
THE INFLUENCE OF FAMILY TIES ON DEPRESSIVE SYMPTOMS SEEN BY ELDERLY: A COMPARISON BETWEEN SWEDEN, DENMARK, ITALY AND SPAIN

Bachelor's thesis Human Geography & Urban and Regional Planning

Joséphine van Klaveren
S3095193

Rijksuniversiteit Groningen
Faculty of Spatial Sciences
Supervisors: T. Vogt and L. Bister

Groningen, The Netherlands
January 15, 2021

Summary

Due to the global increase of the share of people aged 60 and over, the amount of common mental disorders, like depression, are expected to increase as depression is one of the four most common health problems in old age. Social relationships are found as contributors to decrease the odds for elderly on experiencing depressive symptoms. One of these social relationships are family ties. However, having strong family ties is not self-evident. In southern European countries, family ties are generally assessed as strong, but in northern European countries as relatively weak. Nevertheless, depression rates in southern European countries are commonly greater than depression rates in northern European countries. In this thesis, it is researched what the influence of family ties exactly is for elderly on suffering from depression or depressive symptoms. The results of two northern European countries Sweden and Denmark are indirectly compared with the results of two southern European countries, Spain and Italy. The data of a cohort of people aged 60 and over from the easySHARE data set are used in a binary logistic regression analysis, to find the relation between different sorts of family ties and the odds of suffering from depressive symptoms, controlled for age, socioeconomic status and gender. It is found that living together with a spouse/partner is of great importance in reducing the odds of suffering from depressive symptoms. However, not a substantial difference is found between these countries in the importance of the different family ties. For further research, it is needed to dive deeper into the emotional relationships between relatives, as this seems to be a better indicator to measure family ties. Thereby, it is advised to analyze other predictors for depression in later life, so that the core cause of depression by elderly can be found.

Table of contents

Table of contents	2
Introduction	3
<i>Background</i>	3
<i>Research Problem</i>	3
<i>Structure of the thesis</i>	4
Theoretical framework	5
<i>Conceptual model</i>	7
<i>Hypotheses</i>	7
Methodology	8
<i>Data</i>	8
<i>Statistical method</i>	8
<i>Dependent variable</i>	8
<i>Independent variables</i>	9
<i>Control variables</i>	9
<i>Descriptive statistics</i>	9
Results	12
<i>Descriptive analysis</i>	12
<i>Comparison to literature</i>	14
Conclusion	15
References	16
Appendix	18

Introduction

Background

Population ageing is a topic of great societal interest in most countries all over the world. The share of people aged 60 years or over, is expected to globally increase from 11.7 percent in 2013 to 21.1 percent in 2050 (United Nations, 2013). This population ageing has inevitable public health consequences. Common mental disorders, like depression, have become more present over the last two decades due to this demographic change in human age (Baxter et al., 2014). The World Health Organization (2017) states that approximately 15% of adults aged 60 and over suffer from some kind of mental disorder. Globally, 7% of these elderly suffer from depression. Depression is one of the four most common health problems in old age (United Nations, 2013). The total amount of people over 60 who experience depressive symptoms is therefore expected to rise as the global population continues to age. Preventing or dealing with this problem is of high societal relevance. Certain factors could influence depression, but Williams et al. (2017) state that having a diverse social network is one of the important contributors to experiencing mental wellbeing by everyone, even by elderly. Ryan and Willits (2007) concluded that the quality of family ties has a positive influence on personal perceived mental wellbeing and could prevent or help to deal with depression amongst elderly. As individuals age, family ties may become more valuable as the need for receiving care often increases and social ties in other domains like the workplace become less central in their lives (Thomas et al., 2017). The perceived importance of these family ties can vary across cultural spheres. For example, a country like Italy is defined as a country with a strong family-oriented culture. The family has the priority above the individual, by co-residence these families are able to care for each other mutually (Bertolini & Goglio, 2019). This phenomenon is also seen in various other southern European countries. However, Reher (1998) states that there is a big difference in the strength of family ties between southern European countries and northern European countries. He claims the dividing line between 'weak' and 'strong' family ties can be seen between the center and north of Europe (being characterized by relatively weak family ties) and Mediterranean countries (being characterized by relatively strong family ties). This research is of academic relevance because there is not yet research done on the link between particular European countries, their culture regarding family ties and their effect on the mental health of their elderly.

Research Problem

This research aims to investigate whether there is a difference between the northern European countries Denmark and Sweden and the southern European countries Spain and Italy in the importance of family ties and intergenerational solidarity in preventing depressive symptoms by the elderly in their country. The distinction between these countries is made to be able to investigate whether culture or social status are contributors to perhaps different outcomes.

Therefore, the following research question is proposed: "To what extent do family ties influence the occurrence of depressive symptoms seen by elderly in Sweden, Denmark, Italy and Spain, and is there a substantial difference between these countries?"

To answer this research question, the following sub-questions are proposed:

- What is the relation between different measures of family ties and depressive symptoms seen by elderly in Italy, Spain, Sweden and Denmark?
- What is the relation between socioeconomic status, age and gender and depressive symptoms seen by elderly in Italy, Spain, Sweden and Denmark?

