



Mental and physical health among ‘sandwich’ generation working-age adults in the United States: Not all sandwiches are made equal

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ABSTRACT

Objective: This research examined mental and physical health differences by (1) potential upward and downward care recipients and (2) heterogeneous time and money transfer arrangements among working-age adults aged 35–64 in the U.S. who are considered to belong to the ‘sandwich generation’.

Methods: Data for this study came from the Panel Study of Income Dynamics 2013 Family File and Rosters and Transfers module (n = 4609). For the second study objective, we restricted the analytic sample to individuals with at least one living parent/parent-in-law and at least one child (n = 2228). We varied the sandwich generation experience by whether upward (i.e., to parent), downward (i.e., to children), or transfers at both directions occurred. We then fit a series of logistic regression models to study psychological distress and self-rated health status differences among various classifications of sandwich generation, controlling for basic socio-demographic factors and living arrangements. For both samples, we ran separate models for those without underaged coresident children.

Results: Compared to respondents without potential care recipients, sandwiched individuals do not differ concerning severe psychological distress or poor/fair health. Conditional on being sandwiched between parents/parents-in-law and adult children, providers of both upward and downward time transfers have almost twice the odds of having severe psychological distress while money providers to parents/parents-in-law have about 1.6 times higher odds of reporting poor/fair health status.

Conclusion: This study dispels the notion that being part of the sandwich generation is automatically deleterious to mental and physical health. Rather, it is the provision of certain transfers whilst being sandwiched that is associated with worse health outcomes.

1. Introduction

The increase in life expectancy over the past century has led to transformations in population composition and demographic aging around the world. This trend has brought about attention to the rising number of people reaching ages in which some form of support is needed. Older adults are more likely to have a greater need for health-care and long-term care compared to younger adults. According to the National Alliance for Caregiving (2019), about 40 million individuals in the United States (U.S.) provide care in some form to an adult. Approximately 28% or 11 million are additionally burdened by having to care for not only an adult but also for a child/grandchild. The rise of this group of carers, called the “sandwich generation,” has prompted an increased level of attention to caregiving arrangements in the nation

(Friedman et al., 2017).

This topic is not new; Miller (1981) was first in referring individuals caught between having to care for two generations simultaneously as the “sandwich generation” (see a paper by Patterson, 2022 for an overview on the topic). Since then, researchers have created various typologies of the sandwich generation; for example, Abramson (2015) used “panini” to refer to older adults “hard-pressed” to care for aging partners, parents and other relatives, disabled adult children and/or grandchildren, all while having to deal with the demands of their own aging process. While there is a growing body of scholarship on the sandwich generation, thus far, the linkages between sandwiched caregiving and health is an area that warrants further exploration (Hodgdon et al., 2023). Understanding the health of sandwiched carers is of high importance, especially given their substantial prevalence in the U.S. and their role in supporting two

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(or more) dependent populations.

Sandwiched carers are typically expected to fare worse compared to their non-sandwiched counterparts because the role can be demanding and competes with other life responsibilities. The stress process model introduced by Pearlin et al. (1981, 1990) posits that caregiving is considered a stressful activity that can potentially damage the well-being of the care provider. This deleterious health effect is exacerbated when the care needs of the recipient intensify (e.g., progression of Alzheimer's disease, development of functional limitations, etc.). In addition, caregivers balance these responsibilities with other tasks that they hold in life, such as their job, leisure activities, and rest or self-care. This is known as role strain (Goode, 1960). Role strain can lead to interrole conflict or the incongruence between various role demands which further drains the caregivers' time, energy, and resources, and prevents them from enjoying leisure activities (Stephens et al., 2001). Past research has documented the negative health consequences of caregiver burden broadly – operating through both biological and psychosocial processes (Pinquart & Sorensen, 2003; 2007, Vitaliano et al., 2003), in line with the stress process model. However, only a handful of studies have documented the health effects of caregiving burden while being “sandwiched in” at the population level.

The limited evidence in this area suggests that being a sandwiched carer is deleterious to one's psychological and physical health (for a recent review, see Hodgdon et al., 2023). Here, we mention a few studies that compare sandwiched versus non-sandwiched populations. In a sample of women working in nursing homes, DePasquale et al. (2016) called sandwiched carers “triple-duty caregivers” who not only have to provide eldercare at least 3 h per week and have a coresident minor, they also have to provide formal care as part of their job. These triple-duty women had worse overall psychosocial well-being compared to nursing home employees without family care responsibilities. Studies more representative of the general population, however, showed mixed results. For example, a study conducted in the 1990s on women subsample from the Marital Instability Over the Life Course Study found that multigenerational caregiving, defined as having to care for parents/parents-in-law while having underaged children, did not have an impact on various measures of well-being (Loomis & Booth, 1995). Yet, a more recent study using data from the Behavioral Risk Factor Surveillance System found that caring for either a friend or relative who has some health problem exacerbated the deleterious effect of childcare on self-rated health (Do et al., 2014). In a sample of caregivers from the National Long Term Care Survey, sandwiched carers — those who provide eldercare while having a coresident child — had worse quality of life compared to those exclusively caring for older parents (Rubin & White-Means, 2009).

