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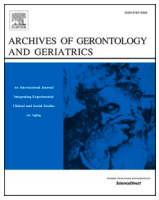

Helps you, helps me? Provision of instrumental and personal care and loneliness among adults aged 50 years and older during the COVID-19 pandemic

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ABSTRACT

Purpose: To examine the association between provision of instrumental and personal care, and loneliness in adults aged 50 years and older during the COVID-19 pandemic. Instrumental care referred to the provision of assistance with obtaining necessary or essential products and/or services, whereas personal care referred to the assistance with daily life activities or the provision of emotional support. Social capital and caregiver stress theories served as the study's theoretical framework.

Materials and methods: The data were obtained from the two COVID-19 waves of the Survey of Health, Ageing, and Retirement in Europe (SHARE) conducted in 2020 and 2021. The data were analyzed using logistic regression models. The analytical sample consisted of 48,722 adults in the abovementioned age bracket residing in Europe and Israel.

Results: Providing instrumental care negatively related to loneliness. Providing instrumental care to a single category of people negatively related to loneliness, whereas providing personal care to multiple categories of people positively related to loneliness. Providing personal care to children positively related to loneliness.

Conclusions: The results suggest that different types of care provision correspond differently to the experience of loneliness while partially supporting both theoretical frameworks. Moreover, care indicators correspond differently to loneliness. The results imply that for a better understanding of the link between care provision and loneliness in later life, various parameters as well as various types of care provision should be examined.

1. Introduction

The COVID-19 pandemic has affected people of nearly all ages, but older adults remained probably the most radically impacted group among them. Older people are at a greater risk of morbidity and mortality caused by infection with the virus compared to younger age cohorts (Center for Disease Prevention & Control, 2021). Social distancing was therefore highly advised for older people in order to mitigate their risk of infection and lethal cases occurrence (Rantanen et al., 2021). While social distancing could perform well in the physical health domain, it seems that it did not do the same job with respect to mental health, contributing to an emergence of mental disorders or increase in their prevalence, as well as to elevated rates of loneliness (Van Tilburg et al., 2021).

Loneliness, broadly defined as "perceived discrepancy between actual and desired social relationships" (Hajek & König, 2021, p.122), appeared to be a major issue in the older population already in the pre-COVID-19 period (Cotten et al., 2013; Newman et al., 2021) keeping on being such into the pandemic itself. Reviews conducted during the pandemic (Lebrasseur et al., 2021; Parlapani et al., 2021), as well as single studies (Atzendorf & Gruber, 2022; Fuller & Huseth-Zosel, 2022; Van Tilburg et al., 2021) suggest that, albeit to a varying extent, loneliness in middle-aged and older adults has increased since its outbreak. The risk of experiencing loneliness due to physical isolation measures could have been even higher in those adults whose social activity took place mainly outdoors before the COVID-19 outbreak (Armitage & Nellums, 2020). Given the cumulative evidence of various deleterious mental and physical health implications of loneliness before the pandemic (Hawkley et al., 2006; Thurston & Kubzansky, 2009) and during its course (Creese et al., 2021; Palgi et al., 2020; & Stickley &

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Ueda, 2022), the present study explored the role of two types of informal care on loneliness. For the study purposes, the term *personal care* refers to the unpaid provision of care and support to loved people who cope with chronic health condition (Bangerter et al., 2019), like help with daily activities, and *instrumental care* refers to the unpaid provision of help with obtaining necessities (like food or medicine).

Middle-aged and older adults tend not only to receive care (Siette et al., 2021) but can also provide it (Rantanen et al., 2021; Scott et al., 2021). They may provide care to their children, parents or other relatives - a *kin care*. Because non-kin relations prevail in the modern middle-aged and older adults' social networks, mostly in the Western world (Suanet et al., 2013), care may also be provided to non-kin, i.e. friends or neighbors.

Provision of care can impact loneliness in different ways. According to the social capital perspective, different values and resources are embedded in people's social networks. Engagement in social relationships within these networks can produce benefits from the realization of these values and resources (Sum et al., 2008). From an emotional aspect, social connections contribute to a reduction of stress, an increase in self-esteem, and to acquisition of support, all of which can positively impact subjective wellbeing (Tegegne & Glanville, 2019). Consequently, engagement in relationships with others for the purposes of care provision can be viewed in this perspective as a maintenance of relationship from which middle-aged and older adults can benefit emotionally (for example, by having low levels of loneliness or not feeling lonely at all).

