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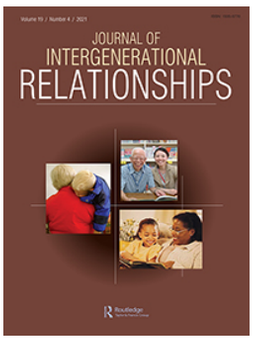

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Grandparenting Activities and Mental Health in Northern Sri Lanka

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ABSTRACT

Grandparenting activities are of increasing interest to researchers seeking to understand reduced social engagement and depression among aging adults. Heterogeneity in the population and caretaking roles complicate its measurement. We piloted a measure of grandparenting activities among 79 grandparents (aged 55+) in Sri Lanka and correlated those activity levels with psychological distress. Second, we explored whether the aforementioned correlation varied by grandparent functional limitations. We found that greater engagement in generative grandparenting activities was correlated with lower distress, and that association was stronger among grandparents with more functional limitations. We discuss possible explanations and implications of these findings.

KEYWORDS

Healthy aging; grandparenting activities; psychosocial distress; instrumental activities of daily living; quantitative research; Sri Lanka

Social engagement is linked with positive health outcomes, including 50% greater odds of survival regardless of initial health status, cause of death, or follow-up duration (Holt-Lunstad et al., 2010; see also Bourassa et al., 2017). Conversely, social isolation negatively impacts longevity and the physical/mental health of older adults (Jivraj et al., 2014; Tomaka et al., 2006). Social isolation is especially high among aging adults because their social networks shrink in old age due to retirement, widowhood, relocation, and the deaths of peers (Cavanaugh & Blanchard-Fields, 2015). In turn, low frequency of participation in social activities is tied to depression among older adults (Ang, 2018). Among men in that study, the protective effect of social participation became stronger with increased age, while among women, the protective effect remained constant across all ages (Ang, 2018). Furthermore, older adults reporting little or no social support are more likely to have more limitations in their physical and social functioning than older adults with robust

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socioeconomic support and frequent social engagement (Teo et al., 2017), which can subsequently increase their likelihood of poor physical and mental health outcomes (Lenze et al., 2001; Ma et al., 2018).

As an aging person's network shrinks, she or he is more likely to invest in existing bonds – especially family relationships – rather than replace lost relationships with new ones (Carstensen et al., 2003). High-quality family relationships, defined via frequent, positive family activity and self-reported attachment, are known to reduce the association between depression and reduced social activities among adults 60+ years old (Holtfreter et al., 2017). One key relationship of interest in the family context is the grandparent-grandchild relationship. While it is clear that a strong grandparent-grandchild relationship is beneficial to the grandchild, there is mixed evidence about the extent to which grandparenting is beneficial for the aging individual's physical or mental health (Arpino & Bordone, 2014; Komonpaisarn & Loichinger, 2019; Scheibe & Carstensen, 2010). Variation in the impact of grandparenting on health is thought to be tied to caregiving burden and cultural context (Vermote et al., 2021. A recent systematic review of studies in the United States comparing the mental health of grandparents providing custodial caregiving to those not engaged in parenting activities concluded that custodial grandparenting negatively influences mental health (Kelley et al., 2021). In contrast, another systematic review looking at the impact of supplementary caregiving found several studies demonstrating positive influences of grandparenting on psychological well-being, but noted that greater research was needed to understand the influence of supplementary caregiving in a wide range of contexts (Kim et al., 2017). One limitation of the literature examining grandparent involvement is that most studies rely on relatively simplistic assessments of grandparent caregiving via questions regarding co-residency, frequency of contact, an estimate of the number of hours spent in broad "caregiving" activity, or custodial status (Hank et al., 2018; Kamnuansilpa & Wongthanavasu, 2005; Uhlenberg & Hammill, 1998). For example, Dunifon et al. (2018) conducted a secondary analysis of U.S. households where grandchildren live with their grandparents (6% of the sample) as well as those who do not, and found that grandparent residential status and child age greatly influenced the frequency of participation in seven categories of activities (household chores and errands, child care, eating meals, achievement and learning activities, social or entertainment activities, play, and media use). Studies that provide slightly more nuanced information on grandparent-grandchild interactions are rarely linked to health outcomes. Dunifon et al. (2020) offer one exception where they examined the relationship between grandparent-grandchild interaction and grandparent subjective well being; they found that grandparents experienced more happiness and meaningfulness when engaged in activities with their grandchildren as opposed to spending time with other people or alone. At the same time, this relationship

was moderated by family type, such that grandparents raising grandchildren while the parental generation is absent experienced less happiness in momentary assessments of time spent with grandchildren than time spent alone. None of these articles evaluated the older adult's age or health or how that might affect their ability to engage in physical or social activities.