Save for Do et al. (2014) who used self-rated physical health, the majority of studies in this area focused on mental well-being measures like perceived stress, psychological distress, and happiness. However, work linking sandwiched caring and physical health remain lacking (Hodgdon et al., 2023). We address this gap in scholarship by studying working-aged adults in the U.S., assessing whether being sandwiched between parents/parents-in-law and adult children is associated with mental and physical health. We hypothesized that being sandwiched is deleterious to one's general well-being. This is expected based on the stress process model, role strain, and the extant literature.

Further, we explored whether the health of sandwiched persons varies by the type of assistance they provide for their care recipients. A study using the Panel Study of Income Dynamics (PSID) revealed that 30% of individuals with at least one living parent/parent-in-law and at least one child provide some form of assistance to both generations (Friedman et al., 2017). Most of these individuals provide to both generations (Friedman et al., 2017). Children of the sandwich generation garnered the lion's share of money transfers, receiving on average almost four times the amount parents received (Friedman et al., 2017). In other words, the magnitude and types of transfer depends on who is receiving it. Aging parents, for example, may be more in need of labor

intensive caregiving while adult children may need financial resources to ease their transition to adulthood or to meet the normative markers of adulthood such as higher education and buying their first home.

So far, the body of work on the well-being impacts of family assistance provision largely focused on caregiving, a form of time transfers (Pinquart & Sorensen, 2003; 2007, Vitaliano et al., 2003). Accounting for an assortment of transfer types, therefore, provides a more accurate depiction of the health impacts of being part of the sandwich generation. Providers of assistance regardless of type, especially to both parents/parents-in-law and adult children, are expected to be worse off compared to non-providers in line with past work in this area. While the study of caregiver burden is by no means new (Pinquart & Sorensen, 2003; 2007, Vitaliano et al., 2003), we contribute to the literature in three ways. First, the majority of the work tackles eldercare and providing assistance to adult children in silos even though both responsibilities can be held simultaneously. Second, studies that describe the mental and more especially physical health of sandwiched carers are still in their infancy (Hodgdon et al., 2023). Finally, and most importantly, we examined both *potential* for obligations (being sandwiched) and *actual* time and money assistance provided to either parents, children, both parents and children, and neither.

2. Data and methods

2.1. Data

In this study, we used the Panel Study of Income Dynamics (PSID). It first started in 1968 as an annual survey until it became a biennial survey starting 1997. The PSID follows a genealogical design. Its initial subjects, surveyed in 1968, were the first to gain the “PSID gene.” Their biological or adopted descendants inherit the PSID gene. The samples are then surveyed for the remainder of their lives. The PSID also collects information on individuals without the PSID gene as long as they live with study subjects.

In 2013, the PSID launched a module called the Rosters and Transfers (R&T) which gathered important characteristics of the respondents' and their spouses' living adult children and parents – whether biological or adoptive. To mitigate recall bias, the study preloaded fertility histories and interviewers asked clarificatory questions about the children whom the respondents or their spouses failed to report. The R&T also asked about the subjects' parents and their partners, enabling the study of step-relations. In addition, the R&T inquired about upward and downward transfers of time (i.e., errands, rides, chores, babysitting, or hands-on care) and money (i.e., loans and gifts over \$100) since the past year or 2012 and larger transfers given and received over the life course for schooling, home purchase, and other unspecified purposes. We must note that most of the transfer information is given at the household level.

To arrive at the analytic sample for the first part of our analyses which focuses on *potential* care provision, we started with the Family File which contains the mental and physical health measures, as well as most of the controls ($n = 9063$). We then merged the Family File with the R&T to obtain potential care recipient variables and transfers given. We removed individuals younger than age 35 or older than 64 ($n = 4343$), living outside of the U.S. or institutionalized ($n = 32$), proxy responses ($n = 9$), individuals with incomplete responses to the variables of the study ($n = 68$), and respondents not considered to be a part of the family unit ($n = 2$). Our analytic sample was $n = 4609$. For the second part of our analyses, which incorporates the role of *actual* care provision, we limited the sample to sandwiched carers (that is, those with at least one living parent/parent-in-law and at least one child simultaneously). The analytic sample for this second part is $n = 2228$.

2.2. Measures

Severe psychological distress was measured using (Kessler et al., 2002) six-item scale (K-6) wherein participants were asked whether they

felt the following over the past 30 days: (1) sad to the point that nothing could cheer them up, (2) nervous, (3) restless or fidgety, (4) hopeless, (5) that everything was an effort, and (6) worthless. These items were answerable by a five-point Likert scale ranging from all the time (score = 4), most of the time, some of the time, little of the time, and none of the time (score = 0). The total score from adding these six items would range from 0 to 24, with higher numbers indicating more psychological distress. Following past literature (Kessler et al., 2003), we dichotomized the total score such that individuals garnering a score >13 were considered under severe psychological distress (SPD).