In contrast, according to the caregiver stress model (Pearlin et al., 1990), one of the key mechanisms underlying the link between care provision and loneliness is the availability of time. Provision of personal care is a highly time-consuming activity which reduces the amount of time dedicated to other activities (Hajek et al., 2021), some of which may contribute to the subjective wellbeing of middle-aged and older adults more than any type of care provision. In addition, caregivers may experience detachment from the broader society, decline in the number of social contacts, deterioration of cognitive functioning associated with possible shortage of sleep hours (Hajek et al., 2021), and be influenced by numerous stressors associated with the provision of informal care (see Pearlin et al. 1990). Indeed, a recent systematic review conducted by Hajek et al. (2021) indicated that most the reviewed studies, cross-sectional and longitudinal as one, found a positive relationship between caregiving and loneliness. In a similar vein, a study by Sundström et al. (2009) has shown that older people, who provided personal care to their life partners, exhibited a higher prevalence of loneliness as compared to people who did not provide such a care. In sum, provision of care is seen in the caregiver stress perspective as corresponding to an increase in levels of loneliness.

1.1. The current study

Structural and interactional characteristics of social relationships in older ages, meaning their number, diversity, frequency, and other indicators can explain the variance in the middle-aged and older adults' quality of life (Litwin & Shiovitz-Ezra, 2006). However, despite the abundant research on loneliness in later life, this notion has not been implemented in order to understand the impact of the provision of instrumental and personal care in this lifespan period. Hence, the goal of the current study was to test the associations between various characteristics of each of these two types of informal care and loneliness in adults aged 50 years and older during the COVID-19 pandemic. These characteristics include the *scope* of care (in terms of number of categories of people provided with instrumental and personal care), and *the identity of subjects* whom the two types of care could have been provided (any kin or non-kin).

Although, as mentioned, several studies investigated the relationship between care provision and loneliness (i.e. Hajek & Konig 2022; Sundström et al. 2009), they have some disadvantages relatively to the current research. First, they tend to employ one indicator/type of care, usually by simply asking whether any type of care was provided. This disregards the notion that provision of care has various indicators that should be separately addressed. Second, most of the studies were conducted using the data from the pre-COVID-19 era. During the pandemic, social environment conditions, such as possibilities for in-person gatherings in light of restrictions and recommendations set by governments, or engaging in an online contact, underwent major transformations. The need for instrumental and personal care was also increased given the limited scope of formal care supplied in times of constrains, curfews, and lockdowns. Therefore, the "care provision-loneliness" link can be better understood by analyzing COVID-related data rather than relying on the pre-pandemic ones. Finally, whereas the link between *personal* care and loneliness was relatively extensively studied, the link between provision of *instrumental* care and loneliness was much less addressed. Consequently, the contribution of the current study to the research in the field is fourfold: (a) it investigates the association between each one of the two types of informal care provision and loneliness simultaneously, (b) it investigates these associations in adults aged 50 years and older, rarely studied as caregivers in the academic literature, (c) it employs recent (COVID-19) data, and (d) it addresses various parameters for each type of care.

Studying the relationship between various parameters and types of care provision and loneliness is of high importance. Examination of this relationship will allow understanding which of the care provision activities and their indicators act better than others to relieve loneliness. This, in turn, will allow developing programs aimed at assisting middle-aged and older adults in a more effective use of their time dedicated for the care provision and leveraging greater emotional benefits from this activity during the major health crisis. The results of the study are also expected to assist in a preparation of the middle-aged and the older adult populations, in terms of care provision, for the future social and health crises.

The following research questions are asked:

RQ1: Is engaging in different types of care provision (i.e. instrumental care and personal care) associated with loneliness in adults aged 50 years and older during the course of the COVID-19 pandemic?
RQ2: Is the scope of care provision associated with loneliness in adults aged 50 years and older during the course of the COVID-19 pandemic?
RQ3: Does provision of care to different categories of people relate to loneliness in adults aged 50 years and older during the course of the COVID-19 pandemic?

2. Material and methods

2.1. Data and sample

The data for the current study were obtained from the two waves of the SHARE Corona Survey (SCS), collected in the Survey of Health, Aging and Retirement in Europe (SHARE) framework. SHARE is a cross-national panel survey which collects the data from the community dwelling people aged 50 and older and their partners, regardless of their age (Börsch-Supan et al., 2013). The data for the first wave of the SHARE COVID-19 survey (hereinafter: SCS1) were collected from participants residing in 26 European countries and Israel by means of computer-assisted telephone interview between June and August 2020 (Börsch-Supan, 2021). The data for the second wave of the survey (hereinafter: SCS2) were collected between June and August 2021 by means of the same method and from (mostly) the same participants (Börsch-Supan, 2022). The current study sample is comprised of adults aged 50 years and older who reported any frequency of feeling lonely in SCS2 (N = 48,722). Fig. 1 shows the sequence of the participants' selection.