In addition to coarse measurement, the literature on grandparent health is hindered by other limitations such as a lack of focus on grandparent characteristics, despite the recognized heterogeneity of multigenerational households (Hayslip et al., 2019, e154) and the importance of assessing factors such as functional limitations (Farone et al., 2007; Tomioka et al., 2016) or grandparent characteristics such as age, sex, health status, or socioeconomic status that may have intersecting influence on role expectations placed on the grandparent. Grandparental involvement is very diverse, with varying levels of responsibility and activity level that depend on family structure and expectations (Fuller-Thomson & Minkler, 2001; Goodman & Silverstein, 2002). Associations of grandparenting on well-being have been shown to vary by custodial status (Dunifon et al., 2020), as well other factors such as grandparent frailty and physical and emotional demands (Goodman & Silverstein, 2002; Kahana et al., 2015, pp. 159–161). Additionally, these factors are known to be related, such that custodial grandparents have greater risk for functional limitations (Minkler & Fuller-Thomson, 1999). Functional limitations have also been shown to influence the likelihood of grandparental engagement in various levels of care depending on custodial status, such that functional limitations influence the likelihood of a grandparent engaging in babysitting, but not the likelihood of providing co-resident care (Luo et al., 2012). It is possible that functional limitations mediate the relationship between grandparent caregiving and well-being, such that for grandparents without functional limitations, higher caregiving burden can still provide positive stimulation while grandparents with functional limitations experience greater caregiving burden as a stressor that negatively influences well-being. Investigating potential mediators of grandparenting health, such as demographics and functional limitations may help to explain the mixed body of literature.

Further limiting this body of work, most of the research to date on this topic has been conducted in high-income countries (HICs) such as the U.S., England, and Sweden, where the norms around grandparenting and household structure differ from those of low and middle-income countries (LMICs). In LMICs such as Sri Lanka,[1] social norms expect children to support their elderly parents ((Watt et al., 2014) such that multigenerational households are common[2] (Risseeuw, 2012) and there is potential for closer engagement with co-resident kin. Depending on the level of custodial care required (Burn & Szoeke, 2015), such family engagement may improve everyday functioning, thereby protecting against the development of disability in activities of daily

living (James et al., 2011). In this study, we sought to evaluate whether the social activity and cognitive stimulation provided by the grandparent-grandchild relationship could not only delay or ameliorate the development of physical/functional disability (ibid) in the grandparent, but also moderate the relationship between functional limitations and associated psychosocial distress.

The present study focused on Sri Lanka, a country that has experienced high international migration and boasts one of the most rapidly aging populations in the world (Kaluthantiri, 2015). Within the country, three decades of protracted civil war resulted in substantial internal and external displacement as well as the death of more than 100,000 people (Husain et al., 2011; Somasundaram, 2013). This ethnic conflict resulted in many families leaving the country altogether or sending away young family members as refugees in the late 1980s to early 2000s (Hugo & Dissanayake, 2017; Venugopal, 2006). A recent study in the area identified an increased prevalence of mental health diseases in the Northern Province after the war (Doherty et al., 2019). In the wake of these events, elders' disrupted social networks, including their interactions with their children and grandchildren, have not been well studied. Thus, the specific objectives of the study were to (1) develop and pilot test a measure of grandparenting activity in Jaffna, Sri Lanka, (2) investigate how engagement in grandparenting activities varied by grandparent characteristics including age, subjective social status (SSS), and functional limitation, (3) conduct a preliminary test of the hypothesis that more frequent social interaction might be associated with indicators of better mental health, and finally, (4) evaluate whether the hypothesized positive association between instrumental and socioemotional grandparenting activities (which can be positive or negative) and mental health was stronger (or weaker) for grandparents in poorer physical health.

Method

Participants

The current analysis was based on a convenience sample of 79 community dwelling individuals selected from an urban area (the city of Jaffna) or rural neighborhoods in a village outside of the city of Jaffna in northern Sri Lanka. Eligible grandparents were at least 55 years old[3] and self-identified as a grandparent or great-grandparent. The sample included 61 women and 18 men. Selected children ranged in age from 0–15 years. A register of older persons and their addresses was generated with the help of local government officials (the Grama Niladari) who are responsible for their village communities, and an initial ("index") household was randomly selected from the list. Two local research assistants then approached eligible grandparents to invite them to

participate after explaining the study's aims and procedures. From the index household, snowball sampling was used to identify other older adults with grandchildren in the study area. Eligible grandparents who expressed interest were consented into the study and completed the grandparent-grandchild activities scale as part of a larger survey conducted between October and December 2018. As a token of appreciation for their participation, survey participants received a small packet of sweets and fruit. All participants provided written consent and study procedures were conducted in Tamil. Before formal administration, we pre-piloted our survey and grandparenting activities scale with two local experts who evaluated its face validity and helped refine our wording regarding potential points of confusion. As a result, some idioms (such as "do you feel fidgety") were revised for local relevance. All data were transcribed and translated from Tamil to English by one researcher and back-translated by a second to confirm accuracy. The IRB at both the the University of North Carolina at Chapel Hill and the Faculty of Medicine at the University of Jaffna provided ethical approval for the study.