Health status was measured using self-rated health (SRH), a widely validated health measure (Schnittker & Bacak, 2014). Respondents were tasked to rate their health using a five-point Likert scale. Following common practice in the literature (e.g., Montez & Cheng, 2022), we dichotomized SRH to 0 = excellent, very good, and good, 1 = poor/fair health.

Sandwich generation was defined in two ways: one reflecting potential informal care responsibilities and another reflecting actual transfers given following Wiemers and Bianchi (2015). First, sandwiched individuals are those simultaneously having at least one parent/parent-in-law and at least one adult child, ignoring intergenerational transfers. For the initial analyses, we compared these individuals with those without both parent(s)/parent(s)-in-law and child(ren), those with only parent(s)/parent(s)-in-law, and those with only child(ren). Then, for the main analyses confined to those simultaneously having at least one parent/parent-in-law and at least one adult child, we developed the following two measures based on the direction and type of transfer at the household level: (1) no money transfer, only upward or to parent/parent-in-law money transfer provided, only downward or to child money transfer provided, and both upward and downward money transfer provided; and (2) no time transfer, only upward time transfer provided, only downward time transfer provided, and both upward and downward time transfer provided. While the literature is inconsistent in the way sandwich generation is measured (Hodgdon et al., 2023; Wiemers & Bianchi, 2015), we used these two measures make our results comparable to the majority of past studies.

Other controls included the following known determinants of health: age group (ages 35–49, 50–64, 65–75), sex (male/female), race/ethnicity (non-Hispanic white, non-Hispanic Black, non-Hispanic other race, Hispanic), marital status (married or permanently cohabiting, not married or partnered), years of education, and net wealth with equity (<\$0, 0-50k, >50-150k, >150-500k, 500k+).

2.3. Statistical analyses

We first calculated the prevalence of SPD and poor/fair SRH between sandwiched versus non-sandwiched individuals. We also did the same using the sandwich generation measures that account for transfer provision. We tested between group differences using Chi-Square/ χ^2 tests. Descriptive statistics for the analytic sample are included in Table 1. Next, we study the association between being sandwiched, and SPD and health status (Table 2). Finally, we study the association between transfer provision and health among those sandwiched, controlling for other determinants of health (Table 3). We ran a series of multivariable logistic regressions and results are presented as odds ratios with corresponding 95% confidence intervals. All analyses were conducted in Stata 18.

2.4. Sensitivity analyses

For sensitivity analyses, both the first and the second part of our analyses were replicated (1) but adding coresidential arrangement with underaged children, adult children, and parents/parents-in-law as additional controls and (2) on samples without underaged coresidents to isolate the potential confounding of childcare (n = 2701 for the entire sample, n = 1395 for the sample with at least one living parent and one

Table 1
Unweighted Proportions Among Working Aged Adults (35–64 yo).

Variables	Main Analytic Sample		No Underaged Coresidents Subsample for Sensitivity Analyses	
	[1] All (n = 4609)	[2] Sandwiched sample (n = 2228)	[3] All (n = 2701)	[4] Sandwiched sample (n = 1395)
Severe Psychological Distress	4%	4%	5%	4%
Poor/Fair Self-Rated Health	19%	18%	22%	19%
Potential Care Recipients				
none	4%		5%	
with child(ren) only	18%		24%	
with parent(s)/parent(s)-in-law only	30%		19%	
both, i.e., sandwich generation	48%		52%	
Money transfers				
with both, only provides upward money transfers		6%		6%
with both, only provides downward money transfers		36%		36%
with both, provides money to both		16%		15%
with both, does not provide money		42%		43%
Time transfer				
with both, only provides upward time transfers		17%		18%
with both, only provides downward time transfers		25%		22%
with both, provides time to both		32%		33%
with both, does not provide time		26%		26%
Age group				
35–49	51%	44%	32%	28%
50–64	49%	56%	68%	72%
65–75	60%	63%	56%	59%
Race-ethnicity				
non-Hispanic white	53%	50%	54%	55%
non-Hispanic Black	38%	40%	38%	36%
Hispanic	7%	8%	6%	7%
non-Hispanic others	2%	2%	2%	2%
Married/partnered	58%	64%	52%	64%
College graduate	30%	23%	28%	25%
Employed	71%	71%	68%	71%
Net Wealth Categories				
<\$0	16%	15%	14%	12%
0-50k	37%	37%	36%	33%
>50-150k	19%	19%	18%	19%
>150-500k	17%	18%	18%	21%
>500k	11%	11%	13%	15%
Coresident children			NA	NA
<18				
0	59%	63%		
1	19%	22%		
2	14%	10%		
3+	9%	6%		

(continued on next page)

Table 1 (continued)

Variables	Main Analytic Sample		No Underaged Coresidents Subsample for Sensitivity Analyses	
	[1] All (n = 4609)	[2] Sandwiched sample (n = 2228)	[3] All (n = 2701)	[4] Sandwiched sample (n = 1395)
Has at least one adult child coresides	27%	43%	26%	37%
Has least one parent coreside	5%	6%	6%	6%

living child). Results remained robust against these sensitivity checks. These sensitivity checks are included, and identified as such, in [Tables 2 and 3](#).

