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# Long-Term Care Determinants in Türkiye: Analyzing A Comprehensive Range of Variables[1]

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## Abstract

*By 2050, one in ten people in OECD countries will be 80 aged or older. The aging population will have several impacts on countries, such as increased demand for healthcare and social services, a smaller workforce, and a growing dependency ratio. Türkiye relies heavily on family members to provide long-term care (LTC) for their elderly. In this paper, we study the relationship between a comprehensive range of demographic and socioeconomic variables and informal long-term caregiving using the Turkish Statistical Institute's Time Use Survey, a nationally representative micro dataset. Employing a multivariate regression analysis, we find that women are more likely to provide unpaid informal caregiving, albeit lacking strong statistical significance. The findings also reveal that being married and older are significant predictors of providing informal LTC. In contrast, we find no significant evidence that income level and house characteristics are crucial determinants of informal LTC. The findings of this study have a number of important policy implications for future practice, such as investing in healthcare and social services and developing policies to encourage LTC workforce participation.*

**Keywords:** *Long Term Care, Multivariate Analysis, Ordinary Least Squares*

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[1] This study does not require ethics committee permission.

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# Türkiye'de Uzun Dönemli Bakım Belirleyicileri: Kapsamlı Bir Değişkenler Dizisinin Analizi

Abdullah TİRGİL [4] - Dilruba VİDİNEL [5]

**Başvuru Tarihi:** 14.06.2023 **Kabul Tarihi:** 01.02.2024 **Makale Türü:** Araştırma Makalesi

## Öz

*2050 yılına gelindiğinde OECD ülkelerindeki her on kişiden biri 80 yaş ve üzerinde olacaktır. Yaşlanan nüfusun ülkeler üzerinde sağlık ve sosyal hizmetlere olan talebin artması, işgücünün azalması ve bağımlılık oranının artması gibi çeşitli etkileri olacaktır. Türkiye'de yaşlıların uzun süreli bakımını (USB) sağlamak büyük ölçüde aile üyelerine dayanmaktadır. Bu çalışmada, ulusal düzeyde temsili bir mikro veri seti olan Türkiye İstatistik Kurumunun Zaman Kullanım Anketi'ni kullanarak kapsamlı bir dizi demografik ve sosyoekonomik değişken ile kayıt dışı uzun süreli bakım verme arasındaki ilişkiyi incelemekteyiz. Çok değişkenli bir regresyon analizi kullanarak, kadınların ücretsiz kayıt dışı bakım hizmeti sunma olasılığının daha yüksek olduğu sonucuna ulaştık. Bulgular ayrıca evli ve ileri yaşta olmanın kayıt dışı uzun süreli bakımın önemli belirleyicileri olduğunu ortaya koymaktadır. Buna karşılık, gelir düzeyi ve hane özelliklerinin kayıt dışı uzun süreli bakımın önemli belirleyicileri olduğuna dair anlamlı bir kanıt bulamadık. Bu çalışmanın bulguları, sağlık ve sosyal hizmetlere yatırım yapmak ve işgücüne katılımı teşvik etmek amacıyla politikalar geliştirmek gibi gelecekteki uygulamalar için bir dizi önemli politika çıkarımına sahiptir.*

**Anahtar Kelimeler:** *Uzun Süreli Bakım, Çok Değişkenli Analiz, Sıradan En Küçük Kareler Yöntemi*

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## Introduction

A growing body of literature recognizes the importance of long-term care (LTC) for adults. In 2019, OECD countries, on average, dedicated 15% of their health spending to long-term care (OECD, 2021, p. 198; Slobbe, Wong, Verheij, van Oers, and Polder, 2017, p.1). By the year 2050, the proportion of individuals aged 80 and older in OECD countries is projected to be as high as 10% of the population (Colombo, Llena-Nozal, Mercier and Tjadens, 2011, p. 3). As the global population ages and due to low fertility, the demand for LTC is projected to grow rapidly in the coming decades (Albuquerque, 2022, p.2; Costa-Font and Courbage, 2015, p. 1).

Previous studies defined LTC as a comprehensive range of services, including social care and health care, catered to individuals who experience a diminished functional capacity, leading to a prolonged dependence on assistance for daily activities (Colombo et al., 2011, p. 4; Albuquerque, 2022, p.1).

LTC can be provided in two settings: residential care and home-based care. Several studies have highlighted that there are various options for residential care, including adult daycare centers, nursing homes, home health agencies, and residential care communities (Gentili, Masiero and Mazzonna, 2017, p.1; Zhang, Zeng, Wang and Fang, 2020, p.2; Katz, 2011, p. 487; Harris-Kojetin, Sengupta, Park-Lee and Valverde, 2013, p. 8). However, there is a shortage of competent long-term care workers who can meet older adults' needs (Stone, 2010, p. 114).

On the other hand, home-based care is administered within the person's own house and could be formal with professionals or informal with family members, relatives, or neighbors (Ozbugday, Tirgil and Kose, 2020, p. 1). Informal caregivers play a vital role in providing LTC. They provide a wide range of services, including personal care, such as bathing, dressing, and grooming; meal preparation and assistance with eating; housekeeping and laundry; transportation and errands; emotional support and companionship. Informal caregiving can be an enriching experience. However, it can also be very demanding and stressful. Caregivers often experience physical and emotional exhaustion, financial hardship, and social isolation (National Research Council, 2010, p.122; Wu, Cohen, Cong, Kim and Peng, 2021, p.124)

This study uses data from the Turkish Statistical Institute to assess the relationship between individual and household-level characteristics and informal long-term care. The approach to empirical research adopted for this study is one of the widely used econometric methods for benchmark analysis, Ordinary Least Squares (Angrist and Pischke, 2009). For the first time, the present research explores the association between demographic and socioeconomic variables and informal long-term care for adults in Türkiye. Therefore, this study makes a major contribution to research on LTC by demonstrating its relationship with individual and household-level characteristics.