Measures

Creation of a Grandparent-Grandchild Activities Scale. To create the grandparenting activities scale, we drew activity categories from the existing literature (Dunifon et al., 2018; Hank et al., 2018) and adapted and refined them for local relevance. This process generated ten representative categories: 1) eating meals together, 2) reading with/to their grandchildren, 3) playing games, 4) telling stories, 5) singing, 6) helping with schoolwork tasks or giving advice/passing on knowledge, 7) holding/soothing (or providing emotional support, depending on age of grandchild), 8) general "watching" them, 9) dropping off/picking up from school or other activities, and 10) "not much," such as simple co-presence while watching TV. This scale did not examine more onerous caregiving duties that are common in custodial relationships, such as disciplining or bathing their grandchildren or providing them financial assistance. Grandparents specified whether these activities were dyadic or whether the child's mother and father were also involved/present, so as to differentiate the presence of other adults from the grandparent's interactions with their grandchildren . The "not much" variable was not included in the activity score sum due to its ambiguous nature and low endorsement (6%).

Each grandparent was asked to describe how often they engage in each activity with up to three grandchildren; no restrictions were placed on which grandchildren the grandparent chose to describe, including residential status. Recognizing the potential difficulty of granular self-report among grandparents who only see their grandchildren intermittently, the frequency options available for each activity differed depending on whether or not the grandchild lived with the grandparent. It also recorded whether non co-resident

grandchildren lived within walking distance, elsewhere in the city or Jaffna District, in another city in Sri Lanka, or in another country, acknowledging that even within Sri Lanka, a grandparent might live in Jaffna while their grandchildren live in Galle, 500 kilometers (and a 10-hour train ride) away. If the grandchild lived with the grandparent (i.e., was co-resident), frequency options included "never," "rarely," "at least once a month," "at least once a week," and "every day"; if the grandchild did not live with the grandparent, the grandparents were asked to report how often they engage in each activity when they are with their grandchildren; options included "never," "rarely," "sometimes," and "often." To enable comparability of responses across both co-resident and non co-resident grandchildren, responses to each activity were first dichotomized so that "never" or "rarely" received a score of 0 and all other responses received a score of 1. Thus, for each grandchild, an activity received a score of 1 if the grandparent reported doing it "at least sometimes" with that grandchild. To generate an activity score at the level of the grandparent, these dichotomous responses were collapsed across grandchildren so that, for a given activity, a grandparent scored a 1 if they engaged in that activity with at least one grandchild or great-grandchild, 0 otherwise. In other words, a grandparent needed to engage in a given activity with at least 1 grandchild sometimes or more frequently to "get credit" for that activity. Finally, the 9 collapsed activity scores were summed to generate a total score: the number of activities that the grandparent reported doing with one or more grandchildren at least sometimes, ranging from 0 to 9.

Psychological distress

We used the Kessler Psychological Distress Scale (Kessler-10), a 10-item questionnaire that yields a global measure of nonspecific psychological distress via questions regarding symptoms of depression, agitation, and anxiety experienced during the past 30 days (Kessler et al., 2002). Questions were rated on a 5-point scale from "none of the time" to "all the time" (scored 1–5 respectively, with a total score ranging from 10–50). This scale has been used in multiple countries (Cornelius et al., 2013; Easton et al., 2017), and it has been translated to Sinhala and validated in a Sri Lankan population (Wijeratne et al., 2011). In the present study, it was administered in Tamil. Scores above 24 indicate a likely moderate or severe mental disorder (e.g., depression or anxiety).

Functional ability

To assess the functional ability of the grandparents in our sample, we used the Instrumental Activities of Daily Living (IADL) scale. The IADL is an 8-item scale assessing an older adult's ability to live independently and handle

everyday tasks such as food preparation, use of transportation, and handling money (Lawton & Brody, 1969). IADL function is typically lost before basic activities of daily living (such as bathing, eating, and using the toilet), such that assessment of IADLs could identify the early stages of physical/cognitive decline in an older adult who otherwise appears healthy. Historically, individuals scoring ≤ 7 out of 8 are deemed to have a deficit or IADL disability (Kenig et al., 2015; Lawton & Brody, 1969). In the present study, item #5 (about "doing laundry") was subsumed under "doing housework" and therefore excluded. The remaining 7 items were asked of both male and female respondents, clarifying affirmative responses that were due to gender roles or cultural norms rather than physical or cognitive ability. Questions were scored on a trichotomous scale of 0 ("completely unable," indicating low functioning) to 2 ("able to complete the task without assistance") (Graf, 2008, p. 54). It had been previously administered to Sri Lankan populations Østbye et al 2010; D. D. Siriwardhana et al., 2018) and was demonstrated to have high internal consistency (Cronbach's alpha = 0.91) and inter-rater reliability (ICC = 0.57–0.91). Total scores ranged from 0–14, with higher scores indicating better functional status. In the present study, a sensitivity analysis led to the data-driven decision to use a cutoff score of 10 or less, indicating the presence of a higher level of limitations in stratified analyses.