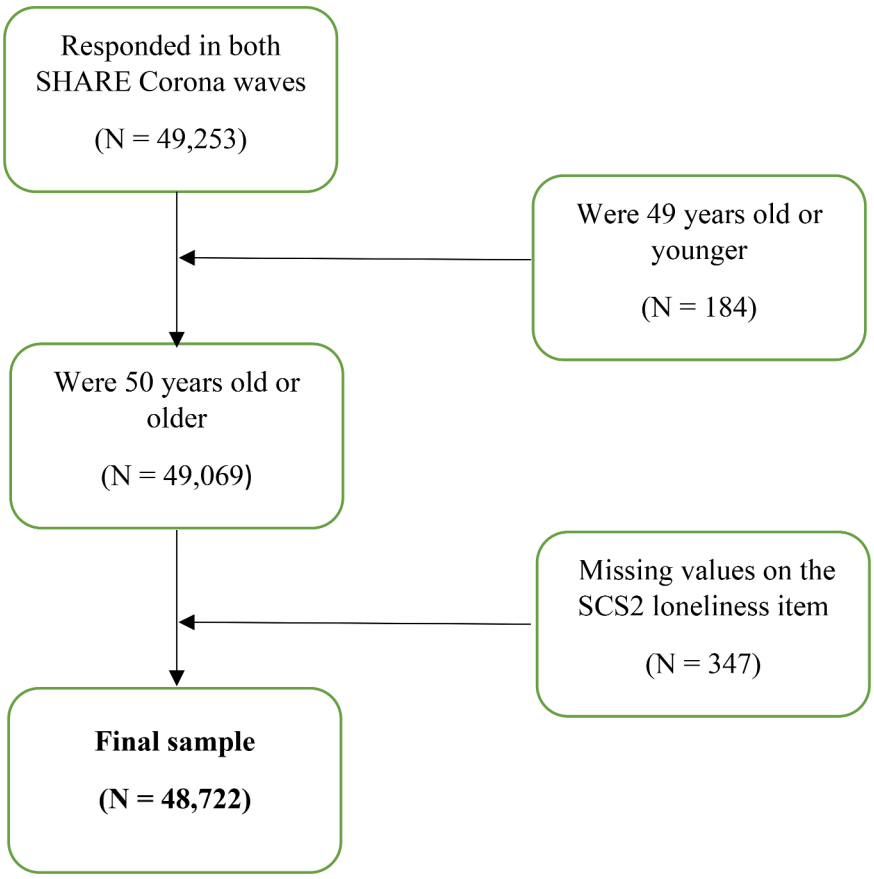

Fig. 1. Flowchart of respondents' selection.

2.2. Measures

2.2.1. Dependent variable

Loneliness - the original three-category item ("How much of the time do you feel lonely? Often, some of the time, or hardly ever or never?") was dichotomized similar to another study (Wester et al., 2022): respondents who felt lonely oftentimes or some of the time as the study ("lonely") category, and respondents who hardly ever or never felt lonely as the reference ("not lonely") category.

2.2.2. Independent variables – engagement in assistance provision

Provision of instrumental care – the original item ("Since the outbreak of corona, have you helped the following people outside your home to obtain necessities, e.g. food, medications, or emergency household repairs? Please answer yes or no to each category: own children, own parents, other relatives, other non-relatives like neighbors, friends, or colleagues") was dichotomized. Respondents who mentioned providing instrumental care to at least one type of people listed in the item formed the study category, and respondents who did not mention providing such a care to anyone represented the reference category.

Provision of personal care - the original item ("Since the outbreak of corona, have you provided personal care to the following people outside your home? Please answer yes or no to each category: own children, own parents, other relatives, other non-relatives like neighbors, friends, or colleagues") was dichotomized. Respondents who mentioned providing personal care to at least one type of people listed in the item formed the study category, and respondents who did not mention providing this type of care to anyone represented the reference category.

2.2.3. Independent variables – scope of engagement in care provision

To measure the scope of engagement in the provision of *instrumental* care, two dummy variables were generated based on the above-mentioned original item: *providing instrumental care to single category of people (for instance, only parents)* and *providing instrumental care to multiple categories of people (for instance, children and non-kin)*. Again, respondents who did not engage in the provision of instrumental care to anyone represented the reference category.

To measure the scope of engagement in the provision of *personal* care, two dummy variables were generated: *provision of personal care to a single category of people* and *provision of personal care to multiple categories of people*. Respondents who did not engage in the provision of personal care at all represented the reference category.

2.2.4. Independent variables – identity of people provided with care

The items in both SCS asked whom instrumental/personal care was provided to: children, parents, other relatives, and friends or neighbours. Therefore, series of eight (two types of care*four categories of people) dummy variables was created based on the information in the SCS2.[1] In each variable, not providing care to a certain category of people, represented the reference category.