A number of researchers have shown that informal care for adults is primarily provided by family members, friends, and neighbors, such that women are more likely to provide informal care (Brito and Contreras, 2023, p.21; Stone, Cafferata and Sangl, 1987, p. 617; OECD, 2021, p.262; Henz, 2009, p.369) but may face opportunity costs in terms of forgone earnings (Geyer, Haan, and Korfhage, 2015, p.4; Carmichael, Charles, and Hulme, 2010, p.182; Mudrazija, 2019, p.1004; Sakata, McKenzie, and Kajitani, 2022, p.3762). Hoffmann and Rodrigues (2010) note that informal care is often essential in filling gaps in formal care services. Wolff, Dy, Frick and Kasper (2007, p. 42) found that primary informal caregivers provide frequent and intense assistance, with few supportive services, particularly at the end of life. Furthermore, Naiditch, Triantafillou, Di Santo, Carretero and Durrett (2013, p. 45) highlight the importance of the social network of co-care providers, who informally provide most of the required support, help, and care.

Researchers in Türkiye have not treated informal long-term care for adults in much detail. Much of the research up to now has been descriptive in nature (Ağören, 2017, p. 8; Ayhan, 2014, p. 28; Karakuş, 2018; Özmete and Hussein, 2017). This paper aims to explore the relationship between demographic and socioeconomic factors and informal long-term care for adults. Demographic and socioeconomic factors can play important roles in addressing the issue of informal long-term care for adults. For instance, income level, educational attainment, health status, gender, employment status, and house type can significantly influence an individual's ability to offer unpaid care (i.e., informal care) to an older person who needs help due to old age problems or illness. Furthermore, cultural and societal norms can play a crucial role in shaping obligations regarding unpaid care for the elderly. Cultural values emphasizing respect for elders and filial piety may affect individuals providing unpaid care (Stein, Wemmerus, Ward, Gaines, Freeberg and Jewell, 1998, p.611; Cicirelli, 1998, p. 478; Silverstein, Gans and Yang, 2006, p.1069; Polenick, Seidel, Birditt, Zarit and Fingerman, 2017, p.418; Zarzycki, Morrison, Bei, and Seddon, 2022, p.256; Spann, Vicente, Allard, Hawley, Spreeuwenberg and Witte, 2020, p.706; Zygouri, Cowdell, Ploumis, Gouva, and Mantzoukas, 2021, p.8).

This paper has been divided into five parts. The first part dealt with the introduction and related literature. The second part explains the details of the data we use for the analysis. The third chapter is concerned with the methodology used for this study. Chapter four analyzes the results of our regression analysis. The final chapter will conclude with a discussion.

**Data**

We utilize the Time Use Survey (TUS) by the Turkish Statistical Institute (TurkStat) conducted between 2014 and 2015 for our analysis. The TurkStat implemented the second wave of the TUS from August 1, 2014, to July 31, 2015, comparable to international time use surveys initiated by EUROSTAT (Turkish Statistical Institute, 2023). The TUS is a nationally representative household survey conducted with 9,073 households and 25,109 individuals aged 10+ in Türkiye, providing rich information on household- and individual-level variables.

The TUS data comprises three questionnaires: individual, household, and diaries. The individual questionnaire and diaries include those aged 10 years or above, and in particular, diaries are separated as weekdays and weekends. The household questionnaire was completed with someone in the household aged 18 or above to provide information about the household.

To examine the determinants of long-term care of adults in Türkiye, we combine two questionnaires: individual and household surveys. The individual survey of the TUS provides rich information on individuals' age, gender, household size (number of people living in the household), employment status, marital status, educational level, income level, and health status. The TUS covers household information, such as residential type, ownership, and number of rooms.

Our dependent variable comes from Part 10, Elderly Care, of the individual questionnaire. The TUS asks individuals, "During the last four months, have you provided unpaid care or assistance to an elderly person who needed help (whether or not a household member or relative) due to old age-related problems or illnesses? (Care for people aged 65 and over)." Participants are asked to respond "Yes" or "No" to this question.

Respondent's education level obtained from the individual survey comprised five groups: Did not finish a school, primary school, primary/secondary or vocational secondary school, high school or vocational high school, and college, faculty, master/doctorate. Furthermore, individuals' marital status consists of four groups: never married, married, divorced, and widow. Individuals are being asked about their employment status: In

the last week, have you worked or had an income-generating job (even if you are a housewife, student, or retired) even for one hour, paid or unpaid, in order to earn an income in kind (goods) or cash (money), which is a "Yes" or "No" question. In addition, the individual income variable has five brackets: 1: 0–1080 Turkish Liras, 2: 1081–1550 Turkish Liras, 3: 1551–2170 Turkish Liras, 4: 2171–3180, and 5: 3181 Turkish Liras and higher. Finally, the general health status of individuals is evaluated by the question "How is your general health?" and the responses range from 1, "very good," to 5, "very bad."