3. Results

[Table 1](#) provides unweighted proportions among working aged adults. For the entire sample (column 1), 4% are considered to be in severe psychological distress (SPD) and 19% report poor/fair self-rated health (SRH). About half of our sample is considered to be sandwiched in. The no underaged coresidents sample (columns 3 and 4) are generally older compared to the entire sample, and are therefore less likely to have living parents. There are no other noticeable sociodemographic differences between the entire sample and the sample without coresident minors. For the sandwiched sample (column 2), the prevalence of

Table 2

Multivariable Logistic Regressions Predicting Severe Psychological Distress (SPD) and Poor/Fair Self-Rated Health (SRH) Among Working Aged Adults (35–64 yo).

Independent Variables	Main Analyses		Sensitivity Analyses					
	SPD	SRH	SPD	SPD	SPD	SRH	SRH	SRH
Model #	1	2	3	4	5	6	7	8
Potential care recipients								
None as reference								
With child(ren) only	0.65 (0.33–1.27)	0.93 (0.62–1.40)	0.70 (0.36–1.38)	0.78 (0.36–1.66)	0.87 (0.40–1.88)	0.93 (0.62–1.41)	0.94 (0.60–1.47)	0.96 (0.61–1.51)
With parent(s)/in-law(s) only	0.75 (0.38–1.48)	0.70* (0.46–1.06)	0.76 (0.38–1.50)	0.72 (0.32–1.61)	0.70 (0.31–1.59)	0.72 (0.47–1.09)	0.85 (0.52–1.38)	0.82 (0.50–1.34)
With both child(ren) and parent(s)/in-law(s)	0.71 (0.38–1.33)	0.78 (0.53–1.16)	0.77 (0.40–1.48)	0.91 (0.44–1.88)	1.05 (0.50–2.21)	0.78 (0.52–1.16)	0.84 (0.54–1.30)	0.85 (0.54–1.33)
Controls								
Age group: 35–49 as reference								
50–64	0.84 (0.59–1.18)	1.80*** (1.48–2.18)	0.79 (0.55–1.13)	0.64** (0.41–0.98)	0.61** (0.39–0.94)	1.64*** (1.34–2.00)	1.63*** (1.27–2.10)	1.62*** (1.26–2.09)
Female	1.11 (0.80–1.52)	0.97 (0.82–1.16)	1.18 (0.85–1.65)	1.12 (0.76–1.67)	1.22 (0.82–1.82)	1.02 (0.85–1.22)	0.98 (0.80–1.21)	1.00 (0.81–1.23)
Race ethnicity: non-Hispanic white as reference								
non-Hispanic Black	0.65** (0.47–0.91)	1.06 (0.88–1.28)	0.67** (0.48–0.93)	0.45*** (0.30–0.68)	0.46*** (0.30–0.70)	1.09 (0.90–1.31)	1.00 (0.80–1.26)	1.01 (0.80–1.27)
Hispanic	0.94 (0.53–1.69)	1.81*** (1.34–2.43)	0.99 (0.55–1.78)	0.89 (0.42–1.90)	0.95 (0.44–2.05)	1.88*** (1.39–2.54)	1.75*** (1.17–2.61)	1.77*** (1.18–2.65)
non-Hispanic others	1.02 (0.35–2.94)	1.53 (0.90–2.60)	1.06 (0.36–3.06)	0.78 (0.18–3.42)	0.82 (0.19–3.61)	1.53 (0.90–2.61)	1.93** (1.01–3.67)	1.96** (1.03–3.73)
Married/partnered	0.47*** (0.33–0.66)	0.71*** (0.59–0.85)	0.48*** (0.34–0.69)	0.42*** (0.26–0.67)	0.43*** (0.26–0.69)	0.76*** (0.63–0.92)	0.73*** (0.58–0.92)	0.74** (0.59–0.94)
College graduate	0.49*** (0.31–0.79)	0.67*** (0.54–0.84)	0.49*** (0.30–0.78)	0.46** (0.25–0.85)	0.45** (0.24–0.84)	0.68*** (0.54–0.85)	0.73** (0.56–0.96)	0.73** (0.56–0.96)
Employed	0.17*** (0.13–0.24)	0.28*** (0.24–0.33)	0.17*** (0.13–0.24)	0.18*** (0.12–0.27)	0.18*** (0.12–0.27)	0.28*** (0.24–0.33)	0.28*** (0.23–0.35)	0.28*** (0.23–0.35)
Net wealth: <\$0 as reference								
0–50k	0.57*** (0.40–0.81)	0.69*** (0.56–0.86)	0.56*** (0.40–0.80)	0.59** (0.38–0.92)	0.57** (0.37–0.90)	0.69*** (0.56–0.86)	0.68*** (0.52–0.90)	0.68*** (0.52–0.90)
>50–150k	0.47*** (0.29–0.76)	0.46*** (0.35–0.60)	0.47*** (0.29–0.76)	0.41*** (0.22–0.78)	0.41*** (0.22–0.78)	0.46*** (0.35–0.60)	0.48*** (0.35–0.68)	0.48*** (0.34–0.67)
>150–500k	0.30*** (0.16–0.58)	0.35*** (0.26–0.48)	0.30*** (0.16–0.57)	0.25*** (0.11–0.57)	0.24*** (0.11–0.56)	0.34*** (0.25–0.47)	0.35*** (0.24–0.51)	0.35*** (0.24–0.51)
>500k	0.20*** (0.08–0.52)	0.13*** (0.08–0.21)	0.19*** (0.07–0.50)	0.19*** (0.06–0.59)	0.19*** (0.06–0.57)	0.12*** (0.08–0.20)	0.12*** (0.07–0.20)	0.11*** (0.07–0.20)
Coresident children <18: 0 as reference								
1			0.79 (0.51–1.22)			0.90 (0.72–1.13)		
2			1.00 (0.60–1.65)			0.69** (0.51–0.94)		
3+			0.83 (0.46–1.49)			0.67** (0.47–0.95)		
Has at least one adult child coresides			0.82 (0.56–1.19)		0.61* (0.37–1.00)	0.97 (0.80–1.19)		0.91 (0.71–1.16)
Has least one parent coresides			1.01 (0.58–1.74)		1.11 (0.58–2.12)	1.29 (0.92–1.80)		1.20 (0.80–1.80)
Constant	0.57 (0.28–1.16)	1.01 (0.64–1.58)	0.58 (0.29–1.19)	0.74 (0.33–1.66)	0.73 (0.32–1.65)	1.06 (0.67–1.67)	1.06 (0.63–1.78)	1.05 (0.63–1.76)
Observations	4609	4609	4609	2701	2701	4609	2701	2701
Excludes those with coresident underaged children?	N	N	N	Y	Y	N	Y	Y