2.2.5. Covariates

Because middle-aged and older adults' background is relevant for predicting loneliness (Dahlberg et al., 2022), the study controlled for a number of demographic, socioeconomic, and health indicators. The chosen set of covariates follows the research on loneliness in later life (Shiovitz-Ezra & Erlich, 2023; Sunwoo, 2020; Vozikaki et al., 2018). *Gender* was defined dichotomously, with women as the reference

[1] In the SCS1 there were no items asking dichotomously about provision of care to particular types of people.

category. *Age* was measured continuously (in years) and generated by subtracting the year of birth from the year of the SCS2. *Education level* was measured using two dichotomous variables based on the International Standard Classification of Education (ISCED) 1997: *high level* (ISCED 5 and 6), and *middle level* (ISCED 3, and 4), with respondents having low level of education (ISCED 0, 1, and 2) as the reference category (Lestari et al., 2021). *Living with a partner* was defined dichotomously, with respondents without a partner in the same household as the reference category. *Self-rated health* was defined ordinally, based on the reversed item asking to evaluate own health (from '1′ = Poor, to '5′ = Excellent). The variable on *being sad or depressed* was operated dichotomously, with respondents who did not experience sadness/depression as the reference category. Similar to Lestari et al. (2021), *countries of residence* were grouped into four categories which reflect their welfare regimes: Social-Democratic/Nordic, Corporatist/Central, Post-Socialist/Eastern, and Southern European/Mediterranean (reference). Finally, because loneliness can be not only situational or transient but also chronic (Shiovitz-Ezra & Ayalon, 2010), the study controlled for the frequency of feeling lonely at SCS1, which was operationalized in the same way as the study's dependent variable.

2.3. Data analysis

Sample descriptive statistics are presented using percentages (for categorical variables) and means and standard deviations (for continuous variables). Bivariate analyzes performed were chi-square and t-tests (showed in the online supplementary material: S1). At the multivariate level, logistic regression analysis was used to estimate the likelihood of feeling lonely in SCS2. In total, three models were examined, each corresponding to the relevant research question and presented in the same order. All models were significant. In each model, variance inflation factor values were below two, suggesting that multicollinearity was not the issue in the analyzes. All the analyzes were performed in SPSS 23. Level of significance was set at 0.05. Missing cases were handled by listwise deletion.

3. Results

3.1. Descriptive statistics

The statistics on the study variables are summarized in Table 1.

The sample was mostly female (58.2%), and the average age was 71.2 years ($SD = 8.96$). Most of respondents had either primary (33.5%) or secondary/postsecondary (43.1%) level of education, and the majority of them lived with a partner in the household (69.2%). The sample was characterized by moderate levels of self-rated health ($M = 2.7$, $SD = 0.98$), and by a notable share of people who reported feeling sad/depressed (29.5%) in the month prior to the survey. The largest share of the sample lived in East European countries (40.6%) followed by Central European (26.5%), South/Mediterranean (25%), and Nordic (7.9%) countries. Finally, 27.7% of the sample reported feeling often or sometimes lonely in the SCS1. As to the study dependent variable, 30.4% of the sample reported feeling often or sometimes lonely in the SCS2.

As to the provision of instrumental care, 25% of respondents reported providing this type of care, while 18.9% provided it to a single category of people, and 6.1% - to multiple categories of people from their social networks. As to the identity of people provided with care the non-kin was the most frequently mentioned (10.4%), followed by children (9.9%), parents (6.9%), and/or other relatives (5.6%).

In contrast to providing instrumental care, only 7.7% of the sample reported providing personal care to anyone from their social networks, whereas 6.5% provided this type of care to a single category of people, and 1.2% - to multiple categories of people. As to the identity of people provided with personal care, parents were the most frequently mentioned (3.2%), followed by children (2.3%), other relatives, and non-kin (1.9% each).

Table 1
Sample descriptive statistics ($N = 48{,}722$, if not mentioned otherwise).