When examining long-term care determinants in Türkiye, it is crucial to consider a wide range of variables that can impact the provision of long-term care services. For this purpose, we also include household-level characteristics in our analysis, which we think would explain household and family structure. We obtain information on residential types of individual houses, such as detached houses, twin or row houses, apartments (less than 10 apartments), apartments (10 or more), and others. Besides, we also learn the ownership status of the house that respondents live in, such as owner, tenant, public housing, does not own the house but does not pay rent. Lastly, we use information from the household questionnaire, which asks about the number of rooms (including the living room and excluding the bathroom, toilet, and kitchen) of the house the respondent lives in.

Table 1
Descriptive statistics

| | Mean (%) | SD | Min | Max | Observation |
|---|---|---|---|---|---|
| Long-term care | 0.087 | 0.281 | 0 | 1 | 9154 |
| Age | 38.954 | 12.099 | 15 | 95 | 9154 |
| Female | 0.251 | 0.434 | 0 | 1 | 9154 |
| Employed | 0.977 | 0.150 | 0 | 1 | 9154 |
| ***Marital status*** | | | | | |
| Never married | 0.221 | 0.415 | 0 | 1 | 9154 |
| Married | 0.740 | 0.439 | 0 | 1 | 9154 |
| Divorced | 0.027 | 0.161 | 0 | 1 | 9154 |
| Widow | 0.013 | 0.111 | 0 | 1 | 9154 |
| ***Education level*** | | | | | |
| No school | 0.045 | 0.207 | 0 | 1 | 9154 |
| Primary | 0.332 | 0.471 | 0 | 1 | 9154 |
| Primary/secondary or vocational secondary school | 0.168 | 0.374 | 0 | 1 | 9154 |
| High school or vocational high school | 0.223 | 0.416 | 0 | 1 | 9154 |
| College, faculty, master/doctorate | 0.232 | 0.422 | 0 | 1 | 9154 |
| ***General Health*** | | | | | |
| Very good | 0.161 | 0.368 | 0 | 1 | 9154 |
| Good | 0.635 | 0.481 | 0 | 1 | 9154 |
| Moderate | 0.175 | 0.380 | 0 | 1 | 9154 |
| Bad | 0.027 | 0.163 | 0 | 1 | 9154 |
| Very bad | 0.001 | 0.039 | 0 | 1 | 9154 |
| ***Income level (Turkish liras)*** | | | | | |
| 0–1080 | 0.474 | 0.499 | 0 | 1 | 9154 |
| 1081–1550 | 0.211 | 0.408 | 0 | 1 | 9154 |
| 1551–2170 | 0.120 | 0.325 | 0 | 1 | 9154 |
| 2171–3180 | 0.130 | 0.336 | 0 | 1 | 9154 |
| 3181 and above | 0.065 | 0.247 | 0 | 1 | 9154 |
| ***House type*** | | | | | |
| Detached house | 0.360 | 0.480 | 0 | 1 | 9154 |
| twin or row houses | 0.024 | 0.154 | 0 | 1 | 9154 |
| apartments (less than 10 apartments) | 0.276 | 0.447 | 0 | 1 | 9154 |
| apartments (10 or more) | 0.338 | 0.473 | 0 | 1 | 9154 |
| Other | 0.001 | 0.033 | 0 | 1 | 9154 |
| ***Ownership status*** | | | | | |
| Owner | 0.595 | 0.491 | 0 | 1 | 9154 |
| Tenant | 0.270 | 0.444 | 0 | 1 | 9154 |
| Public housing | 0.014 | 0.113 | 0 | 1 | 9154 |
| Does not own the house but does not pay rent | 0.122 | 0.327 | 0 | 1 | 9154 |
| Number of rooms | 3.550 | 0.778 | 1 | 9 | 9154 |

Notes: Long-term care is the dependent variable in our analysis, and taking the value of 1 if the person responds to the question "During the last four months, have you provided unpaid care or assistance to an elderly person who needed help (whether or not a household member, relative or not) due to old age-related problems or illnesses?" Yes, and zero otherwise.

Table 1 illustrates some of the main characteristics of the sample used in our analysis. As can be seen from the table above, about 9% of the sample have provided unpaid care or assistance to an older adult who needed help (whether or not a household member relative, or not) due to old age-related problems or illnesses. While the mean age of our sample is 39, females are 25% of the sample. 74% of those who were interviewed indicated that they were married, and just over 20% of those who responded stated that they were never married. As many as a third of the respondents indicated they have a primary school degree, and just above 20% indicated they have a higher education and more. Approximately 64% of those surveyed reported having good health, and just below 50% of those responding indicated that they are in the bottom section of the income brackets. While just over 35% of the respondents indicated that they live in a detached house, those who stated living in a twin or row house, approximately 3%. 60% of those interviewed indicated owning their house, whereas 27% were tenants.

## Method

To investigate the determinants of long-term care in Türkiye, we use the ordinary least squares (OLS) method, which is widely used in the literature, and apply the following model:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 Region_r + \beta_3 Survey - year_y + \beta_2 Survey - month_m + e_i, \qquad (1)$$

where $Y_i$ is our dependent variable, which takes the value of 1 if the $ith$ individual responded "Yes" to the question "During the last four months, have you provided unpaid care or assistance to an elderly person who needed help (whether or not a household member, relative or not) due to old age-related problems or illnesses?" and 0 otherwise.