Other variables

We also gathered information on several sociodemographic domains of interest. These included subjective social status, educational attainment, marital status, and working status. Subjective social status (SSS) was assessed using an adapted version of the Macarthur Scale of Subjective Social Status, which depicts a 10-rung ladder representing where people stand in their community (Demakakos et al., 2008). We allowed participants to mark each rung or the space in between each rung, resulting in 19 possible response options. Both life achievements and socioeconomic status are reflected by this pictoral scale, thereby making it relevant to poorer individuals that may have high social standing in their community despite not having high education or income. It has been deemed to provide a better predictor of health status or declining health than objective measures of socio-economic status based on income or occupation in aging populations (Singh-Manoux et al., 2005).

Analytical methods

Data were collected and entered into REDCap (Harris et al., 2009) by the two research assistants, with the first author reviewing all data and resolving any discrepancies. During data analysis, we first calculated descriptive statistics to examine the distributions of all variables. We then constructed linear regression

models predicting psychological distress based on our grandparenting activities scale. We adjusted the models for age, sex, and subjective social status. These variables were identified in the literature as potential confounders of the relationship between grandparent engagement and psychological distress. We also calculated Cronbach's alpha ($\alpha = 0.81$) for internal consistency between items of the grandparenting activities scale. Finally, to assess moderation by the degree of grandparent functional limitation, we included an interaction term in all models, using a cutoff of ≤ 10 vs. ≥ 11 on the IADL.

Results

The 79 grandparents included in our analysis ranged in age from 55 to 90 (mean = 67.5); roughly three-quarters were grandmothers, the remainder were grandfathers. The majority (72%) had 10 years of education or less, and half of the grandparents were currently married; the other half were widowed. The sample was evenly split between those living in an urban area ($n = 40$) and a rural area ($n = 39$). Twenty-seven percent were currently engaged in part- or full-time economic activity while 21% were retired and the remaining 53% were either a stay-at-home parent or had never been employed. Ninety-five percent of the sample lived in a multigenerational household with at least two other adults, and 51.9% ($n = 41$) also lived with one or more grandchildren under the age of 18 (mean age = 9.4). No grandparents lived in a skipped generation household (that is, a household where their adult children were absent and they were raising their grandchildren). During activities with their grandchildren, grandparents reported that the children's parents were often present, but they were not actively participating most of the time. While engaged in such interactions, grandparents reported being alone with their grandchildren approximately 11% of the time. They reported being engaged in social activities as well as custodial caretaking during that time.

The majority of the sample scored within the healthy range of psychosocial distress, with a mean Kessler-10 score of 18.89. However, 23% of participants scored above 24 on the Kessler-10, indicating the likelihood of moderate or severe mental disorder. The average IADL score was 11.20, signifying that the majority of participants had at least one functional limitation. Furthermore, about a quarter of grandparents reported significant functional limitations, with 24% scoring 10 or lower on the IADL scale. Table 1 presents the demographic characteristics of the sample.

Patterns of grandparenting activity

The most common activity that grandparents reported engaging in sometimes or more frequently with at least one grandchild was eating together (91%), followed by playing together (87%) and telling stories (85%) as well as either

Table 1. Characteristics of grandparents in the study sample (N = 79).

Socio-Demographics	Mean (SD) or % (n)
Age	67.46 (7.82)
Female	77% (61)
Marital Status	
Married	48% (38)
Widowed	49% (39)
Other (Never Married/ Divorced)	2% (2)
Level of Education	
None	1% (1)
Primary (Grade 1–5)	29% (23)
Secondary (Grade 6–10)	42% (33)
Passed GCE (O/L) or higher	28% (22)
Subjective Social Status	12.05 (4.18)
Engaged in Paid Economic Activity	
Yes	27% (21)
No	73% (58)
Number of Grandchildren	
Urban Residence	3.33 (2.31)
Rural Residence	3.77 (2.47)
Number of Great-Grandchildren	
Urban Residence	0.83 (2.48)
Rural Residence	0.64 (1.86)
Grandchild Age	7.08 (4.52)
Health Indicators	
K10 Distress Scale	18.89 (7.49)
IADL Scale	11.20 (3.57)
Low functioning (≤10)	24% (19)
Not low functioning (≥11)	76% (60)

holding the child or providing emotional support, depending on the child's age (85%). Other activities, such as reading to the child or transporting them to/from activities, were less common (Table 2).

