in both pre-old and old groups (Table A1; see Additional file 6), while results in respect of objects varied according to two age phases (Table 3). Subdivision of objects could be an inspiration that contributes to clarifying the age-specific mechanism of social support and mental health in the future.

There were some limitations to our research. First, we used a cross-sectional sample which limited our ability to establish a causal relationship. Second, although quota sampling was conducted to compare different ages and subdivisions of social support, it introduced a weakness concerning representation and generalization of results. Third, few items of social support were designed to ease the burden of filling up the questionnaire, considering the physical and comprehension limitations of the older people. More details on the multiple sub-dimensions and need to be investigated in future research.

7. Conclusion

The association between social support and mental health in later life differed based on the objects of social support regarding subscales of roles, functions. The association also varied by age; a positive relationship was found only in the pre-old group. Physical disability has a marked effect on the old age individual's mental health. Public health policy should consider the potential effects of social interaction with community neighbors.

Abbreviations

ESS: emotional social support

ISS: instrumental social support

Declarations

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

The study was approved by the ethics committee at the Division of Health Sciences, Osaka University Graduate School of Medicine (approval number 271). All participants provided written informed consent.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Authors Contributions

YL, MK, KK: concept, designed and developed the overall research plan. MK, KK: data collection. YL: data analysis, and interpretation of data. YL, MK, KK: wrote and had responsibility for the final contents of the manuscript. All the authors read and approved the final manuscript.

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