-
- What influence do socioeconomic status, age and gender have on the relationship between family ties and depressive symptoms seen by elderly in Sweden, Denmark, Italy and Spain?

Structure of the thesis

This thesis is structured as follows: first, a theoretical framework based on existing literature is presented and used for the development of a conceptual model, explaining the different concepts in this research and the hypothesized relationship between each other. Second, the methodology used to answer the research questions is elaborated, concerning which data, variables and statistical method are used. Third, the results from the analysis are presented and discussed with the existing literature to answer the sub-questions formulated above. Finally, in the conclusion, an answer to the main research question is given and will suggestions for further research be made.

Theoretical framework

The Encyclopedia of Behavioral Medicine (2013) gives a broad definition of the term social relationships and interactions: “...social relationships refer to the connections that exist between people who have recurring interactions that are perceived by the participants to have personal meaning. This definition includes relationships between family members, friends, neighbors, coworkers, and other associates but excludes social contacts and interactions that are fleeting, incidental, or perceived to have limited significance...”. Fiori et al. (2006) found that older adults who participate in diverse social interactions have a greater chance of better mental health. They found that there can be made a distinction between networks, family network types and friends network types. Wegner (1997) formulated a ‘locally integrated’ support network, which was characterized by informal help from family, friends, neighbors and involvement in community groups. The elderly with this kind of support network were least at risk for mental health problems such as loneliness and depression, whether elderly in a ‘private restricted’ support network (characterized by absence of local kin and no informal support) were more at risk. Social integration is thus an essential modifier for mental health amongst elderly.

What we already know is that having a diverse social network is important in experiencing mental wellbeing by elderly (Williams et al., 2017). The main reason for this is the support they receive from their social network. It is hypothesized by Fiori et al. (2006) that only those roles that provide social support are critical facilitators for health. This, rather than the total amount of roles. Quality of relationships is the determinant for reported mental wellbeing by elderly and adds to less chance of mental health problems such as loneliness and depression (Wegner, 1997). This is also concluded by Ryan and Willits (2007). They stated that the quality of family ties has a positive influence on the personal perceived mental wellbeing, but that quantity (number of family members or spouse) had little or no impact. Thereby, if social networks are of closer geographical proximity, the probability of receiving informal care will increase (Fernández-Carro & Vlachantoni, 2018). Domènech-Abella et al.(2017) even conclude that small networks can be the cause of a feeling of loneliness and can cause depressive symptoms amongst adults.

Family is one of the most reoccurring network types. Family ties can be defined as the relationship between relatives on different levels such as marital relationships, intergenerational relationships (child, parent, grandparent) and sibling relationships (Thomas et al.,2017). Rook and Ituarte (1999) found that the quality measurement of family ties was related to emotional support, companionship and social control.

Some other factors can determine if elderly are more likely to suffer from depressive symptoms. Age, gender and socioeconomic status are important to keep in mind, as Von dem Knesebeck et al. (2003) found that low income could reduce the opportunities for elderly to live a comfortable life, even in their old days. They concluded that this could reduce experienced wellbeing and trigger depressive symptoms. Thereby, the comparison done by Girgus et al. (2017) between 85 existing studies concerning gender differences in depression, concluded that there was enough empirical evidence for gender differences in depression among older adults aged 60 and over. Older women were more at risk of suffering from depression compared to older men. These studies all focused on particular stressors for depression that increase dramatically in old age. Poor health, living alone, poverty and cognitive decline are a few examples, which could indicate that becoming older may put someone more at risk of feeling depressed in some way.