$X_i$ comprises control variables such as age, sex, employment status, marital status (in four categories: never married, married, divorced, and widow, educational level (in five categories: did not finish a school, primary school, primary/secondary or vocational secondary school, high school or vocational high school, and college, faculty, master/doctorate), health status (in five categories: very good, good, moderate, bad, very bad), and income level (in five brackets: 0–1080 Turkish Liras, 1081–1550 Turkish Liras, 1551–2170 Turkish Liras, 2171–3180, 3181 Turkish Liras and higher) of respondents. According to Article 39 of Labor Law No. 4857, the minimum wage in Türkiye is designed to control all workers' economic and social circumstances. The minimum wage is typically determined in compliance with this law's rules annually or every six months. The Minimum Wage Determination Commission set the minimum wage that would be in place from January 1, 2014, to June 30, 2014, which is a gross wage of 1,071.00 TL and a net wage of 846 TL. The minimum salary from July 2014 to December 2014 was 1,134.00 TL (gross) and 891.03 TL (net). Then again the commission issued the minimum wage, which was to be in effect from January 1, 2015 to June 30, 2015, which is a gross salary of 1,201.50 TL and a net wage of 949.07 TL. The minimum salary was 1,273.50 TL (gross) and 1,000.54 TL (net) for the calendar year ending December 31, 2015. In brief, the average net salary for 2014 is roughly 868.52 TL, while the average net minimum salary for 2015 is roughly 974.81 TL, which coincides with our income variable's first category.

In equation (1), $Region_r$ stands for 12-region (NUTS1-level) specific fixed effects, $Survey - year_y$ for survey-year fixed effects, and $Survey - month_m$ for survey-month fixed effects. Region-fixed effects will capture significant time-invariant variation across 12 regions in the dependent variable, long-term care. We cluster standard errors at the household level.

## Results

Regression analysis was used to predict the relationship between whether a person offers unpaid care or assistance to an older adult and a wide range of control variables such as individuals' age, sex, marital status, education, and health status. The results obtained from the preliminary analysis of these demographic and socioeconomic variables on unpaid long-term care assistance were presented in Table 2 by applying three separate models. Column 1 in Table 2 shows the correlational analysis for these variables, including only the demographic and socioeconomic variables. Column 2 in Table 2 included 12 region fixed effects, and column 3 included survey-year and survey-month fixed effects in our regression analysis. It is apparent from this table that as people age, they are more likely to offer unpaid care or assistance to an older adult who needs help (which we will call LTC from hereon). A closer inspection of the table shows that compared with men, female individuals tend to provide more LTC, supporting previous research into this area which links female and long-term care (Stone et al., 1987, p. 4). There was a significant positive correlation between married people and LTC; in other words, in contrast to never-married individuals, married respondents tend to be more pro-LTC.

Further analysis shows that higher educated people are likelier than those with no school degree to perform LTC. As for general health relations with the LTC, in contrast to those with very good health, those with very bad health conditions are less likely to provide unpaid care or assistance to the elderly. What is striking about the results in this table is that the income level of individuals is not associated with LTC, which is a rather surprising outcome. It is worth noting that there was no correlation between the house type of respondents and LTC. Interestingly, the ownership status of the house and the number of rooms are not always correlated with LTC.

Table 2
Results for Long-Term Care Determinants

| | (1) | (2) | (3) |
|---|---|---|---|
| Age | 0.002*** | 0.002*** | 0.002*** |
| | (0.000) | (0.000) | (0.000) |
| Female | 0.012* | 0.013* | 0.013* |
| | (0.007) | (0.007) | (0.007) |
| Employed | -0.005 | -0.006 | -0.006 |
| | (0.024) | (0.023) | (0.023) |
| ***Marital status*** | | | |
| Never married | Ref. | Ref. | Ref. |
| Married | 0.029*** | 0.023*** | 0.023*** |
| | (0.009) | (0.009) | (0.009) |
| Divorced | 0.029 | 0.022 | 0.022 |
| | (0.026) | (0.025) | (0.025) |
| Widow | -0.019 | -0.024 | -0.025 |
| | (0.027) | (0.027) | (0.027) |
| ***Education level*** | | | |
| No school | Ref. | Ref. | Ref. |
| Primary | 0.060*** | 0.051*** | 0.052*** |
| | (0.013) | (0.013) | (0.013) |
| Primary/secondary or vocational | 0.058*** | 0.050*** | 0.051*** |
| secondary school | (0.014) | (0.014) | (0.014) |
| High school or vocational high | 0.065*** | 0.058*** | 0.058*** |
| school | (0.015) | (0.015) | (0.015) |
| College, faculty, master/doctorate | 0.066*** | 0.053*** | 0.053*** |
| | (0.016) | (0.016) | (0.016) |
| ***General Health*** | | | |
| Very good | Ref. | Ref. | Ref. |
| Good | 0.010 | 0.005 | 0.003 |
| | (0.008) | (0.008) | (0.008) |
| Moderate | 0.028** | 0.022* | 0.020* |
| | (0.012) | (0.012) | (0.012) |
| Bad | 0.028 | 0.022 | 0.019 |
| | (0.021) | (0.021) | (0.021) |
| Very bad | -0.070*** | -0.070*** | -0.069*** |
| | (0.013) | (0.020) | (0.021) |
| ***Income level (Turkish Lira)*** | | | |
| 0–1080 | Ref. | Ref. | Ref. |
| 1081–1550 | -0.016** | -0.013 | -0.012 |
| | (0.008) | (0.008) | (0.008) |
| 1551–2170 | 0.001 | 0.003 | 0.004 |
| | (0.011) | (0.011) | (0.011) |
| 2171–3180 | 0.003 | 0.007 | 0.008 |
| | (0.012) | (0.012) | (0.012) |
| 3181 and above | 0.019 | 0.024 | 0.025 |
| | (0.017) | (0.017) | (0.017) |
| ***House type*** | | | |
| Detached house | Ref. | Ref. | Ref. |
| twin or row houses | -0.002 | 0.008 | 0.011 |
| | (0.025) | (0.025) | (0.025) |
| apartments (less than 10 apartments) | -0.016* | -0.008 | -0.008 |
| | (0.009) | (0.009) | (0.010) |
| apartments (10 or more) | -0.004 | -0.009 | -0.008 |
| | (0.009) | (0.010) | (0.010) |
| Other | 0.224 | 0.213* | 0.208 |
| | (0.139) | (0.129) | (0.127) |
| ***Ownership status*** | | | |
| Owner | Ref. | Ref. | Ref. |
| Tenant | -0.005 | -0.006 | -0.007 |
| | (0.008) | (0.008) | (0.008) |
| Public housing | -0.000 | -0.010 | -0.005 |
| | (0.032) | (0.032) | (0.031) |
| Does not own the house but does not | 0.023* | 0.019 | 0.018 |
| pay rent | (0.012) | (0.012) | (0.012) |
| Number of rooms | 0.007 | 0.005 | 0.006 |
| | (0.004) | (0.004) | (0.004) |
| 12 region fixed effects | - | + | + |
| Survey year fixed effects | - | - | + |
| Survey month fixed effects | - | - | + |
| R-squared | 0.020 | 0.041 | 0.042 |
| N | 9154 | 9154 | 9154 |