On average, grandparents reported engaging in 6 of the 9 activities (SD = 2.34) sometimes or more frequently, with a range of 0 (1 grandparent) to 9 activities (8 grandparents) (Figure 1). The internal consistency of the grandparenting activities scale was relatively high, indicating a very good level of reliability.

Table 2. Percentage and number of grandparents who report engaging in each activity sometimes or more frequently with one or more grandchildren (N = 79).

Activity	% (n) Grandparents
Eat meals together	91% (72)
Play games	87% (69)
Tell stories	85% (67)
Hold/Soothe (babies)	85% (67)
Emotional support (older children)	
Watch child	77% (61)
Help with schoolwork/Teach	56% (44)
Sing songs	54% (43)
Read with/to child	42% (33)
Pick up/Drop off from activities	23% (18)

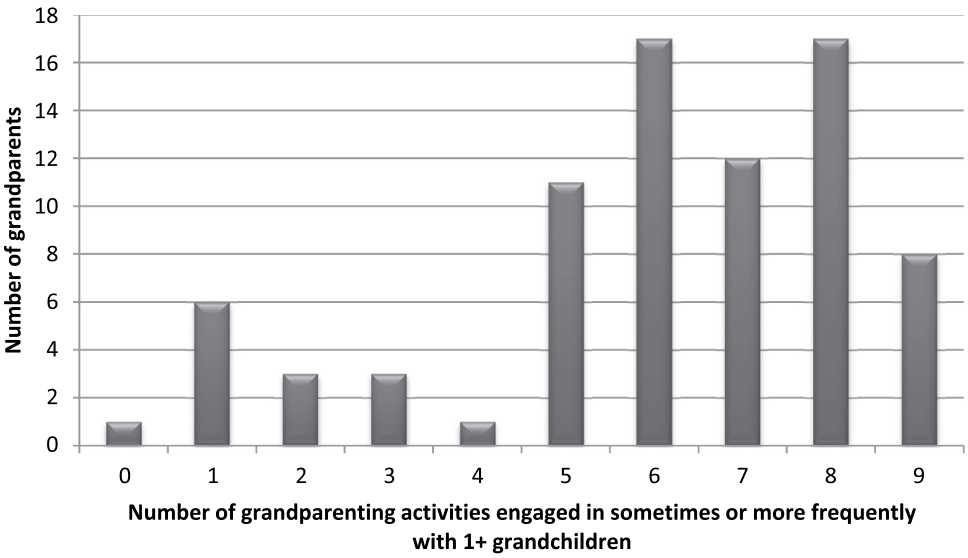

Figure 1. Distribution of grandparenting activity sum score (N = 79).

The most salient predictors ($p < .05$) of a higher number of shared activities included younger grandparent age, greater number of grandchildren, and higher education (Table 3). Interestingly, grandmothers and grandfathers reported similar total levels of activities (5.95 vs. 6.17, $p = .73$). In addition, grandparents with more functional limitations reported lower levels of activity (3.89 among those with IADL scores of 10 or less, in comparison to an activity sum score of 6.67 among those with higher IADL scores).

Although the between-group difference in activity score was small, co-residence did lead to substantial increases in the frequency of particular activities, such as 100% of the sample endorsing eating together sometimes or more frequently as opposed to 75.56% of grandparents with non co-resident grandchildren doing so. Likewise, 85.29% of grandparents endorsed reading stories to their co-resident grandchildren sometimes or more frequently, in contrast to 62.22% of grandparents with non co-resident grandchildren. Moreover, grandparents who interacted with both co-resident and non co-resident grandchildren often reported on a higher number of grandchildren (mean = 2.96) when compared to those who only reported on co-resident grandchildren (mean = 2.50) or non co-resident grandchildren (mean = 2.38).

Furthermore, given the high percentage of grandfathers in the sample, we also evaluated the relative percent of grandfathers vs. grandmothers who engaged in a given activity at a given frequency level. We found that, overall, grandfathers were no more or less likely than grandmothers to engage in any particular activity, with the exception of picking up or dropping off their grandchildren from school or other activities. Of note, among all grandparents who picked up or dropped off their grandchildren every day, 45% were grandfathers and 55%

Table 3. Correlates of the activity sum score* (N = 79).