Furthermore, Reher (1998) stated, as addressed in the background section, that the strength of family ties is likely to be different in different countries, even if they have a positive effect on the mental health of elderly. Taylor et al. (2013) found in their research that there were substantial differences between ethnic groups on involvement in friendship networks on the one hand, and daily interaction with family members on the other. This could be the result of the differences in levels of social safety nets. When these are easily accessible for everyone, like in Denmark, a process that is called de-familialization can appear. This is the case when family responsibilities decrease because of the improvement in individual social rights for people in need, for example, for receiving care. In Spain, this coverage by municipalities remains low, resulting in much space left for familialism (Saraceno, 2010). So when the level of social safety nets are weak, it is expected that the importance of social support, especially family support, is growing (Williams et al., 2017). This can be seen for both Spain and Italy, where it seems that the lower the household income of both the older persons needs and his or her family carers, the higher the probability that relatives will be used to cover ones needs instead of other paid services (Saraceno, 2010). Another similar pattern the other way around happens in Italy, where a lot of young people choose to stay longer with their parents because of socioeconomic reasons. In that way, they can mutually care for their older relatives and receive financial support (Di Stefano, 2017). Silverstein et al. (2010) formulated this as the 'intergenerational solidarity' concept, which consists of emotional closeness, social contact, geographic distance and supportive behaviors. Mebane and Pezzuti (2020) define intergenerational solidarity as the "social cohesion between generations". It represents a multidimensional model, which consists of three independent conceptual dimensions: affinity (emotional closeness), opportunity structure for contact (necessary conditions to exchange behaviors) and functional exchange (receiving assistance). Von Humboldt et al. (2018) dedicated their research to analyzing intergenerational relationships at a cross-national level. They found that cross-national differences are related to the expectations and implications of giving support to family members. This is supported by the article written by Nauck & Suckow (2006). They saw a cross-national difference in the expectations of mothers and daughters regarding giving and receiving help. Different societies in their research are characterized by two different kinship systems, the affinal kinship system the descent kinship system. These determine what kind of intergenerational relations can be called on to satisfy basic needs. The expected and actual intergenerative help show intercultural differences. Instrumental intergenerative expectations are low in societies characterized by affinal kinship systems, and relatively high in descent kinship systems. Silverstein et al. (2010) concluded that both socioeconomic development and sociocultural factors are responsible for the difference in this intergenerational support across nations. For example, in Germany, detached family relationships were more common and in Israel, ambivalent family relationships were more common. They concluded that an understanding of national and cultural context is necessary when attributing the meaning of social relationship quality. This can also be seen in the results of the research of Rodriguez-Pose and von Berlepsch (2013). By investigating the relationship between social capital and happiness of individuals in Europe, they found differences in the strength of this linkage between Europe's four main geographical macro-regions, North, South, East and West. Putnam (1993) defined social capital as "informal, as well as formal associational activity yielding positive externalities". Meeting with relatives, friends, colleagues and participating in different activities like voluntary work and church service are these informal activities. Rodriguez-Pose and von Berlepsch (2013) found that while Scandinavians display very high levels of social capital endowment, southern European countries have almost no trust in both humankind and institutions. These different outcomes can be traced back to differences in the local culture, social institutions and traditions which drive the strength of the link between happiness and social capital.

Conceptual model

From this theoretical framework, one theory can be distinguished as most important for this research. Intergenerational solidarity and marital relationships sum up the quality of family ties and therefore is of great importance in evaluating its influence on the odds that elderly (who find or do not find themselves in these social relationships) experience depressive symptoms. Concepts that can be derived from this theory which are valuable in answering the previous formulated research question have a hypothesized relationship with each other, based on the theoretical framework. In figure 1, a schematic representation of the concepts and their relationship to one another is presented. Social, economic and educational environments can have a positive or negative influence on the strength of family ties and on the odds of experiencing depressive symptoms by elderly

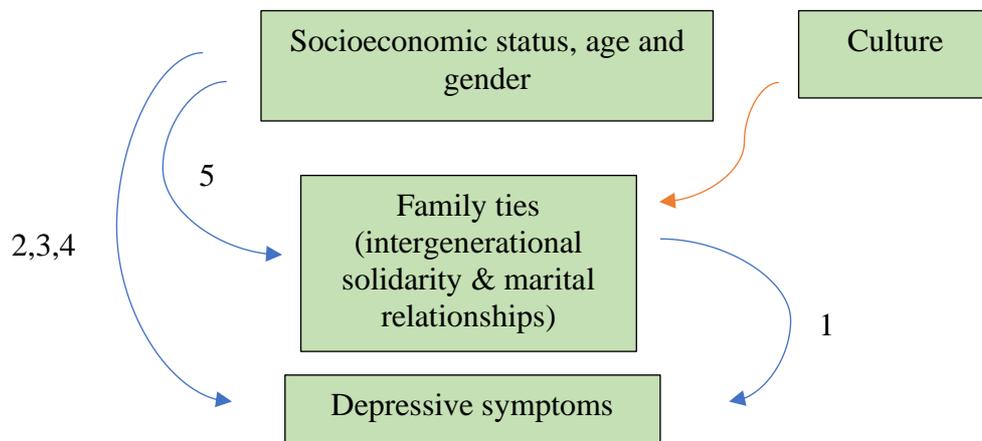


Figure 1: Conceptual model of intergenerational solidarity, based on the theoretical framework. The blue arrows represent the hypothesized relationships between the concepts, as elaborated below. Culture influences family ties as well.

Hypotheses

The theoretical framework and conceptual model show how it is hypothesized how the different concepts are related to each other and what the assumed effects are. This results in 5 related hypotheses.

1. First, it is hypothesized that there is a negative relationship between family ties and suffering from depressive symptoms in both Italy and Spain and Denmark and Sweden. However, because the family ties are expected to be stronger in the southern European countries, this negative relation is expected to be greater for Italy and Spain as opposed to Denmark and Sweden.
2. Second, it is hypothesized that there is a stronger negative relation between socioeconomic status and suffering from depressive symptoms in both Italy and Spain as opposed to Denmark and Sweden.
3. Third, it is hypothesized that females are more likely to suffer from depressive symptoms, in both Italy and Spain and Denmark and Sweden.
4. Fourth, it is hypothesized that there is a positive relationship between age and suffering from depressive symptoms.
5. Last, it is hypothesized that socioeconomic status, gender and age weaken the relation between family ties and depressive symptoms, as they control for different personal circumstances that could lower or increase the chances of depression.