Notes: Standard errors in parentheses are clustered at the household level. * $p < .1$, ** $p < .05$, *** $p < .01$. Regressions are weighted using individual weights given in the survey.

This section of the paper is concerned with the heterogeneous analysis, where we examine LTC determinants by respondents' sex, such as female and male. Costa-font, Courbage and Swartz (2015, p.51) argue that some OECD countries, such as Türkiye and Mexico, provide LTC widely in the form of informal care by families, which means that primarily females will take care of the elderly when the need arises. However, Ozbugday and Tirgil (2021, p. 62) indicate that female labor force participation rates have increased in Türkiye since the 2000s, which may affect the equilibrium in the LTC market. Hence, we also investigate whether the LTC determinants change based on the respondents' sex. Table 3 below illustrates the determinants of LTC concerning individuals' sex. While column 1 in Table 3 reports the results for female individuals, column 2 shows the results for men. For both sexes, age is a significant positive factor in determining LTC. Married male respondents indicate they are more likely to offer LTC to an older adult when needed than never-married male individuals. On the other hand, married women individuals do not seem to offer more LTC compared with female people who are never married.

Furthermore, education for male respondents seems to be a significant positive determinant for LTC. Similarly, education is a positive and significant factor for female respondents, albeit lacking strong statistical significance. It is difficult to explain this result, but it might be related to increasing female labor force participation. Those with very bad health status tend to provide less LTC for both sex groups. Turning now to the insignificant results for both groups, we observe that income level, house type, and ownership status do not appear to be a determinant of LTC for these subsamples we analyze in Türkiye.

Table 3
Heterogenous Results for Long-Term Care Determinants

| | (1) Female | (2) Male |
|---|---|---|
| Age | 0.003*** | 0.002*** |
| | (0.001) | (0.000) |
| Employed | 0.020 | -0.028 |
| | (0.027) | (0.032) |
| ***Marital status*** | | |
| Never married | Ref. | Ref. |
| Married | -0.004 | 0.032*** |
| | (0.021) | (0.008) |
| Divorced | -0.026 | 0.047 |
| | (0.039) | (0.035) |
| Widow | -0.052 | -0.028 |
| | (0.042) | (0.040) |
| ***Education level*** | | |
| No school | Ref. | Ref. |
| Primary | 0.073*** | 0.051*** |
| | (0.026) | (0.014) |
| Primary/secondary or vocational secondary school | 0.055* | 0.054*** |
| | (0.029) | (0.016) |
| High school or vocational high school | 0.054* | 0.064*** |
| | (0.030) | (0.016) |
| College, faculty, master/doctorate | 0.053 | 0.061*** |
| | (0.032) | (0.018) |
| ***General Health*** | | |
| Very good | Ref. | Ref. |
| Good | 0.002 | 0.002 |
| | (0.016) | (0.009) |
| Moderate | -0.018 | 0.028** |
| | (0.022) | (0.013) |
| Bad | 0.083 | -0.001 |
| | (0.057) | (0.022) |
| Very bad | -0.072** | -0.067** |
| | (0.031) | (0.032) |
| ***Income level (Turkish Lira)*** | | |
| 0-1080 | Ref. | Ref. |
| 1081-1550 | -0.017 | -0.008 |
| | (0.017) | (0.009) |
| 1551-2170 | -0.007 | 0.006 |
| | (0.022) | (0.012) |
| 2171-3180 | -0.019 | 0.016 |
| | (0.023) | (0.014) |
| 3181 and above | 0.014 | 0.028 |
| | (0.036) | (0.018) |
| ***House Type*** | | |
| Detached house | Ref. | Ref. |
| Twin or row houses | 0.022 | 0.005 |
| | (0.047) | (0.024) |
| Apartments (less than 10 apartments) | -0.023 | -0.007 |
| | (0.019) | (0.010) |
| Apartments (10 or more) | -0.012 | -0.009 |
| | (0.019) | (0.010) |
| Other | 0.017 | 0.244* |
| | (0.028) | (0.140) |
| ***Ownership Status*** | | |
| Owner | Ref. | Ref. |
| Tenant | 0.011 | -0.014 |
| | (0.015) | (0.008) |
| Public housing | 0.046 | -0.015 |
| | (0.066) | (0.028) |
| Does not own the house but does not pay rent | 0.004 | 0.021 |
| | (0.021) | (0.013) |
| Number of rooms | 0.009 | 0.006 |
| | (0.008) | (0.005) |
| 12 region fixed effects | + | + |
| Survey year fixed effects | + | + |
| Survey month fixed effects | + | + |
| R-squared | 0.059 | 0.045 |
| N | 2300 | 6854 |