Notes: Results in odds ratios. 95% confidence intervals in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3

Multivariable Logistic Regressions Predicting Severe Psychological Distress (SPD) and Poor/Fair Self-Rated Health (SRH) Among Sandwiched Working Aged Adults (35–64 yo).

Model #	Main Analyses		Sensitivity Analyses					
	SPD	SRH	SPD	SPD	SPD	SRH	SRH	SRH
	1	2	3	4	5	6	7	8
<i>Panel A: Sandwich accounting for money transfers</i>								
Does not provide money as reference								
Only provides upward money transfers	0.87 (0.33–2.33)	1.56* (0.99–2.46)	0.88 (0.33–2.35)	0.27 (0.04–2.13)	0.27 (0.03–2.14)	1.59** (1.01–2.50)	1.45 (0.80–2.63)	1.45 (0.80–2.62)
Only provides downward money transfers	0.98 (0.59–1.64)	1.11 (0.84–1.45)	1.01 (0.60–1.69)	1.00 (0.53–1.88)	1.02 (0.54–1.92)	1.12 (0.85–1.47)	1.04 (0.74–1.46)	1.05 (0.75–1.48)
Provides money to both	1.41 (0.74–2.68)	1.14 (0.80–1.63)	1.41 (0.74–2.69)	1.21 (0.52–2.81)	1.29 (0.55–3.03)	1.15 (0.81–1.65)	1.00 (0.63–1.56)	1.01 (0.64–1.60)
<i>Panel B: Sandwich accounting for time transfers</i>								
Does not provide time as reference								
Only provides upward time transfers	0.84 (0.38–1.86)	0.87 (0.61–1.26)	0.78 (0.35–1.74)	0.70 (0.29–1.74)	0.67 (0.27–1.66)	0.84 (0.58–1.21)	0.74 (0.48–1.15)	0.74 (0.47–1.14)
Only provides downward time transfers	1.43 (0.75–2.72)	0.98 (0.71–1.36)	1.51 (0.79–2.89)	0.98 (0.43–2.25)	1.05 (0.46–2.43)	1.00 (0.72–1.39)	0.96 (0.63–1.45)	0.97 (0.64–1.48)
Provides time to both	1.90** (1.06–3.42)	1.03 (0.76–1.40)	1.91** (1.05–3.47)	1.51 (0.76–3.00)	1.66 (0.82–3.38)	1.03 (0.76–1.41)	0.93 (0.64–1.36)	0.96 (0.65–1.40)
Observations	2228	2228	2228	1395	1395	2228	1395	1395
Excludes sample with coresident underaged children?	N	N	N	Y	Y	N	Y	Y
Additionally controls for coresidence of children and parents?	N	N	Y	N	Y	Y	N	Y

Notes: Table entries are odds ratios of the three sandwich generation measures. 95% confidence intervals in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All models controlled for basic socio-demographic factors (age, sex, race-ethnicity, marital status, employment status, education, wealth).