Methodology

Data

To answer the research questions and test the related hypotheses, the SHARE data set (Börsch-Supan, 2019) is used for quantitative data analysis. SHARE is short for Survey of Health, Ageing and Retirement in Europe. It is a panel database, which consists of data on an individual level. The original SHARE data set has 140,000 respondents from people from 28 European countries above the age of 50. The participants are interviewed several times in different years, between 2004 and 2017. This period is divided into 7 different waves where data is collected. During waves 1 and 4, the SHARE study is reviewed and approved by the Ethics Committee of the University of Mannheim. Furthermore, the country implementations of SHARE were reviewed and approved by the respective ethics committees or institutional review boards whenever this was required. In this research, the simplified version of the SHARE data set is used, named *easySHARE*. The *easySHARE* data is restricted to a subset of variables, to make the data set more user-friendly.

Additionally, only the data from the European countries Spain, Italy, Sweden and Denmark are used, as this is the target group in this research. Respondent information is needed at one point in time and therefore the choice is made to select the data from only one of the 7 waves in the *easySHARE* data set. The questionnaire in Wave 2 is selected as the most suitable questionnaire for this research, as all of the questions which are of use in this analysis are asked in this wave. The question of whether someone had provided help to friends, family or neighbors is only asked in Wave 1 and Wave 2 but is relevant in this research for measuring family ties. The data from Wave 2 is collected in 2006 and 2007. Furthermore, only the data of respondents who were aged 60 and over at the time of the interview, is used. According to the World Health Organization (2017) and the United Nations (2013), being 'old aged' is being aged 60 and over.

Statistical method

A binary logistic regression analysis is used to predict the odds of suffering from depressive symptoms based on its predictor in this research, family ties. In a binary logistic regression, the dependent variable is binary, meaning that the variable can only have two possible values. Because the dependent variable in this research, suffering from depressive symptoms either yes or no, is binary, the analysis is not about the independent variables predicting an individual score, but how they predict which of the two possible values of the dependent variable people end up in. In this case, suffering from depressive symptoms or not suffering from depressive symptoms. Therefore, the odds ratio ($\text{Exp}(B)$ in SPSS) in the output of the binary logistic regression analysis is important for interpretation. The odds are the ratio of probabilities for a particular event. In this case, it is the probability of suffering from depressive symptoms divided by the probability of not suffering from depressive symptoms. When interpreting the odds ratio ($\text{Exp}(B)$), it is important to know when:

- Odds ratio = 1, the probability of falling into the target group is equal to the probability of falling into the non-target group for every 1 unit increase of the independent variable
- Odds ratio > 1, the probability of falling into the target group is greater than falling into the non-target group for every 1 unit increase of the independent variable
- Odds ratio < 1, the probability of falling into the target group becomes less than falling into the non-target group for every 1 unit increase of the independent variable

Dependent variable

From the *easySHARE* data set, the variable *Depression* is used to explain the concept of depressive symptoms, as seen in the conceptual model (figure 1). The question asked to the respondents was if they had felt sad or depressed in the last month. The two answer options are either yes or no.

Independent variables

In the conceptual model (figure 1), it is hypothesized that family ties and socioeconomic status, gender and age of the respondent are of influence on the odds of suffering from depressive symptoms. From the *easySHARE* data set, a subset of variables is used to explain the concept of family ties. Because family ties can be defined as the relationship between relatives on different levels (Thomas et al., 2017), the focus when selecting the valuable variables for this research was on covering all of these levels. These levels include marital relationships, intergenerational relationships and relationships between siblings. Accordingly, Fernández-Carro & Vlachantoni (2018) stated that the geographical proximity of relatives could increase the probability of receiving informal care. Therefore, the variables *Living with spouse/partner*, *At least one child in the same household*, *Residential proximity of children*, *Activities last month: provided help to family, friends or neighbors* and *Received help from family* are used to explain the concept of family ties. All of these variables have two answer options, either yes or no, which makes them all binary variables. This can also be seen in Table 1.

Control variables

In this research, the control variables are used as independent variables, but they are not the variables of primary interest in this research. These variables can control relationships for alternative explanations. Because a relation is seen between two variables, it does not mean directly that the one caused the other. In this case, it is hypothesized that there are other concepts next to family ties that are of influence on suffering from depressive symptoms (figure 1). These are socioeconomic status, age and gender. The variables *Relative household income* and *Education level* are used to represent the socioeconomic status of the respondent. The variable *Relative household income* has two possible values: above the average income of that country and under the average income of that country. The variable *Education level* also has two possible values, lower education level and higher education level. Lower education ranges from no education until upper secondary education (ISCED 3). Higher educated is someone who attended post-secondary, non-tertiary education (ISCED 4) or above. The variables *Age at interview* and *Gender of the respondent* are used to represent the age and gender of the respondent. The variable *Gender* has two possible values, either male or female. *Age at interview* is a scale variable. This can also be seen in Table 1.

Descriptive statistics

In table 1, the descriptive statistics from the variables used in this research are presented, per country. The total amount of respondents from only the countries Sweden, Spain, Italy and Denmark, wave 2 and are aged 60 or above is 7177. A few remarkable differences are seen between the different countries.