	N *n*	*% or M*	*SD*
Study measures			
Felt lonely on SCS2			
Yes	*14,806*	*30.4*	
No	*33,916*	*69.6*	
Provided instrumental care to someone	48,655		
Yes	*12,142*	*25.0*	
No	*36,513*	*75.0*	
Provided personal care to someone	48,671		
Yes	*3732*	*7.7*	
No	*44,939*	*92.3*	
Scope of instrumental care provision	48,655		
To no one	*36,513*	*75.0*	
To a single category of people	*9179*	*18.9*	
To multiple categories of people	*2963*	*6.1*	
Scope of personal care provision	48,672		
To no one	*44,940*	*92.3*	
To a single category of people	*3168*	*6.5*	
To multiple categories of people	*564*	*1.2*	
Provided instrumental care to children	48,618		
Yes	*4798*	*9.9*	
No	*43,820*	*90.1*	
Provided instrumental care to parents	48,560		
Yes	*3356*	*6.9*	
No	*45,204*	*93.1*	
Provided instrumental care to other relatives	48,609		
Yes	*2745*	*5.6*	
No	*45,864*	*94.4*	
Provided instrumental care to non-kin	48,623		
Yes	*5061*	*10.4*	
No	*43,562*	*89.6*	
Provided personal care to children	48,632		
Yes	*1126*	*2.3*	
No	*47,506*	*97.7*	
Provided personal care to parents	48,496		
Yes	*1556*	*3.2*	
No	*46,940*	*96.8*	
Provided personal care to other relatives	48,633		
Yes	*911*	*1.9*	
No	*47,722*	*98.1*	
Provided personal care to non-kin	48,647		
Yes	*901*	*1.9*	
No	*47,746*	*98.2*	
Demographic, socioeconomic and health background			
Gender			
Men	*28,345*	*41.8*	
Women	*20,377*	*58.2*	
Age *(50–100)*		*71.2*	*8.96*
Level of education	47,677		
Primary/elementary	*15,936*	*33.5*	
Secondary/postsecondary	*20,561*	*43.1*	
Tertiary	*11,180*	*23.4*	
Living with partner			
Yes	*33,722*	*69.2*	
No	*15,000*	*30.8*	
Self-rated health *(1–5)*	48,702	*2.7*	*.98*
Was sad/depressed last month	48,601		
Yes	*14,340*	*29.5*	
No	*34,261*	*70.5*	
Country of residence			
Nordic	*3850*	*7.9*	
Central	*12,911*	*26.5*	
Eastern	*19,785*	*40.6*	
South	*12,176*	*25.0*	
Felt lonely on SCS1	47,711		
Yes	*13,205*	*27.7*	
No	*34,506*	*72.3*	

Note. M = Mean, N = Total number of observations in each variable, n = number of observations in each category of each variable, SCS = SHARE COVID-19 Survey, SD = Standard Deviation.

3.2. Findings of the multivariable analysis

Table 2 shows results of the analysis estimating the likelihood of feeling lonely as a function of engaging in the two studied care provision activities.

After controlling for the covariates, providing instrumental care was negatively associated with loneliness ($OR = 0.93$, $p = 0.028$). Respondents who provided instrumental care to someone from their social network were 7% less likely to experience loneliness as compared to those who did not provide it. In contrast, providing personal care was positively associated with loneliness ($OR = 1.13$, $p = 0.01$). Respondents who provided personal care to someone were 13% more likely to experience loneliness as compared with those who did not provide such a care.

Table 3 shows results of the analysis estimating the likelihood of feeling lonely as a function of the scope of engagement in care provision.

Providing instrumental care to a single category of people was negatively associated with loneliness ($OR = 0.92$, $p = 0.022$). Respondents who provided instrumental care to any one category of people from their social networks were 8% less likely to feel lonely than those who did not help anyone. Providing instrumental care to multiple categories of people, however, was unrelated to loneliness ($OR = 0.96$, $p = 0.471$).

Providing personal care to a single category of people was not associated with loneliness ($OR = 1.1$, $p = 0.075$). In contrast, providing personal care to multiple categories of people was positively associated with loneliness ($OR = 1.32$, $p = 0.014$). Respondents who provided personal care to more than one category of people from their social networks were 32% more likely to feel lonely than those who did provide such a care to anyone.

Table 4 shows results of the analysis estimating the likelihood of feeling lonely as a function of the identity of people whom the care was provided.

Of all the variables, only the provision of personal care to children was associated with loneliness ($OR = 1.56$, $p < 0.001$). Respondents who provided personal care to children were 56% more likely to feel lonely than their counterparts who did not provide personal care to children.

Table 2
Results of the logistic regression analysis estimating the likelihood of feeling lonely on SCS2 by engagement in care provision.

Effect	B (SE)	Exp (B)	95% CI for Exp (B) LB	UB	p
Constant	−0.34				.012
Provided instrumental care[1]	*−0.07 (0.03)*	*.93*	*.88*	*.99*	*.028*
Provided personal care[2]	*.13 (0.05)*	*1.13*	*1.03*	*1.25*	*.010*
Male[3]	−0.11 (0.03)	.90	.85	.94	.000
Age	.001 (0.002)	1.001	.999	1.004	.329
Secondary/post-secondary education[4]	−0.06 (0.03)	.95	.89	1.003	.064
Tertiary education[4]	−0.07 (0.04)	.94	.87	1.003	.060
Lives with partner[5]	−0.99 (0.03)	.37	.35	.39	.000
Self-rated health	−0.19 (0.01)	.83	.81	.85	.000
Sad/depressed last month[6]	1.35 (0.03)	3.85	3.65	4.05	.000
Nordic country residence[7]	−0.90 (0.06)	.41	.36	.45	.000
Central European country residence[7]	−0.73 (0.04)	.48	.45	.52	.000
Eastern European country residence[7]	−0.39 (0.03)	.68	.64	.72	.000
Felt lonely at SCS1[8]	1.66 (0.03)	5.26	4.999	5.53	.000
−2log likelihood	41,956.01				
Nagelkerke R	.401				
N	46,693				

Note. B = Regression estimate (coefficient), CI = Confidence Interval, N = Number of cases included in the analysis, p = Significance value, SCS = SHARE Corona Survey; SE = Standard Error. The model controlled for the covariates. Reference categories:.

