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The association between social support and cognitive function in Mexican adults aged 50 and older

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ABSTRACT

Social support networks are crucial for the health of older adults; however, personal characteristics and time of life may diminish the protective effect of social support.
Objective: to determine if the presence of social support networks were associated with cognitive impairment among Mexican adults aged 50 or older and if this relationship was different based on age.
Method: This study analyzed data from the National Representation Survey performed in Mexico, Study on Global Ageing (SAGE) wave 1. Cognitive function was evaluated by a standardized test, social support was evaluated through latent class analysis (LCA). The LCA was run to obtain three subgroups of different Social Support Levels (SSL): low, medium, and high. Logistic regression models, stratified by age, were performed to analyze the association between SSL and cognitive function.
Results: For respondents ages 71–80 y/o, there was an inverse relationship with cognitive impairment for those with medium (OR 0.23, p = 0.020) and high (OR 0.07, p = 0.000) SSL in comparison with low SSL. While social support helped to improve cognitive function in older adults aged 71–80, this same association was not observed in adults of other ages. Those younger than 70 y/o may not need such a strong support network as a result of being more self-sufficient. After 80, social networks were not enough to help diminish the negative impact of cognitive impairment.
Conclusion: Social support could improve the cognitive function of adults ages 71 and 80; suggesting there could be a window of opportunity to improve cognitive functioning for this group.

1. Introduction

By 2025, people 50 and older will exceed the number of people younger than 15 years of age (United Nation Population Division, 2015). Other medium- and low-income population countries, Mexico among them, exhibit the same demographic profile (National Institute of Statistics, 2015).

Cognitive and physical impairment is common among older adults as well as cognitive decline (7–8%) (Manrique-Espinoza et al., 2013; Mejia-Arango & Gutierrez, 2011; Sosa et al., 2012). Previously, Green, Rebok & Lyketsos (2008) and Sims, Levy, Mwendwa & Clive (2011) showed that strong social support networks were related to the maintenance of cognitive function.

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Social support networks are essential for the maintenance of physical and mental health of older adults (Salinas, Manrique & Téllez 2008; Guzmán, Huenchuan & Montes de Oca, 2003). Family relationships are the main source of social support. They provide physical, material and emotional support, and meet varying needs such as food, housing and personal hygiene (physical), self-esteem and affection (psychological), and identification, communication and sense of belonging (social) (Alvarenga, Campos, Rodrigues, Amendola & Faccenda, 2011; Gallegos-Carrillo et al., 2009).

Cross-sectional studies performed by Fratiglioni and Wang (2007), Krueger et al. (2009), Feng, Linqin and Lingzhong (2014), Bassuk, Glass and Berkman (1999) have found that people with poor support networks have a greater chance of suffering cognitive decline and developing illnesses such as dementia or Alzheimer's disease in comparison with people with more active social lives. Longitudinal studies have consistently shown the same effect (Fratiglioni, Paillard-Borg & Winblad, 2004; Zunzunegui, Alvarado, Del Ser, & Otero, 2003). Hughes, Flatt, Fu, Chung-Chou, and Ganguli (2013) reported that the presence of social support had a positive effect on cognitive function of people who already showed some degree of impairment.

Epidemiological evidence has shown that the relationship between social support and health is modified by characteristics such as age, sex, socio-economic status, education, residence (urban/rural), co-morbidities, and others (Montes de Oca, 2006; Scott & Wenger, 1996; Stringhini et al., 2012).

Age is particularly relevant in social support network research even though it has been traditionally incorporated as a confounding variable. Studies by Antonucci et al. (2002), Antonucci et al. (2004) described how the structure of social support networks have changed over time and Schnittker (2005) described a differentiating effect of social support and cognitive impairment based on age.

Results from a cohort study of adults aged 35 to 85 showed that social support networks were related to better cognitive capacity exclusively in young adults (Seeman, Miller-Martinez, Stein-Merkin, Lachman, Tun, & Karlamangla, 2011). Previous works indicated a positive effect on the relationship between functional capacity and stress, and results varied by age (Alvarenga et al., 2011; Stringhini et al., 2012). The main objective of this study was to determine if the presence of social support networks were associated with cognitive function among Mexican older adults aged 50 and older and if this relationship varied by age group.