- The education level of respondents is on average higher in Sweden and Denmark as opposed to Spain and Italy
 - Relative more respondents in Spain and Italy felt sad or depressed in the last month
- Concerning family ties, following Reher (1998) it is expected that in Spain and Italy (as these are Mediterranean countries) the family ties are ‘stronger’ than in Sweden and Denmark (as

these are northern European countries). A few variables for the concept family ties are in line with this statement:

- Way more respondents in Spain and Italy have at least one child living within 1 km of their household
- Way more respondents in Spain and Italy have at least one child living in the same building or within their household

However, concerning the research from Fernández-Carro & Vlachantoni (2018) it is expected that if these relatives live closer to the elderly person, the probability for the elderly receiving informal care will increase. The difference between the four countries on this topic cannot be made according to the descriptive statistics, as there is no substantial difference in the frequencies of the values from the variables *Received help from family last month* and *Activities last month: provided help to family, friends or neighbors*, between Sweden and Denmark as opposed to Spain and Italy.

Table 1: Descriptive statistics of data used in this research

Variable	Sweden	Spain	Italy	Denmark
N total: 7177	N(%)	N(%)	N(%)	N(%)
<i>Gender</i>				
Male	933 (47,5)	757 (45,6)	974 (48,4)	701 (45,5)
Female	1032 (52,5)	902 (54,4)	1038 (51,6)	840 (54,5)
<i>Age, mean (±SD)</i>	71,14 (±8,25)	72,67 (±8,18)	70,51 (±7,17)	71,13 (±8,20)
<i>Relative household net income</i>				
Under country average	1264 (64,3)	1238 (74,6)	1388 (69,0)	1149 (74,6)
Above country average	701 (35,7)	421 (25,4)	624 (31,0)	392 (25,4)
<i>Education level</i>				
Lower level of education	1386 (72,9)	1507 (94,9)	1874 (93,6)	1074 (70,0)
Higher level of education	514 (27,1)	81 (5,1)	128 (6,4)	461 (30,0)
Family ties				
<i>Living with spouse/partner in a household</i>				
Living without a spouse/partner	513 (26,1)	437 (26,3)	440 (21,9)	510 (33,1)
Living with a spouse/partner	1452 (73,9)	1222 (73,7)	1572 (78,1)	1031 (66,9)
<i>Residential proximity of children (at least one child lives less than 1km away)</i>				
Yes	247 (12,6)	909 (54,8)	1110 (55,2)	157 (10,2)
No	1541 (78,4)	573 (34,5)	714 (35,5)	1245 (80,8)
No children	154 (7,8)	161 (9,7)	179 (8,9)	133 (8,6)
<i>Activities last month: provided help to family, friends or neighbors</i>				
No	1225 (65,1)	1578 (97,5)	1864 (94,0)	1147 (77,5)
Yes	657 (34,9)	41 (2,5)	119 (6,0)	333 (22,5)
<i>Received help from family last month</i>				
No	1631 (83,6)	1420 (85,9)	1733 (86,4)	1238 (80,7)
Yes	321 (16,4)	233 (14,1)	272 (13,6)	297 (19,3)
<i>At least one child lives in the same building/household</i>				
Yes	85 (4,3)	661 (39,8)	915 (45,5)	67 (4,3)
No	1703 (86,7)	821 (49,5)	909 (45,2)	1335 (86,6)

No children	154 (7,8)	161 (9,7)	179 (8,9)	133 (8,6)
Depression				
<i>Depression (felt sad or depressed last month)</i>				
No	1347 (70,4)	984 (61,2)	1149 (57,6)	1080 (71,1)
Yes	565 (29,6)	625 (38,8)	846 (42,4)	438 (28,9)

Results

The results of the binary logistic regression analysis are presented in table 2. In appendix A, the regression analysis without the control variables *Age*, *Gender*, *Education level* and *Relative household income* is presented. There is a comparison made between the two tables to look at the influence of these control variables on the results of the independent variables. The differences are discussed under sub-question 2. The data file is split into the four countries of interest, to make a distinction between the countries possible. The model has an overall good fit, as the Hosmer and Lemeshow Test shows a non-significant result for all of the four countries, indicating high goodness of fit. In performing a binary logistic regression analysis, we cannot talk about predicted change, we can only talk about the probability of falling into the target group. The target group in this research is the group suffering from depressive symptoms, instead of not suffering from depressive symptoms.

Descriptive analysis

When looking at the results in table 2 and knowing how to interpret these results using the level of significance and the odds ratio, it is possible to test the 5 hypotheses and give an answer to the sub-questions within this research. In this research design, the coefficients per country cannot be directly compared to each other which is taken into account in answering the sub-questions.