Notes: Standard errors in parentheses are clustered at the household level. * $p < .1$, ** $p < .05$, *** $p < .01$. Regressions are weighted using individual weights given in the survey.

Taken together, these results suggest that there is a significant and positive association between a wide range of variables such as age, being female (albeit less precise estimates), being married, more education, and better health and long-term care for the elderly. These results also suggest that there is no evidence that the income level of individuals, house type and ownership status of the house, number of rooms, and employment status are significant factors for determining LTC.

## Discussion

The percentage of people 65 aged and older has increased over the last few decades in all OECD countries, going from less than 9% in 1960 to more than 17% in 2019. Declining fertility rates and increased life expectancy are two factors driving this trend, causing an increase in the proportion of older people in the population across all OECD countries. Over 232 million people in the 38 OECD member nations were 65 or older in 2019, with over 62 million at least 80 years old (OECD, 2021, p.250).

There is a growing body of literature that recognizes the importance of aging and long-term care. A notable outcome of rapid population aging is the decline in the prospective labor pool within the economy, even in the face of continued efforts by nations to extend the working lives of their citizens. In reviewing the literature, there have been few attempts to investigate the association between demographic and socioeconomic factors and informal long-term care for adults in Türkiye.

The present study was designed to determine how individual- and household-level characteristics affect informal long-term care. The most obvious finding to emerge from the analysis is that women are more likely to offer informal LTC than men (Grigoryeva, 2017, p.129; Navaie-Waliser, Spriggs and Feldman, 2002, p. 1255), albeit less precise estimates. It is encouraging to compare this outcome with that reported by International Labour Organization (ILO) (2022), which indicated that women are disproportionately responsible for caring for the elderly, which affects their ability to work. Our finding also aligns with the recent research report "Caregiving in the U.S. 2020," indicating that men comprise 39% of caretakers, compared to women, who comprise 61% of caregivers (AARP, 2020).

Another significant finding is that married people, specifically married men, are more likely to bear responsibility for informal care service provision. This finding is contrary to previous studies, which have suggested no significant relationship between marital status and long-term care for parents. For instance, Grigoryeva (2017) suggests that their marital status is not significantly associated with parental care for sons and daughters regarding absolute hours of care. However, married daughters are more likely to care for their parents concerning a standardized share of care. In the meantime, in contrast to sons' caregiving, married daughters tend to be more elastic based on individual and parental characteristics and available resources.

LTC systems vary globally in various crucial aspects, such as provision, access to care, coverage, and funding methods. Potential long-term care needs pose one of the most significant economic risks for older individuals and their adult children. As family structures shift towards single-generation households and female employment rises, the ability to provide informal long-term care for family members decreases. A key policy priority should, therefore, be to plan for the long-term care of adults to be more accessible and offered in their preferred places, either in their homes or LTC institutions. Otherwise, families may be forced to take time off from work (Zuchandke, Reddemann, Krummaker and Von Der Schulenburg, 2010, p. 639).

Another important practical implication is that Türkiye needs to take steps to address the challenges of informal caregiving. These steps include expanding the availability of formal LTC services, reducing the cost of formal LTC services, providing training and support to informal caregivers, and raising awareness of the importance of informal caregiving. These efforts will ensure that Türkiye can continue to rely on informal care to provide LTC for their elderly.

It is not the task of this paper to examine the causal relationship between demographic and socioeconomic variables and informal long-term care for adults. Therefore, establishing causality is beyond the scope of this study. Notwithstanding limitations, the findings reported here shed new light on informal long-term care for adults in Türkiye.

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## Genişletilmiş Özet

### Amaç

Bu çalışmada, Türkiye'de demografik ve sosyoekonomik faktörler ile yetişkinlere yönelik kayıt dışı uzun süreli bakım arasındaki ilişkiyi incelemek araştırmanın ana konusudur. Bu doğrultuda Türkiye İstatistik Kurumunun ulusal düzeyde temsili bir mikro veri seti olan Zaman Kullanımı Anketi'ni kullanarak Türkiye'de kapsamlı bir demografik ve sosyoekonomik değişkenler yelpazesi ile kayıt dışı uzun süreli bakım verme arasındaki ilişkinin incelenmesi amaçlanmaktadır. Bu çalışmayla Türkiye'deki yetişkinlerin demografik ve sosyoekonomik değişkenleri ile kayıt dışı uzun süreli bakım arasındaki ilişki ilk kez incelenmektedir. Dolayısıyla bu çalışma, uzun süreli bakımın bireysel ve hanehalkı düzeyindeki özelliklerle ilişkisini ortaya koyarak uzun süreli bakım araştırmalarına önemli bir katkı sağlamaktadır. Çalışmanın bulgularının sağlık ve sosyal hizmetlere yatırım yapmak ve işgücüne katılımı teşvik etmek amacıyla politikalar geliştirmek gibi gelecekteki uygulamalar için önemli politika çıkarımlarına katkı sağlayacağı düşünülmektedir.