SPD is 4%, about the same as the entire sample, yet poor/fair health is slightly lower (18%) compared to the full sample (19%). Although about 40% of the sample are non-providers of money transfers, those that are money providers tend to provide downwardly rather than upwardly. In terms of time transfers, the majority provided for both adult children and parents. There are no differences among all sandwiched members and those that have no underaged children, except that the former are more likely to be younger and to have coresident adult children than the latter.

Fig. 1 provides the unweighted prevalence of SPD and poor/fair SRH by potential care recipient. Although overall SPD prevalence is low, SPD is highest among respondents with neither child nor parent, and there are statistically significant group differences for the entire sample ($\chi^2 = 8.76^{**}$). Prevalence of worse SRH is most pronounced among those without parents and children, and those who have no living parents but only have children; group differences are statistically significant for both samples (entire sample $\chi^2 = 107.21^{***}$; no underaged coresident sample $\chi^2 = 28.11^{***}$). Next, we test these differences of health by potential care recipients, controlling for known confounders using regression models.

Table 2 presents the regression results predicting having SPD and poor/fair SRH among working aged adults. The odds of having SPD are not statistically different among individuals sandwiched between two generations, those with child(ren) only, those with parent(s) only, and

those who have no living predecessors or successors (column 1). Meanwhile, the likelihood of reporting poor/fair SRH is lower by about 0.70 for those with at least one parent compared to the reference group (column 2). When we consider individuals without underaged coresidents (column 7 and 8), the protective effect of having parent(s) disappears.

Note that the associations between the controls and the health outcomes of interest tend to follow what is known in the literature. Specifically, lower odds of having SPD are reported among: the older age group, non-Hispanic Blacks compared to non-Hispanic whites, married/partnered versus the unpartnered, employed compared to the unemployed, and wealthier individuals. Almost the same pattern is applicable for SRH, except that the older age group and Hispanics report worse health, which still follows what is known in the literature. Coresident controls are statistically significant, except that having an adult child coresident is negatively associated with SPD for those without underaged children (column 5), and having more underaged coresidents is inversely associated with poor/fair health (column 6).

Fig. 2 provides the prevalence of SPD and worse SRH among the sandwich generation, by type and direction of transfers provided. The general sandwiched sample does not differ as much when compared with those without underaged coresidents. The rate of SPD does not vary by transfer type based on visual inspection of the figure, but there are more pronounced differences in the share of those reporting poor/fair

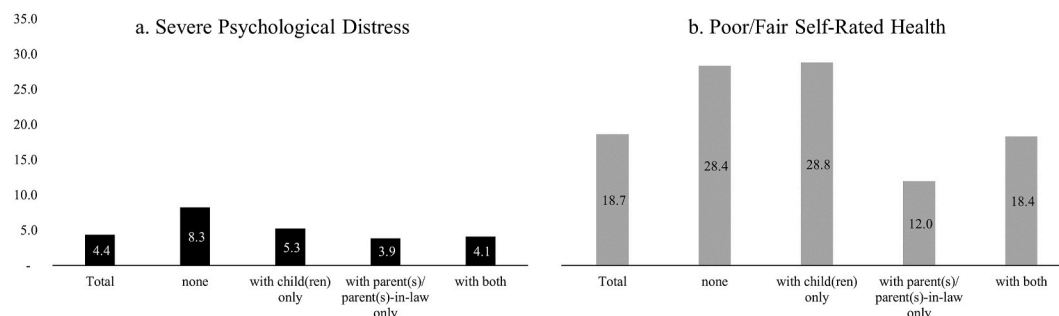


Fig. 1. Prevalence of having severe psychological distress (SPD) and reporting poor/fair self-rated health (SRH).