	Mean (SD)
Total score	6.00 (2.34)
Age	
≤67 (At or Below Median)	6.58 (2.18)
>67 (Above Median)	5.41 (2.38)
Number of grandchildren or great grandchildren under 15 years	
1 to 2	5.13 (2.82)
3 or More	6.36 (2.04)
Number of activities with co-resident	5.93 (2.95)
grandchildren only	5.23 (2.43)
Number of activities with non co-resident grandchildren only	7.19 (1.10)
Number of activities with co-resident and non co-resident grandchildren	
Sex	
Grandmother	5.95 (2.39)
Grandfather	6.17 (2.23)
Residence	
Urban	6.38 (2.17)
Rural	5.62 (2.48)
Marital Status	
Married	6.74 (2.15)
Divorced/Widowed/Never Married	5.32 (2.33)
Education	
Never or Primary (Grade 1–5)	4.92 (2.52)
Secondary (Grade 6–10)	6.55 (2.11)
Passed GCE (O/L)	5.92 (2.56)
Passed GCE (A/L) or higher	7.00 (1.32)
Subjective Social Status	
<11 (Lowest Third)	5.50 (2.56)
11–13 (Middle Third)	6.03 (2.58)
>13 (Highest Third)	6.38 (1.81)
Employment	
Currently Engaged in Paid Economic Activity	6.62 (2.31)
Not Engaged in Paid Economic Activity	5.78 (2.33)
Loyola Generativity Scale	
<38 (Lowest Third)	4.54 (2.21)
38–50 (Middle Third)	6.15 (2.15)
>50 (Highest Third)	7.07 (2.03)
Lubben Social Network Scale	
1–2 (Lowest Third)	5.89 (2.56)
3 (Middle Third)	5.94 (2.78)
4–8 (Highest Third)	6.13 (2.05)
IADL	
≤10	3.89 (1.92)
≥11	6.67 (1.96)

* The activity sum score is the total number of activities engaged in sometimes or more frequently with one or more grandchildren.

were grandmothers, even though grandfathers only represented 23% of the total sample and grandmothers represented 77%. This indicates that grandfathers were over-represented among grandparents who picked up/ dropped off their grandchildren, although otherwise grandparent sex did not differentially impact the number or type of activities with grandchildren.

Associations between grandparenting activities and psychological distress

After adjusting our linear regression models for grandparent sex, subjective social status, and age, each point on the grandparenting activities score was associated with a 1.21-point lower psychological distress score (95% CI: −1.79 to −0.63) (Table 4, Figure 2).

In models that were stratified by level of functional limitation, among grandparents with worse functional impairment (IADL scores ≤10), each point on the grandparenting activities score was associated with a 1.17-point lower psychological distress score (95% CI: −2.24 to −0.10), while among those with better functioning, this association was meaningfully ameliorated (β = −0.24, 95% CI: −0.86 to 0.39) (Figure 3).

Table 4. Crude and adjusted models of the association between activity sum score and the Kessler-10.

	Full sample (n = 79)		IADL ≤10 (n = 19)		IADL ≥11 (n = 60)	
	β	95% CI	β	95% CI	β	95% CI
Crude	−1.23	(−1.88, −0.58)	−1.02	(−2.24, 0.20)	−0.02	(−0.75, 0.72)
Adjusted*	−1.21	(−1.79, −0.63)	−1.17	(−2.24, −0.10)	−0.24	(−0.86, 0.39)

*Adjusted linear model controls for age, sex, and subjective social status.

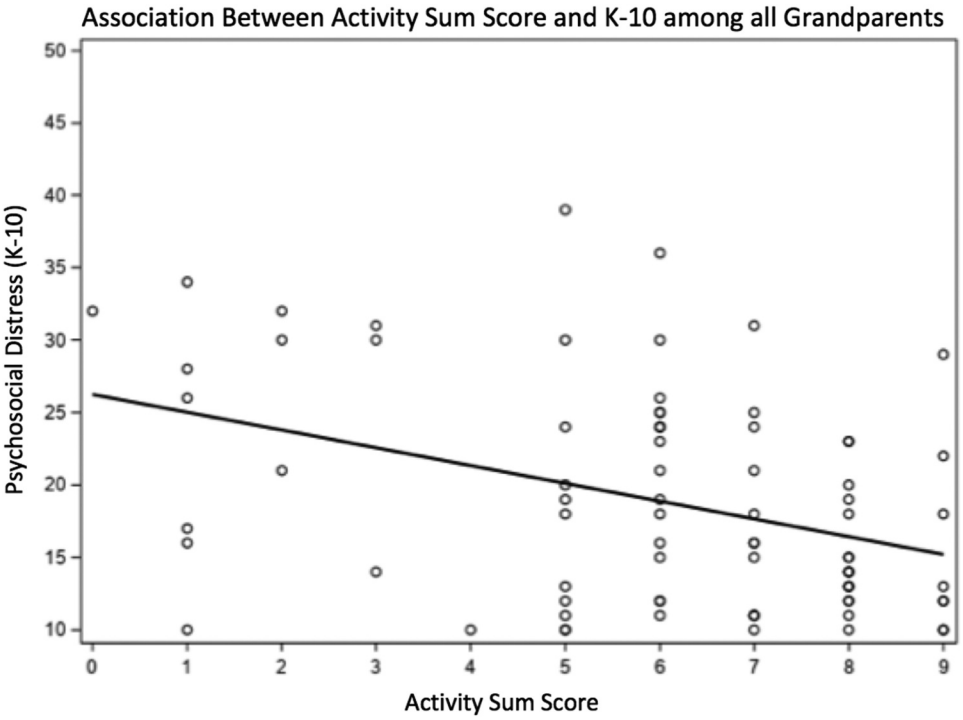

Figure 2. Association between activity sum score and psychosocial distress among all grandparents.