### Tasarım ve Yöntem

Bu çalışma için benimsenen ampirik araştırma yaklaşımı, kıyaslama analizi için yaygın olarak kullanılan ekonometrik yöntemlerden biri olan Sıradan En Küçük Kareler'dir. Analizimizde Türkiye İstatistik Kurumu (TÜİK) tarafından 2014-2015 yılları arasında hazırlanan Zaman Kullanım Anketi kullanılmıştır. Türkiye'de uzun dönemli bakımın belirleyicilerini araştırmak için literatürde yaygın olarak kullanılan sıradan en küçük kareler (OLS) yöntemi ~~araştırmada~~ kullanılmıştır.

EUROSTAT tarafından başlatılan ve uluslararası karşılaştırılabilir nitelikte olan Zaman Kullanım Araştırması'nın, TÜİK tarafından 1 Ağustos 2014 ve 31 Temmuz 2015 döneminde ikinci uygulaması gerçekleştirilmiştir. Zaman kullanım anketi (ZKA), Türkiye'de 9.073 hanede ve 10 yaş ve üzeri 25.109 birey ile gerçekleştirilen, hane ve birey düzeyindeki değişkenler hakkında zengin bilgi sağlayan, ulusal düzeyde temsili bir hane halkı araştırmasıdır. ZKA üç soru kâğıdı kullanmaktadır. Bunlar hanehalkı soru kâğıdı, fert soru kâğıdı ve haftaiçi ve haftasonu olarak ayrılan günlüklerdir. Hanehalkı ve fert soru kâğıtları 10 yaş ve daha yukarı yaştaki fertleri kapsamaktadır. Hanehalkı soru kâğıdı 18 ve üzeri yaştaki bir fert ile görüşülerek doldurulmuştur.

Çalışmada Türkiye'de yetişkinlerin uzun süreli bakımının belirleyicilerini incelemek için fert ve hanehalkı anketleri birleştirilmiştir. ZKA'nın bireyler üzerine anketi bireylerin yaşı, cinsiyeti, hanehalkı büyüklüğü (hanede yaşayan kişi sayısı), istihdam durumu, medeni durumu, eğitim düzeyi, gelir düzeyi ve sağlık durumu hakkında zengin bilgi sağlamaktadır. Aynı zamanda konut tipi, mülkiyeti ve oda sayısı gibi hanehalkı bilgilerini de kapsamaktadır.

Bağımlı değişkenimiz bireysel anketin Yaşlı Bakımı başlıklı 10. Bölümünden gelmektedir. ZKA bireylere şu soruyu yöneltmektedir: "Son dört ay içinde, yaşlılığa bağlı sorunlar veya hastalıklar nedeniyle yardıma ihtiyacı olan yaşlı bir kişiye (hanehalkı üyesi veya akrabası olsun olmasın) ücretsiz bakım veya yardım sağladınız mı? (65 yaş ve üzeri kişiler için bakım)." Katılımcılardan bu soruya "Evet" veya "Hayır" şeklinde yanıt vermeleri istenmektedir.

Katılımcıların bireysel anketten elde edilen eğitim düzeyi beş grup, bireylerin medeni durumları da dört gruptan oluşmaktadır. Ayrıca bireylere çalışma durumu sorulmaktadır. Bireysel gelir değişkeninin beş dilimi bulunmaktadır. Son olarak, bireylerin genel sağlık durumu "Genel sağlığınız nasıl?" sorusu ile değerlendirilmektedir.

Çalışmamızda uzun süreli bakım hizmetlerinin sağlanmasını etkileyebilecek değişkenleri göz önünde bulundurmak amacıyla hanehalkı ve aile yapısını açıklayacağını düşündüğümüz hanehalkı düzeyindeki bireysel evlerin konut tipleri, mülkiyeti gibi özellikleri ve hanehalkı anketinde yer alan ve katılımcının yaşadığı evin oda sayısını soran bilgiler analizimize dahil edilmiştir.

**Bulgular**

Demografik ve sosyoekonomik değişkenlerin ücretsiz uzun süreli bakım yardımı üzerindeki ön analizinden elde edilen bulgulara göre insanların yaşı ilerledikçe yardıma ihtiyacı olan yaşlı bir kişiye ücretsiz bakım ya da yardım sunma olasılıkları artmaktadır. Kadın bireylerin erkeklere kıyasla daha fazla uzun süreli bakım sağlama eğiliminde olduğu görülmektedir. Evli kişiler ile uzun süreli bakım arasında anlamlı bir pozitif korelasyon vardır.

Daha ileri analizler yüksek eğitimli kişilerin, okul mezunu olmayanlara kıyasla uzun süreli bakımda bulunma olasılıklarının daha yüksek olduğunu göstermektedir. Genel sağlık durumunun uzun süreli bakım ile ilişkisine gelince, sağlık durumu çok iyi olanların aksine, sağlık durumu çok kötü olanların yaşlılara ücretsiz bakım veya yardım sağlama olasılığı daha düşüktür. Sonuçlarla ilgili en dikkat çekici olan bireylerin gelir düzeyinin uzun süreli bakım ile ilişkili olmamasıdır. Katılımcıların ev tipi ile uzun süreli bakım arasında herhangi bir ilişki bulunmadığını da belirtmek gerekir. İlginçtir ki evin mülkiyet durumu ve oda sayısı uzun süreli bakım ile ilişkili gözükmemektedir.