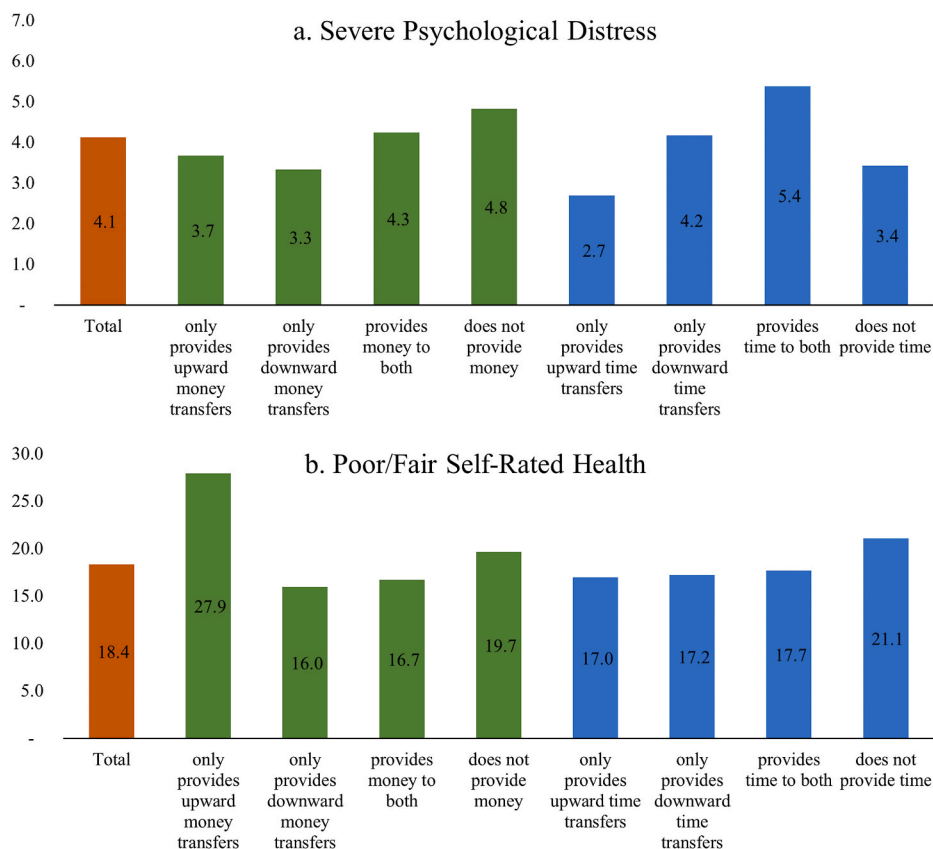


Fig. 2. Prevalence of having severe psychological distress (SPD) and reporting poor/fair self-rated health (SRH) among sandwich generation. The orange bar represents the overall prevalence for the sandwiched sample while the green and blue bars represent the prevalence by money and time transfer provision, respectively.

SRH. For instance, providers of money to parents (Panel B, green bars) and providers of time to both (Panel B, blue bars) have noticeably higher prevalence of worse health. There are no bivariate associations between transfer types and SPD, but there are some for SRH (i.e., for all sandwiched members: $\chi^2 = 13.10$ and $p < 0.01$ for money transfers; for sandwiched members without coresident minors: $\chi^2 = 9.10$ and $p < 0.5$ for money transfers).

Table 3 shows the regression results, confining the sample to sandwiched individuals and using measures that capture the presence of time and money transfers – be it upward, downward, or in both directions. Conditional on having at least one parent/parent-in-law and adult child alive, those who provided money to their parents have almost 1.6 times higher odds of reporting poor/fair SRH compared to those who have not provide any money to kin (Panel A, column 2 and 6). Sandwiched individuals providing time to both predecessors and adult children have almost twice the odds of having SPD compared to those not providing time transfers (Panel B, column 1 and 3).

4. Discussion and conclusion

There are about 11 million Americans caught between caring for their children and their parents (National Alliance for Caregiving, 2019). It is therefore an imperative to understand the health and well-being effects of being sandwiched between generations, as the contemporaneous coexistence of multiple generations has become a mainstay in recent times (Bengtson, 2001; Wiemers & Bianchi, 2015; Wiemers & Park, 2021).

Using data from the Panel Study of Income Dynamics (PSID), we first compared the mental and physical health of working-aged individuals sandwiched between parents/parents-in-law and adult children versus non-sandwiched respondents. Controlling for sociodemographic factors,

other social roles (e.g., employment), and other family-related factors (e.g., coresidence), sandwiched individuals did not differ in terms of odds of reporting severe psychological distress (SPD) and poor/fair self-rated health (SRH) compared to respondents without potential care recipients, contradicting our first hypothesis. Our findings suggest that being caught in between generations is not necessarily negative for health. Having upward and downward family ties puts one at risk for having informal care responsibilities. However, these kin connections may also be beneficial, as they can be a source of social, emotional, and instrumental support in times of need, which, in turn, can protect against a variety of disadvantageous health outcomes. In addition, vertical ties can serve as a safety net wherein members can exchange resources to those in need, which, in turn, may alleviate health crises (e.g., Carr & Utz, 2020; Freedman et al., 2024).

In the second part of our analyses confined among individuals with at least one living parent/parent-in-law and child, we incorporate transfer provision. The PSID Rosters and Transfers module (R&T) provides household-level past year transfers of both time and money, allowing us to further elaborate on the heterogeneous health implications of being sandwiched between generations. Distinguishing between types of transfers is essential since time transfers can be more demanding and involved than provision of financial assistance (Attias-Donfut et al., 2005; Wiemers & Park, 2021).