Table 2: Results from the binary logistic regression analysis, per country

Variable	Sweden		Spain		Italy		Denmark	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
N = 7177								
<i>At least one child lives in the same building/household</i>	0,004	2,423	0,536	1,112	0,091	0,753	0,862	0,939
<i>Residential proximity of children (at least one child lives less than 1km away)</i>	0,306	0,817	0,237	0,815	0,142	1,284	0,342	1,255
<i>Living with spouse/partner in a household</i>	0,036	0,740	0,003	0,621	0,028	0,735	0,982	1,003
<i>Activities last month: provided help to family, friends or neighbors</i>	0,893	0,984	0,027	2,352	0,704	1,086	0,283	1,178
<i>Received help from family last month</i>	0,017	1,425	0,014	1,513	0,000	2,254	0,000	1,759
<i>Gender (female=1, male=0)</i>	0,000	1,798	0,000	2,695	0,000	1,852	0,000	1,650
<i>Age at interview</i>	0,008	1,021	0,528	1,005	0,076	1,013	0,927	1,001
<i>Relative household income</i>	0,710	1,049	0,497	1,098	0,308	1,119	0,003	0,616
<i>Level of education</i>	0,474	1,096	0,054	0,540	0,591	0,890	0,949	0,991
<i>Constant</i>	0,000	0,075	0,112	0,345	0,011	0,218	0,056	0,264

Sub-question 1 was “What is the relation between different measures of family ties and depressive symptoms seen by elderly in Italy, Spain, Sweden and Denmark?” To answer this sub-question, hypothesis 1 was proposed: “...there is a negative relation between family ties and suffering from depressive symptoms in both Italy and Spain and Denmark and Sweden.

However, because the family ties are expected to be stronger in the southern European countries, this negative relation is expected to be greater for Italy and Spain as opposed to Denmark and Sweden”. To test this hypothesis, we need to look at the various variables concerning family ties; other variables function as control variables. Remarkable is that when someone receives help from family, in all four countries the odds of suffering from depression will increase. It was expected that it would be the other way around, but an explanation for this result could be that the people who receive this help from family, receive this help because they are feeling unhappy or even depressed. Furthermore, living with a spouse or partner is negatively related to the odds of suffering from depressive symptoms, in Italy, Spain and Sweden. In Denmark, this makes no significant difference. In Spain, this negative relation is the strongest, which indicates that living with a partner decreases the odds of feeling depressed substantially.

Thereby, having a child live nearby, within 1km or even in the same building/household has no significant influence on depressive symptoms. Only in Sweden, having at least one child living in the same household/building could increase the odds of feeling depressed drastically. Last, providing help to family, friends or neighbors does not make a significant contribution to the odds of suffering from depressive symptoms. Only in Spain, there is a positive relation between giving help to these groups and the odds of suffering from depressive symptoms. Concluding, there is an explicit negative relationship between living with a spouse/partner in a household and the odds of suffering from depressive symptoms. Furthermore, a little difference can be seen between the strength of this negative relationship between Spain and Italy as opposed to Sweden and Denmark. However, there is no statistical evidence in this analysis that the other variables have a significant relationship with depressive symptoms seen by elderly and the different coefficients cannot be readily compared to each other.

Sub-question 2 was “What is the relation between socioeconomic status, age and gender and depressive symptoms seen by elderly in Italy, Spain, Sweden and Denmark?” To answer this sub-question, the following three hypotheses were proposed:

- *Hypothesis 2*: “...there is a stronger negative relation between socioeconomic status and suffering from depressive symptoms in both Italy and Spain as opposed to Denmark and Sweden”. To test this hypothesis we need to look at the variables *Relative household income* and *Level of education*. First, we take a look at the level of significance for these variables, which are almost all over 0,05, meaning they are all non-significant at a 95% level. Nevertheless, if they were significant (on a 90% level for example), for both Italy and Spain the level of education had a strong negative relation to depression. Denmark is the only country where relative household income has a strong negative relationship with depression and is significant. Concluding, there is an indirect stronger negative relationship between the education side of socioeconomic status and depression in Spain and Italy, but this result is not significant and cannot be readily compared to each other.
- *Hypothesis 3*: “...females are more likely to suffer from depressive symptoms, in both Italy and Spain and Denmark and Sweden.”. To test this hypothesis we can combine looking at the variable *Gender* and the answer on hypotheses 1. There is a strong and significant positive relationship between the gender of a person and being depressed. In this case, this means that women are more at risk of falling into the target group, suffering from depressive symptoms. This is what was expected, but what we cannot conclude is if these women benefit more from family ties as a prevent for depressive symptoms because we have seen in testing hypotheses 1 that there is not even a very strong negative relation between family ties and depression. The only thing we can say is women benefit more from living with their spouse/partner because they are more at

risk of becoming depressed and living with a spouse/partner could decrease the odds of becoming depressed.

- *Hypothesis 4*: "...there is a negative relation between age and suffering from depressive symptoms". Age is only a significant contributor for a difference in Sweden; in all of the other countries, this variable is non-significant. This tells us that age does not make a difference in the odds of suffering from depressive symptoms, only in Sweden there is a weak positive relationship between these two.