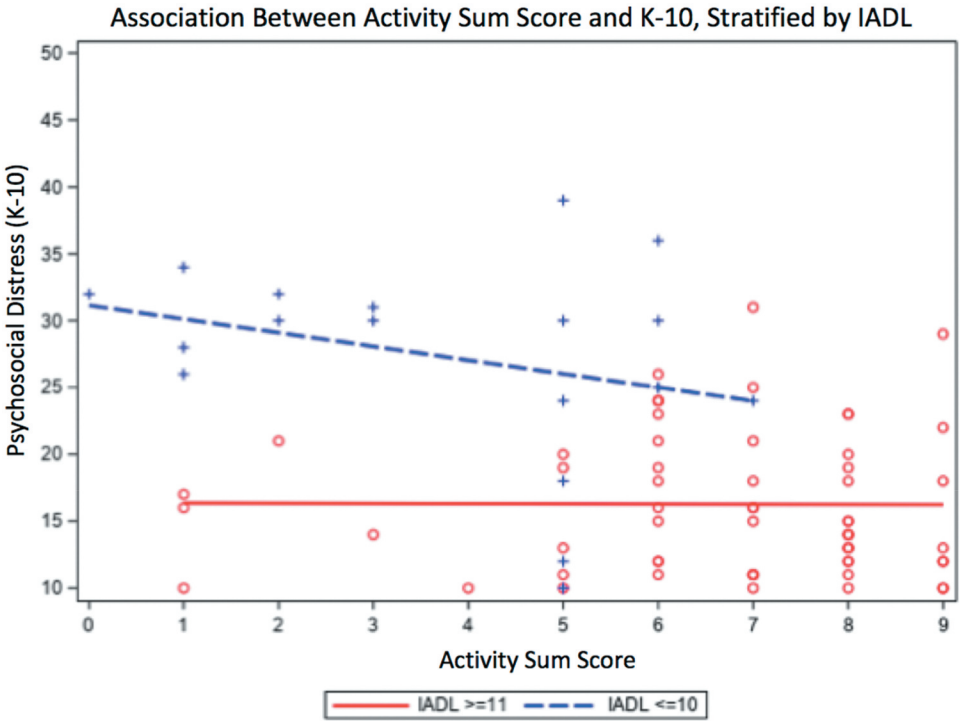

Figure 3. Association between activity sum score and psychosocial distress among high functioning (IADL ≥11; N = 60) vs. low functioning (IADL ≤10; N = 19) grandparents.

The observed association between engagement in more grandparenting activities and lower psychosocial distress appeared to be driven by grandparents with worse functional limitations (the interaction term from the IADL and grandparenting activities was 0.17). We conducted chi-square tests in order to evaluate the frequency of each activity according to a grandparent's level of functioning, and found that grandparents with worse functional limitations were consistently less involved in particular types of grandparenting activities. While that difference was most significant for instrumental caretaking activities (i.e., babysitting and pick-up/drop off from events) and physical activities such as playing with them and holding or soothing grandchildren, this pattern of lower engagement also held for some socioemotional activities such as singing songs.

Discussion

The objectives of this study were to develop and pilot a measure of grandparenting activities in a sample of older Sri Lankan adults and then identify a) how levels of grandparenting activity vary according to grandparent characteristics, as well as b) whether an association exists between grandparenting

activity and mental health. We found that the grandparent-grandchild relationship is quite complex. Grandparents engaged in a wide variety of activities with co-resident as well as non co-resident grandchildren while, at the same time, there was meaningful variation in levels of activity between grandparents. Furthermore, engaging in more positive grandparenting activities were related to reporting less psychosocial distress, especially among grandparents with worse functional impairment. These findings suggest that grandparents with greater functional limitations experienced greater mental health benefits from engagement in positive grandparenting activities.