2. Subjects and methods

2.1. Sample

Our sample was obtained from SAGE, a cross-sectional, nationally representative survey of adults aged 50 and older, which comes from a parallel multicenter study performed in other countries (Kowal et al., 2012). The aim of the SAGE survey was to compare respondents, ages 18–49 to those 50 and older. However, only respondents in the national representative sample aged 50 and older from Mexico were considered in our research. This sample was obtained in wave 1 (2009–2010) and the sample design for Mexico was probabilistic, multistaged, stratified, and clustered. The strata considered were: city/metropolitan area, urban/rural, housing, and households with people aged 50 and older. Our sample included 2211 respondents.

2.2. Variables

2.2.1. Cognitive function

A battery of cognitive tests was used to measure cognitive performance. In order to measure objective indicators of various aspects of cognition, these tests were developed and validated for the Latin Population. The first test was the 1987 Memory Wechsler Scale (Wechsler, 1987) that was based on successive number repetition to test memory. Second, verbal fluency was tested by the interviewee's capacity to mention as many words as possible in one minute. The third test was for immediate and delayed memory and was tested using the CERAD Neuropsychology Battery (Morris et al., 1989), which consisted of saying ten words in order to the interviewee and requiring repetition of the remembered words. Each test provided segments to develop a factor analysis with which a single factor provided a general score. This score was then converted to a percentage scale where 100% meant the most impaired. Afterwards, Cognitive Function was divided into tertiles where the highest was compared to the other two; therefore, a dichotomous variable was created.

2.2.2. Social support levels

Social Support Index, Trust Index, and Social Cohesion Index were used to construct a Latent Class Analysis that were used as indictors to determine the SSL.

2.2.2.1. Social network index. Proposed by Heaney and Israel (1996) and Berkman and Glass (1996), the Social Network Index was developed from the following questions: 1) What is your marital status? 2) How often do you attended a religious service? 3) Generally speaking, would you say that you can trust strangers? 4) Have you ever attended a group meeting? Answers were dichotomized by Yes = 1 and No = 2. Each one was added to develop a 4-level variable, where 0 represented the worst and 4 represented the best social network.

2.2.2.2. Social cohesion index (SCI). Based on the Durkheim (1893) Theory of Social Capital, SCI was built with the modified version of Ramlagan, Peltzer, and Phaswana-Mafuya (2013), which consisted of the sum of 9 items: How often in the last 12 months have you: (1) Attended any public meeting in which there was discussion about local or school affairs? (2) Met personally with someone you consider to be a community leader? (3) Attended any group, club, society, union or organizational meeting? (4) Worked with other people in your neighborhood to fix or improve something? (5) Had friends over to your home? (6) Been in the home of someone who lives in a different neighborhood than you do or had them in your home? (7) Socialized with coworkers outside of work? (8) Attended religious services? (9) Gotten out of the house/your dwelling to attend social meetings, activities, programs or events or to visit friends or relatives? Scores were calculated using a Likert scale. Responses were assigned a value and then added to obtain a general score. The score was then converted into a percentage, and 100% represented the highest degree of social cohesion.

2.2.2.3. Trust Index. Developed and used for the first time, it was constructed using the sum of 6 items: (1) Do you think you can trust or do you think you do not need to be very careful when dealing with people? (2) Do you have someone you believe you can trust? (3) Would you say that you can trust people in your neighborhood? (4) In relation to strangers, would you say that you can trust them? (5) Generally, how safe from crime and violence do you feel when you are alone at home? (6) How safe do you feel when walking down your street alone after dark? Scores were calculated using a Likert scale. Responses were assigned a value and then added to obtain a general score. The score was then converted into a percentage, where 100% represented total trust.

2.2.3. Co-variables

Sex (men/women), age, marital status (with partner/without partner), place of residency (urban/rural), education (years of,