[1] Did not provide instrumental care to anyone.
[2] Did not provide personal care to anyone.
[3] Female.
[4] Primary/elementary education level.
[5] Does not live with partner.
[6] Was not sad/depressed last month.
[7] South/Mediterranean country residence.
[8] Did not feel lonely at SCS1.

Table 3
Results of the logistic regression analysis estimating the likelihood of feeling lonely on SCS2 by scope of care provision.

Effect	Estimate (SE)	Exp (B)	95% CI for Exp (B) LB	UB	p
Constant	−0.34				.012
Provided instrumental care to a single category of people[1]	*−0.08 (0.04)*	*.92*	*.86*	*.99*	*.022*
Provided instrumental care to multiple categories of people[1]	−0.04 (0.06)	.96	.86	1.07	.471
Provided personal care to a single category of people[2]	.09 (0.05)	1.10	.99	1.22	.075
Provided personal care to multiple categories of people [2]	*.27 (0.11)*	*1.32*	*1.06*	*1.64*	*.014*
Male[3]	−0.11 (0.03)	.90	.85	.94	.000
Age	.002 (0.002)	1.002	.999	1.004	.318
Secondary/post-secondary education[4]	−0.06 (0.03)	.95	.89	1.003	.063
Tertiary education[4]	−0.07 (0.04)	.94	.87	1.003	.060
Lives with partner[5]	−0.99 (0.03)	.37	.35	.39	.000
Self-rated health	−0.19 (0.01)	.83	.80	.85	.000
Sad/depressed last month[6]	1.35 (0.03)	3.84	3.65	4.05	.000
Nordic country residence[7]	−0.91 (0.06)	.41	.36	.45	.000
Central European country residence[7]	−0.73 (0.04)	.48	.45	.52	.000
Eastern European country residence[7]	−0.40 (0.03)	.67	.63	.72	.000
Felt lonely at SCS1[8]	1.66 (0.03)	5.26	4.996	5.53	.000
−2log likelihood	41,952.72				
Nagelkerke R	.401				
N	46,693				

Note. B = Regression estimate (coefficient), CI = Confidence Interval, N = Number of cases included in the analysis, p = Significance value, SCS = SHARE Corona Survey; SE = Standard Error. The model controlled for the covariates. Reference categories:.

[1] Did not provide instrumental care to anyone.
[2] Did not provide personal care to anyone.
[3] Female.
[4] Primary/elementary education level.
[5] Does not live with partner.
[6] Was not sad/depressed last month.
[7] South/Mediterranean country residence.
[8] Did not feel lonely at SCS1.

4. Discussion

Provision of informal care is a highly common experience, shared by each and every one of us (Council, 2010). As indicated by Rosaline Carter: “There are only four kinds of people in the world - those who have been caregivers, those who are caregivers, those who will be

Table 4
Results of the logistic regression analysis estimating the likelihood of feeling lonely on SCS2 by the identity of people provided with care.

Effect	Estimate (SE)	Exp (B)	95% CI for Exp (B) LB	UB	*p*
Constant	−0.32				.019
Provided instrumental care to children[1]	.08 (0.05)	1.08	.99	1.18	.096
Provided instrumental care to parents[2]	−0.04 (0.07)	.96	.84	1.09	.497
Provided instrumental care to other relatives[3]	−0.11 (0.06)	.90	.80	1.01	.072
Provided instrumental care to non-kin[4]	−0.07 (0.04)	.93	.86	1.02	.125
Provided personal care to children[5]	*.44 (0.08)*	*1.56*	*1.33*	*1.83*	*.000*
Provided personal care to parents[6]	−0.04 (0.09)	.96	.81	1.14	.624
Provided personal care to other relatives[7]	−0.06 (0.10)	.95	.78	1.15	.574
Provided personal care to non-kin[8]	−0.02 (0.10)	.98	.81	1.18	.813
Male[9]	−0.11 (0.03)	.90	.85	.94	.000
Age	.001 (0.002)	1.001	.998	1.004	.426
Secondary/post-secondary education[10]	−0.05 (0.03)	.95	.90	1.01	.077
Tertiary education[10]	−0.06 (0.04)	.94	.88	1.01	.088
Lives with partner[11]	−0.99 (0.03)	.37	.35	.39	.000
Self-rated health	−0.19 (0.01)	.83	.80	.85	.000
Sad/depressed last month[12]	1.35 (0.03)	3.84	3.65	4.05	.000
Nordic country residence[13]	−0.91 (0.06)	.40	.36	.45	.000
Central European country residence[13]	−0.72 (0.04)	.49	.45	.52	.000
Eastern European country residence[13]	−0.40 (0.03)	.67	.63	.71	.000
Felt lonely at SCS1[14]	1.66 (0.03)	5.25	4.99	5.52	.000
−2log likelihood	41,664.17				
Nagelkerke R	.402				
N	46,425				