Uzun süreli bakımın belirleyicilerinin katılımcıların cinsiyetine göre incelenmesi sonucunda her iki cinsiyet için de yaşın, uzun süreli bakımı belirlemede önemli bir pozitif faktör olduğuna ulaşılmıştır. Evli erkek katılımcıların, hiç evlenmemiş erkek bireylere kıyasla ihtiyaç duyduklarında yaşlı bir kişiye ücretsiz bakım hizmeti sunma olasılıklarının daha yüksek olduğu belirlenmiştir.

Evli kadın bireyler, hiç evlenmemiş kadın bireylerle karşılaştırıldığında, ücretsiz bakım hizmeti ile ilişkili görünmemektedir. Ayrıca, erkek katılımcılar için eğitim, uzun süreli bakım için önemli bir pozitif belirleyici gibi görünmektedir. Benzer şekilde, eğitim kadın katılımcılar için de pozitif ve anlamlı (daha az kesin tahmin) bir faktördür. Sağlık durumu çok kötü olanlar her iki cinsiyet grubu için de daha az uzun süreli bakım sağlama eğilimindedir. Türkiye'de analiz ettiğimiz örneklem için gelir düzeyi, ev tipi ve mülkiyet durumunun ücretsiz bakım veya yardım ile ilişkisinin olmadığı gözlemlenmiştir. Bu sonuçlar birlikte ele alındığında, ileri yaşta olmak, kadın olmak, evli olmak, daha fazla eğitim ve daha iyi sağlık gibi çok çeşitli değişkenler ile yaşlılar için uzun süreli bakım arasında anlamlı ve pozitif bir ilişki olduğu görülmektedir. Bu sonuçlar aynı zamanda bireylerin gelir düzeyinin, konut tipinin ve konutun mülkiyet durumunun, oda sayısının ve çalışma durumunun uzun süreli bakımı belirlemede önemli faktörler olduğuna dair bir kanıt olmadığını göstermektedir.

**Sınırlılıklar**

Demografik ve sosyoekonomik değişkenler ile yetişkinler için kayıt dışı uzun süreli bakım arasındaki nedensel ilişkiyi incelemek bu çalışmanın kapsamı içerisinde değildir. Bu kısıta rağmen, burada rapor edilen bulgular Türkiye'de yetişkinlere yönelik kayıt dışı uzun süreli bakıma yeni bir ışık tutmaktadır.

**Öneriler**

Uzun dönemli bakım sistemleri; tedarik, bakıma erişim, kapsam ve finansman yöntemleri gibi çeşitli önemli açılardan küresel olarak farklılık göstermektedir. Potansiyel uzun süreli bakım ihtiyaçları, yaşlı bireyler ve onların yetişkin çocukları için en önemli ekonomik risklerden birini oluşturmaktadır. Aile yapıları tek nesilli

hanelere doğru kaydıkça ve kadın istihdamı arttıkça, aile üyeleri için kayıt dışı uzun süreli bakım sağlama olanağı azalmaktadır. Bu nedenle temel politika önceliği, yetişkinlerin uzun vadeli bakımının daha erişilebilir olmasını ve evlerinde ya da uzun süreli bakım kurumlarında tercih ettikleri yerlerde sunulmasını planlamak olmalıdır.

Uygulamaya yönelik bir diğer önemli çıkarım ise Türkiye'de kayıt dışı bakım hizmetlerinin zorluklarını ele almak için adımlar atılması gerektiğidir. Bu adımlar şunları içermektedir: resmî uzun süreli bakım hizmetlerinin yaygınlaştırılması, resmî uzun süreli bakım hizmetlerinin maliyetinin düşürülmesi, kayıt dışı bakıcılara eğitim ve destek sağlanması ve kayıt dışı bakıcılığın önemi konusunda farkındalığın artırılması. Bu adımlar, Türkiye'nin yaşlılarına bakım hizmeti sağlamak için kayıt dışı bakıma güvenmeye devam edebilmesini sağlayacaktır.

**Özgün Değer**

Bu araştırmada, Türkiye'deki yetişkinler için demografik ve sosyoekonomik değişkenler ile kayıt dışı uzun süreli bakım arasındaki ilişki ilk kez incelenmektedir. Dolayısıyla bu çalışma, uzun süreli bakımın bireysel ve hanehalkı düzeyindeki özelliklerle ilişkisini ortaya koyarak uzun süreli bakım araştırmalarına önemli bir katkı sağlamaktadır. Ayrıca Türkiye'de uzun süreli bakımın belirleyicilerini incelerken, uzun süreli bakım hizmetlerinin sunumunu etkileyebilecek çok çeşitli değişkenleri dikkate almak çok önemlidir. Bu amaçla, hanehalkı ve aile yapısını açıklayacağını düşündüğümüz hanehalkı düzeyindeki özellikler de analize dahil edilmiştir. Çalışmanın bulgularının, sağlık ve sosyal hizmetlere yatırım yapmak ve işgücüne katılımı teşvik etmek amacıyla politikalar geliştirmek gibi gelecekteki uygulamalar için önemli politika çıkarımlarına katkı sağlayacağı düşünülmektedir.

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