Our study makes several contributions to the literature in the areas of aging, mental health, and grandparent-grandchild relationships. First, our measure of grandparenting activities revealed meaningful variation in the types and levels of grandparental involvement, independent of grandparent sex. For example, in this sample, grandfathers and grandmothers reported fairly similar levels of overall activities but engagement in some specific activities differed according to sex (i.e., grandfathers tend to do more "picking up from school"). In ongoing analyses, we are examining in more detail the predictors of different activity patterns, both in terms of grandparent and grandchild characteristics. A key area of inquiry is examining to what extent the frequency, valence, and diversity of activities reflects a relationship with the grandchild that is perceived as closer or more meaningful. Our measure also indicated that grandparents consistently played an active role in playtime activities and conveying wisdom to the younger generation, rather than their contributions merely tending toward instrumental support (cooking, cleaning, childcare). Several events in Sri Lanka have greatly impacted multigenerational relationships, including family member migration (Kaluthantiri, 2015, pp. 155–158, 207–212; C. Siriwardhana et al., 2015) and casualties and displacement in Jaffna resulting from the 26-year Sri Lankan Civil War that ended in 2009 (Witting et al., 2019), making our evaluation of co-resident as well as non co-resident grandchildren (including those living abroad) important to the local context.

Second, we showed that shared activities between grandparents and grandchildren may translate into measurable positive mental health impacts for grandparents. The fact that the shared activities were more closely correlated with mental health among those grandparents with worse functional limitations points toward one pathway through which certain family relationships, such as those with grandchildren, increase in importance during late life. Interacting with the youngest generation may have especially strong positive psychological impacts through pathways such as generativity (Maselko et al., 2014; Thiele & Whelan, 2006). Grandparents with worse functional limitations were less involved in instrumental activities and caregiving responsibilities, such as babysitting, thereby reducing the potential negative impact of

caregiving burden, and potentially enabling them more simply to "enjoy their grandchildren." At the same time, there is much more to tease apart than grandparents having fewer expectations for custodial caregiving placed upon them. One alternative explanation for this is that grandparents with no functional limitations do not need to rely on their grandchildren in order to socialize, but rather can participate in community events, for example. Grandparents with worse functional limitations may also be confined to the home, making this one of the few ways they can interact. Therefore, those who choose to invest in relationships with their grandchildren may experience more positive emotions and lower distress, thereby helping to explain previous null or contradictory findings in studies examining the link between grandparent caregiving and health.

Limitations

Our recruitment method allowed participating grandparents to select three grandchildren or great-grandchildren about whom they wanted to talk, and this often resulted in individuals selecting the grandchildren with whom they feel closest (rated on a scale of 1–4, with 4 being "very close"). However, it is unknown whether their level of engagement with those whom they feel affectively close is comparable to the time and energy spent with other grandchildren, or whether the frequency of activities in which they engage corresponds to the activities they most preferred or personally enjoyed. Furthermore, although we did ask how often other adults were present during interactions with their grandchildren and gauge their social network through the Lubben social network scale, we did not quantify how frequently participants socialized with other individuals who are not their grandchildren or great-grandchildren. Similarly, we do not have information on perceived burden resulting from caring for the grandchild. Finally, many individuals endorsed engaging in most grandparenting activities "often"/"everyday," raising a question regarding whether social desirability bias led respondents to answer questions in a manner that would be viewed favorably by others rather than accurately reflecting their behavioral engagement. In future research, this could be addressed by deploying mixed methodologies that do not rely on self-report. We call for further exploration of the relationships between grandparents and parents, as well as the study of positive activities with grandchildren and the caregiving burden for grandchildren.

Although this research showed that co-residence led to substantial increases in the frequency of particular activities and it provided insight into the relationship between grandparenting activities and psychosocial distress, this pilot study used a snowball sampling approach in both an urban and rural

neighborhood. Future, larger scale studies should aim to stratify based on relevant subpopulations (including men and women, rural and urban, multigenerational households and grandfamilies) and then randomly sample based on the register of older adults provided by the local government. This would also enable researchers to tease apart different kinds of multigenerational living arrangements (and their temporary or long-term nature) and evaluate their impact on instrumental vs. generative grandparenting activities and grandparent psychosocial distress.

Conclusion

In this study, we created a grandparenting activities scale and pilot tested it among a sample of 79 older adults in Sri Lanka. We found that grandparents engaged in a wide variety of activities with their grandchildren and that there was meaningful variation in levels of activity between grandparents. Gathering details on specific activities can help identify precise types of activities that are linked with better grandparent mental health. This information not only points to specific mechanisms linking social engagement with mental health, but it can also help inform intervention development. Despite past literature finding that people with more functional limitations have lower social participation and higher levels of distress, this study demonstrated that older adults with more functional limitations reported much less psychosocial distress as they engaged in more grandparenting activities.

Notes

1. Note that at the time of research, Sri Lanka was a lower-middle income country, and at the time of submission, it was classified as an upper-middle income country.
2. Although co-residence is currently common, the World Bank (2008) anticipates that socioeconomic and demographic changes will lead to a greater number of older adults living alone or in assisted living/institutional settings in the future.
3. In Sri Lanka's private sector, 55 years of age is the usual retirement age for men, and 50 years of age for women (United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), 2015, p. 20). Public sector employees must retire and take their pension by age 60 (ibid, p. 16).

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