Note. *B* = Regression estimate (coefficient), CI = Confidence Interval, *N* = Number of cases included in the analysis, *p* = Significance value, SCS = SHARE Corona Survey; SE = Standard Error. The model controlled for the covariates. Reference categories:.

[1] Did not provide instrumental care to children.
[2] Did not provide instrumental care to parents.
[3] Did not provide instrumental care to other relatives.
[4] Did not provide instrumental care to non-kin.
[5] Did not provide personal care to children.
[6] Did not provide personal care to parents.
[7] Did not provide personal care to other relatives.
[8] Did not provide personal care to non-kin.
[9] Female.
[10] Primary/elementary education level.
[11] Does not live with partner.
[12] Was not sad/depressed last month.
[13] South/Mediterranean country residence.
[14] Did not feel lonely at SCS1.

caregivers and those who will need caregivers." To date, most of the research has focused on older persons as the recipients of care (Schulz et al., 2020; Yuen et al., 2018). In contrast, this study examined middle-aged and older persons as providers of care. In our analysis we examined two types of informal care, *instrumental care*, characterized as assistance with everyday tasks and *personal care*, characterized as emotional assistance including other care tasks. We also examined whether the quantity and identity of people who receive care make a difference regarding sense of loneliness in persons who provide care in the second half of life. This comprehensive approach is essential to better understand the relationship between informal care provision and sense of loneliness in people aged 50 years and older.

As expected, respondents were more likely to provide instrumental rather than personal care. Yet, as many as 2902 participants (about 6% of the sample) reported providing both types of care.

As for the RQ1, our findings show that the type of informal care matters and that not all types of care provision are similar in terms of their impact on loneliness. Whereas, according to the study findings, provision of instrumental care is largely protective against loneliness in the middle age and later life, provision of personal care contributes to a greater sense of loneliness in these lifespan periods. Although not all care-related variables were associated with loneliness, the associations found in the study provide a notable support for both theoretical frameworks employed. A positive role of part of the instrumental care variables supports the social capital theory, and a negative role of part of the personal care variables supports the caregiver stress model.

Our findings indicate that provision of personal care can be harmful and results in higher levels of loneliness, corresponding to the notion of caregiver stress/burden. This can be explained by the nature of the two types of care. Instrumental care represents a more distal type of care, which might be less burdensome emotionally. Personal care, on the other hand, represents a more emotionally demanding and involving type of care, thus possibly leads to higher levels of loneliness. A study that distinguished between emotional and instrumental support has found that it is the provision of emotional support, which benefits caregivers, rather than instrumental support (Morelli et al., 2015). In our own study, we examined personal care versus instrumental care, with personal care encompassing more than just the provision of emotional care. This could possibly account for the different findings. Another study, which examined the differential association of personal and instrumental care with wellbeing among 468 hospitalized older adults, has found that psychological support provided by informal caregivers was associated with lower levels of depressive symptoms, whereas instrumental support was associated with higher levels of depressive symptoms (Gur-Yaish et al., 2013). Our findings, in contrast, demonstrate a reverse mirror image among caregivers, thus suggesting that possible benefits to care recipients might be emotionally challenging to care providers.

As for the RQ2, the number of different categories of persons one provides with care also matters, with survey participants who provided instrumental care to a single person reported reduced levels of loneliness, whereas those who provided personal care to several categories of persons reported higher levels of loneliness. Once again, the distinction between care types should be noted, but also the scope of care. The provision of instrumental care to a single person likely results in more intimate relations. These relations can contribute to an accumulation of social capital as the relations become reciprocal. Moreover, such care probably allows for more time to engage in other activities, thus potentially allowing the accumulation and maintenance of social capital also outside the dyadic relationship with the care receiver. On the other hand, the provision of personal care to multiple categories of people likely results in high levels of burden, given the time demands this type of care puts on the caregiver. In accordance with the caregiver stress model (Pearlin et al., 1990), one of the mechanisms underlying the link between assistance provision and loneliness is the availability of time. Hence, a higher load of care recipients, coupled by more demanding care tasks likely leaves limited time to engage in activities beyond provision of care. Moreover, care demands from each category of people may vary and, consequently, lead to a greater emotional burden. All this stands in some contrast to the social capital theory, which suggests that social connections contribute to reduction of stress, increase of self-esteem, and getting support, all of which can positively impact subjective wellbeing (Tegegne & Glanville, 2019). However, it is possible that (multiple) care recipients do not represent a source of social capital. In fact, providing care to multiple types of care recipients results in limited

opportunities to engage with people who are not the recipients of care, thus restricts one's access to the social network outside the care relations.