Sub-question 3 was "What influence do socioeconomic status, age and gender have on the relationship between family ties and depressive symptoms seen by elderly in Sweden, Denmark, Italy and Spain?" To answer this sub-question, hypothesis 5 was proposed: "...the variables socioeconomic status, gender and age weaken the relation between family ties and depressive symptoms, as they control for different personal circumstances that could lower or increase the chances of depression". To test this hypothesis we need to look at what the control variables Education level, Relative household income, Gender and Age have done with the odds ratio (Exp(B)). In appendix A, the results for the regression analysis without the control variables in the model are presented. When compared, two differences between the models are apparent. A living with spouse/partner in a household has a weaker negative relation with depressive symptoms when controlled by the control variables. Furthermore, the positive relationship between received help from family and depressive symptoms is also weaker than it was seen in appendix A. The other variables are not significant, so are not worth reviewing in this hypothesis. It can be concluded that the control variables are of importance to the reliability of the results in this analysis.

Comparison to literature

There are a few remarkable results in this research when compared to the reviewed literature. In the literature, when having relatives of closer geographical proximity, the chances of receiving informal care would increase. However, in this case, the child living close to the elderly household is no significant contributor to decreasing the odds of suffering from depression because the amount of informal care given did not increase as expected.

Furthermore, Fiori et al. (2006) found that the roles that provide social support are important facilitators of mental health. However, in this research, there was a positive relation between receiving care from family and being depressed. An explanation for this result could be that the people who receive this help from family, receive this help because they are feeling unhappy or even depressed. Next to this, it was expected that having a lower socioeconomic status would increase the odds of suffering from depressive symptoms, but in this model socioeconomic status made no significant contribution to this difference.

What was in line with the reviewed literature was the greater odds of being depressed when being female (Girgus et al., 2017) and that marital relationships (Thomas et al., 2017) are the kind of family tie that decreases the odds of suffering from depressive symptoms. A living with spouse/partner has for all countries a very strong negative relation to depression.

The main difference between the literature and this research is that there is almost no difference concerning family ties in the results of the regression analysis between Italy, Spain, Denmark and Sweden. With the distinction from two southern European countries (defined as having strong family ties), from two northern European countries (defined as having weak family ties), more diverse results in the regression analysis concerning negative or positive relations were expected. However, due to the use of many different variables and not enough cases, it could be that some effects are not significant. Nevertheless, in the descriptive statistics, the differences which were expected between the countries can be seen.

Conclusion

In the result section, an answer can be found to all of the sub-questions asked, what makes it possible to eventually answer the main research question: “To what extent do family ties influence the occurrence of depressive symptoms seen by elderly in Sweden, Denmark, Italy and Spain, and is there a substantial difference between these countries?” Concluding, not every kind of family tie is from a significant influence on the occurrence of depressive symptoms by elderly in the countries of research. Only the ‘marital’ relationship, not explicitly being married, but living with spouse/partner is a big contributor to decreasing the odds of elderly suffering from depressive symptoms in later life. Next to this kind of family tie, being male or female can decrease or increase the odds of depression in later life substantially. However, from this research, it cannot be concluded that there is a substantial difference in the results between Sweden, Denmark, Italy and Spain. The only expected difference in rates of children living close to the elderly household can be noticed in the descriptive statistics from the data used. In Spain and Italy as opposed to Denmark and Sweden, elderly and their offspring keep living much closer together. This, however, cannot be linked to lower depression in these countries, as the depression rates are higher in Spain and Italy as opposed to Denmark and Sweden. Additionally, this variable had no significant influence on the odds of suffering from depressive symptoms.

The weakness of this study is that the focus on the emotional relationship between relatives could be improved. The strength of emotional relationships between relatives would perhaps have been a more suitable measure to define family ties and could contribute to a higher connectedness between family ties and the mental health of elderly, as seen in the literature. The data on the role of social support are very mixed and difficult to interpret, probably because there are so many different ways to define social support and family ties. Thereby, it is suggested to design a model which makes the immediate comparison between countries possible.

The strength of this study is the distinction between countries, which makes it possible to give a customized advice per country on their policy on decreasing mental health issues by elderly if significant results would have been found. The advice for further research would therefore be to keep performing these kinds of analysis, and looking for factors other than family ties that could influence the odds for elderly suffering from depressive symptoms. This is from great societal relevance as the depression rates in Spain and Italy amongst elderly remain high. Customized mental health programs focusing on the main predictor for depression per country are needed to solve this problem within different countries.