In line with our hypothesis based on the stress process model and role strain (Goode, 1960; Pearlin et al., 1990) we found that providers of both upward and downward time transfers had almost twice the odds of SPD compared to those who do not provide any time transfers. This is in line with the extensive literature on caregiving burden (e.g., Pinquart & Sorensen, 2003, 2007) and the limited evidence specifically on sandwiched carers (Hodgdon et al., 2023). Helping children and parents at the same time, is a stressor on top of other life responsibilities such as

work that can put one under a lot of psychological distress. In terms of physical health, however, we detected no elevated risk of reporting worse self-rated health among time transfer providers, contradicting earlier studies (Pinquart & Sorensen, 2003; Vitaliano et al., 2003). One possible explanation is that caregiving has more immediate effects on one's mental health compared to physical health, operating through instantaneous feelings of stress, fatigue, and lack of competence and control over the situation (Pinquart & Sorensen, 2003). We also found that those who exclusively gave upward time transfers were about 30% less likely to say they have poor/fair health, which could be driven by the positive aspects caregiving brings (e.g., sense of purpose, mastery, see Cho et al., 2016; energy expansion perspective, see (Martire & Stephens, 2003), or the higher likelihood of being selected into care provision because of better health.

The PSID R&T also records money transfers, defined as loans and gifts given in the past year of over \$100. Financial transfers, another important component of intergenerational transfers, has largely been ignored. The few studies on the implications of money transfer provision on well-being have yielded mixed results. For example, one study found that giving money to adult children was protective against depression (Lee et al., 2014) whereas another found that this mental health promoting effect is only applicable up until a certain amount of money given (Roll & Litwin, 2010). And to the best of our knowledge, very few studies within the thin literature on the health of sandwiched carers accounted for money transfers.

Unexpectedly, providers of money to both parents and children did not differ in physical health when compared with sandwiched individuals who do not provide any form of transfer. Rather, upward money transfer providers were 1.6 times more likely to perceive their self-rated health as poor/fair. Two potential mechanisms can be at play here. First, compared to providing help to children, providing money to parents/parents-in-law may be construed as non-normative by the giver or society. This role reversal may be perceived as a negative experience (Miller, 1981), which, in turn, may lead to poorer health outcomes. Second, there may be a health selection effect into money transfer provision among sandwiched carers. Individuals in worse health (or have other constraint like distance and work demands, see for example, Koh & MacDonald, 2006; Schoeni, 1997) may have to resort to providing money instead of the more physically demanding care.

While being one of the few studies that document the mental and physical health implications of being caught in between generations, our study is not without limitations. Our analyses uncovered associations, not causal effects. The process of selecting into being sandwiched, as well as transfer provision, are not observed in the cross-sectional data we used. We controlled for a wide array of personal and family-level confounders to somehow mitigate this endogeneity concern. In addition, the PSID was intended to be nationally representative, but our given our study purpose, we limited our main analyses to the working age population and subsequently, the sandwiched population. Thus, our results are limited to these subsamples of the PSID. While no survey weights exist for this specific subsample, we account for potential covariates and test our results to assess whether they are sensible to measurement issues. Moreover, our study was not able to account for psychosocial factors which may positively (e.g., mastery and sense of purpose) or negatively (e.g., role centrality) mediate the relationship between sandwiched caregiving and health. Additionally, the transfer measure we used is at the household level, not individual level. The R&T contains transfer information for each of the parent and adult child of the PSID heads of households and their respective spouse (i.e., the Parent/Child File or the PARCHD). But we decided against using this version because the mental and physical health measure we used from the PSID family file refer to whoever responded to the survey on behalf of the household, *not* necessarily the head/spouse level whereas the PARCHD is at the head/spouse level. This limitation may underestimate the health impact of transfer provision, especially among women who typically play the caregiver role in the family (Freedman et al., 2024).

However, this gender disparity on transfers may only be a minimal concern since a previous study, using the same data as our study, found small differences of transfers between men and women (Friedman et al., 2017). Lastly, our study slightly differs from the original meaning of sandwich generation. Miller (1981) conceptualized sandwiched carers as having dependent children. In our case, because of data artifact, we were liberal with our definition by disregarding the age of the children. This is because the R&T observes intergenerational transfers between respondents and their *adult children* over the age of 18. To account for the confounding of underaged children, we ran models controlling for the presence of coresident minors, and the results remained consistent to those presented in the main analysis.

Our findings dispel the notion that being part of the sandwich generation is automatically deleterious to mental and physical health. Rather, it is the activation of the demands underlying this status such as the provision of certain transfers whilst being sandwiched is what is actually detrimental to mental and self-rated physical health. Future work using longitudinal data, with finer-grained measures of transfer provision, as well as more objective health measures is warranted to expand our understanding of the implications of being caught between providing for two or more generations on health.

Ethics approval

The data used for this study are deidentified and publicly available. Thus, this study is considered as research not involving human subjects as defined by US regulation (45 CFR 46.102[d]).

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CRediT authorship contribution statement

Kent Jason Go Cheng: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation, Conceptualization. **Alexis Raúl Santos-Lozada:** Writing – review & editing, Supervision, Resources, Methodology, Formal analysis, Conceptualization.

Declarations of completing interest

None.

Data availability

The authors do not have permission to share data.

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