As for the RQ3, it is not only the quantity of different types of care recipients, but also the identity of the care recipients which make a difference in older adults' sense of loneliness. Our findings show that the provision of personal care to one's children results in higher levels of loneliness among middle-aged and older persons. Much of the research to date, has focused on the other direction, namely older persons who receive care from their adult children (Oldenkamp et al., 2016; Pickard, 2015). The other direction of care provided by older adults to their children has been less explored. Nonetheless, there are several reasons why middle-aged and older persons would find themselves caring for children including giving birth at a relatively older age or having children with mental or physical disabilities (Abramson, 2015). The phenomenon was recently termed the *Panini sandwich generation* to stress the impact such care places on older persons' wellbeing (Abramson, 2015). As this represents an unexpected life event, its consequences appear detrimental to one's sense of loneliness.

4.1. Limitations

This study is not without limitations. First, although some longitudinal measures were included in the study, no causal relationships can be concluded from the findings. Second, although various parameters of both provision of instrumental and personal care were computed, the survey did not provide any additional information on the nature of these activities. Specifically, it is unknown for what reasons each type of care was provided, which exact actions were included in each one of them, or what is the extent of satisfaction with providing each type of care. Future studies should provide the response on these issues. Third, it is unknown whether participants of the current study had some previous experience in the informal care provision or past training/professional preparation which could contribute to their caregiving abilities (like an academic degree in social work). Fourth, care provision and loneliness are subjects to cross-temporal changes, so that the results may reflect the studied period only.

5. Conclusions

The present study provides an important outlook on the structure of care supplied by middle-aged and older persons. In contrast to past research, which has mainly focused on older persons as care recipients, the present study examines the opposite direction - of persons aged 50 years and older as care providers. Our findings demonstrate clear distinction between the roles of instrumental and personal care, with the former acting in a protective way against loneliness, and the latter contributing to the increased levels of loneliness. This provides a clear argument against pulling all care providers into a single category. Instead, our findings point to persons aged 50 years and older who provide personal care as potentially needing further assistance given its association with higher levels of loneliness.

In addition to the type of care provided, the number of different categories of persons once provides care to and the type of persons one provides care to also matter when it comes to understanding loneliness. Hence, practitioners working with middle-aged and older persons should be cautioned against grouping all forms of care under a single umbrella. Theoretically, the study contributes to an understanding of a more refined social capital theory by pointing to the fact that often times, care recipients do not constitute a source of capital, but rather, it is the probably the opportunity to maintain social contacts with the outside world (e.g., a reduced care load), which results in a lower sense of loneliness. As the study was conducted using the data collected during the pandemic, it is important to examine these associations under more regular circumstances, when contact between people is not constrained by law or by fears of contamination.

Helps you, helps me? Provision of instrumental and personal care and loneliness among adults aged 50 years and older during the COVID-19 pandemic –

Provision of instrumental care to people from social networks was associated with older adults' lower likelihood of feeling lonely during the COVID-19 pandemic, whereas provision of personal care was associated with greater likelihood of feeling lonely during this period.

- Provision of instrumental care by older adults to a single category of people from social networks was associated with lower likelihood of feeling lonely during the COVID-19 pandemic whereas provision of personal care to multiple categories of people was associated with greater likelihood of feeling lonely during this period.
- Provision of personal care to children was associated with older adults' greater likelihood of feeling lonely during the COVID-19 pandemic.
- Instrumental care and personal care related differently to experiencing the loneliness in later life during the COVID-19 pandemic, corresponding to the notion of social capital accumulation and caregiver burden, respectively.
- For a better understanding of the impact of care provision on loneliness, various types and parameters of care should be considered.

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CRediT authorship contribution statement

Dennis Rosenberg: Writing – review & editing, Writing – original draft, Validation, Software, Methodology, Formal analysis. **Sharon Shiovitz-Ezra:** Writing – review & editing, Writing – original draft, Project administration, Funding acquisition. **Liat Ayalon:** Writing – review & editing.

Declaration of Competing Interest

The author reports there are no competing interests to declare.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.archger.2023.105065.

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