References

- August, K. and Rook, K. (2013). Social Relationships. *Encyclopedia of Behavioral Medicine*, pp.1838-1842.
- Baxter, A., Scott, K., Ferrari, A., Norman, R., Vos, T. and Whiteford, H. (2014). Challenging The Myth Of An “Epidemic” Of Common Mental Disorders: Trends In The Global Prevalence Of Anxiety And Depression Between 1990 And 2010. *Depression and Anxiety*, 31(6), pp.506-516.
- Bertolini, S. and Goglio, V. (2019). Job uncertainty and leaving the parental home in Italy. *International Journal of Sociology and Social Policy*, 39(7/8), pp.574-594.
- Börsch-Supan, A. (2019). Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 2. Release version: 7.1.0. SHARE-ERIC. Data set.
- Di Stefano, E. (2017). Leaving Your Mamma: Why so Late in Italy?. *SSRN Electronic Journal*, 17, pp.323-347.
- Domènech-Abella, J., Lara, E., Rubio-Valera, M., Olaya, B., Moneta, M., Rico-Urbe, L., Ayuso-Mateos, J., Mundó, J. and Haro, J. (2017). Loneliness and depression in the elderly: the role of social network. *Social Psychiatry and Psychiatric Epidemiology*, 52(4), pp.381-390.
- Fernández-Carro, C. and Vlachantoni, A. (2019). The role of social networks in using home care by older people across Continental Europe. *Health & Social Care in the Community*, 27(4), pp.936-952.
- Fiori, K., Antonucci, T. and Cortina, K. (2006). Social Network Typologies and Mental Health Among Older Adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 61(1), pp.25-32.
- Girgus, J., Yang, K. and Ferri, C. (2017). The Gender Difference in Depression: Are Elderly Women at Greater Risk for Depression Than Elderly Men? *Geriatrics*, 35(2), pp.1-21.
- Humboldt, S. von, Monteiro, A. and Leal, I. (2018). How Do Older Adults Experience Intergenerational Relationships? Different Cultures, Ambivalent Feelings. *Educational Gerontology*, 44(8), pp. 501–513
- Mebane, M. E. and Pezzuti, L. (2020). Intergenerational Solidarity in Triads of Adult Grandchild, Parent, and Grandparent: The Positive View of Elders, Positive Expectations Towards the Future and Young-Elders Divide. *Educational Gerontology*, 46(9), pp. 512–524.
- Nauck, B. and Suckow, J. (2006). Intergenerational Relationships in Cross-Cultural Comparison. *Journal of Family Issues*, 27(8), pp. 1159–1185.
- Putnam, R. (1993). *Making democracy work—civic traditions in modern Italy*. Princeton: Princeton University Press

-
- Reher, D. (1998). Family Ties in Western Europe: Persistent Contrasts. *Population and Development Review*, 24(2), pp.203-234.
- Rodríguez-Pose, A. and von Berlepsch, V. (2013). Social Capital and Individual Happiness in Europe. *Journal of Happiness Studies*, 15, pp.357–386.
- Rook, K. and Ituarte, P. (1999). Social control, social support, and companionship in older adults' family relationships and friendships. *Personal Relationships*, 6(2), pp.199-211.
- Ryan, A. and Willits, F. (2007). Family Ties, Physical Health, and Psychological Well-Being. *Journal of Aging and Health*, 19(6), pp.907-920.
- Taylor, R., Chatters, L., Woodward, A. and Brown, E. (2013). Racial and Ethnic Differences in Extended Family, Friendship, Fictive Kin, and Congregational Informal Support Networks. *Family Relations*, 62(4), pp.609-624.
- Thomas, P.A., Liu, H., and Umberson, D. (2017). Family Relationships and Well-Being. *Innovation in aging*, 1(3), pp.1-11.
- Saraceno, C. (2010). Social inequalities in facing old-age dependency: a bi-generational perspective. *Journal of European Social Policy*, 20(1), pp.32–44.
- Silverstein, M., Gans, D., Lowenstein, A., Giarrusso, R. and Bengtson, V. (2010). Older Parent-Child Relationships in Six Developed Nations: Comparisons at the Intersection of Affection and Conflict. *Journal of Marriage and Family*, 72(4), pp.1006-1021.
- United Nations, Department of Economic and Social Affairs, Population Division (2013). World Population Ageing 2013. ST/ESA/SER.A/348. New York: United Nations publication.
- Von dem Knesebeck, O., Lüschen, G., Cockerham, W. and Siegrist, J. (2003). Socioeconomic status and health among the aged in the United States and Germany: A comparative cross-sectional study. *Social Science & Medicine*, 57(9), pp.1643-1652.
- Wenger, G. (1997). Social networks and the prediction of elderly people at risk. *Aging & Mental Health*, 1(4), pp.311-320.
- Williams, L., Zhang, R. and Packard, K. (2017). Factors affecting the physical and mental health of older adults in China: The importance of marital status, child proximity, and gender. *SSM - Population Health*, 3, pp.20-36.
- World Health Organization (2017). Mental health of older adults. Accessed via <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults> .

Appendix

A. Results of the binary logistic regression not controlled for age, gender and socioeconomic status

Variable	Sweden		Spain		Italy		Denmark	
	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)	Sig.	Exp(B)
<i>At least one child lives in the same building/household</i>	0,040	1,828	0,763	1,050	0,053	0,730	0,536	0,801
<i>Residential proximity of children (at least one child lives less than 1km away)</i>	0,595	0,904	0,371	0,864	0,124	1,291	0,263	1,303
<i>Living with spouse/partner in a household</i>	0,000	0,629	0,000	0,423	0,000	0,531	0,037	0,759
<i>Activities last month: provided help to family, friends or neighbors</i>	0,574	0,938	0,025	2,270	0,957	1,011	0,673	1,064
<i>Received help from family last month</i>	0,001	1,582	0,007	1,545	0,000	1,882	0,000	1,820
<i>Constant</i>	0,000	0,531	0,249	1,184	0,268	1,160	0,000	0,411