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Caregiving And Depressive Symptomatology: Multi-National Testing Of Role Strain Theory

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CAREGIVING AND DEPRESSIVE SYMPTOMATOLOGY: MULTI-NATIONAL TESTING OF ROLE STRAIN THEORY

by

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A DISSERTATION

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SOCIOLOGY

ABSTRACT

While several studies have shown that caregiving duties are correlated with poor mental health outcomes, little is known about this association and how it varies by the type of care provided, as well as the other types of social roles that the caregiver occupies. Furthermore, the nature of these associations amongst caregivers who have been diagnosed with a chronic condition themselves is also unclear. Role Strain theory offers a foundation by which we can begin to understand the level of burden that results from occupying multiple social roles including that of caregiving. Using dating from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, this dissertation will assess the associations in China, India, Mexico, and Russia among caregivers' depressive symptomatology, specifically amongst those who occupy multiple social roles such as that of employment, caring for young children in the home, being married. I also introduce the diagnosis for a chronic condition as a social role. It will also address variation in depressive symptomatology by the type of care being provided.

This research also tests the applicability of Western sociological theory in non-Western settings. Societies with a more advanced economic standing and level of development tend to lower the status of older adults and, perhaps, the act of caregiving. Therefore, I hypothesize that depressive symptomatology will differ by country, as the countries in this study represent different levels of development. Findings suggest caregiver status is associated with greater levels of depressive symptomatology. Having a chronic condition and being employed are significantly associated with greater levels of depressive symptomatology, and moderate the relationship between caregiver status and depressive symptomatology. The effect of young children in the home on depressive symptomatology is significant for caregivers only. Although marriage is protective, it does not significantly impact depressive symptomatology differently for caregivers and non-caregivers. The effect of different social roles on depressive symptomatology does not vary by country, except for the role of employment. The effects of being female and age also vary significantly different in their impact on depressive symptomatology by country. Depressive symptomatology also differs by the type of care that is provided.

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INTRODUCTION

Broadly speaking, informal caregivers are those who provide care to family members or friends, and fictive kin caring for older adults with whom they have a relationship (Bauer and Sousa-Poza 2019). With the number of aging adults rapidly increasing, informal caregivers have become an integral part care, which alleviates health care systems worldwide. Informal caregivers provide assistance that helps support activities of daily living (ADLs) such as personal care in dressing, bathing, grooming and toileting; as well as instrumental activities of daily living (IADLs) such as shopping or other tasks outside of the home, financial management, and housework (Hopkins et al. 2017). This care is often unpaid and performed by those who are still employed in other lines of work (Bauer and Sousa-Poza 2015).

The literature on caregiver burden and mental health outcomes is robust, often showing poor mental health outcomes among those who provide care (Carruth et al., 1997; Wilkins, Sirey, and Bruce 2019). However, there is little insight into the nature of this relationship beyond black-white racial comparisons in U.S. settings. Using data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, this dissertation will analyze the relationship between caregiving and depressive symptomatology for caregivers residing in four different countries – China, India, Mexico, and Russia. The current study also explores the effects of having a chronic condition, employment, the presence of children under 5 in the home, being married, and how different types of care provided affect depressive outcomes. I compare caregivers to non-caregivers. Drawing on theories of Role Strain, this research tests the applicability of US sociological theory in other global contexts, assessing which theory is upheld by the countries in question. Caregiver strain or burden is experienced in multiple dimensions, and is heavily influenced by subjective perceptions (Riffin, Fried, and Pillemer 2016). It is defined as the multidimensional response to the physiological, social, emotional, *and* financial strains of caring for an aging adult (Riffin et al. 2017). Various sociocultural factors can affect the level of obligation and sentiment towards caregiving and perceived burden.

Global variation in family ties and traditions of familism have been shown to influence the appraisal of considerably burdensome caregiving circumstances (Aranda and Knight 1997; Knight et al., 2002; Roth et al., 2001; Cordella and Rojas-Lizana 2019). According to Aranda and Knight (1997), societies that emphasize individualism would be more likely to perceive caregiving as a burden because it disrupts the caregiver's life. Therefore, societies with stronger ties to familism would report to lower perceptions of caregiving as burdensome. Compared to White caregivers, ethnic minorities are more likely to engage in familial caregiving models (Knight et al. 2002; Richardson et al. 2017). In regions of the world that are more focused on individualism and personal development across the life course, such as those countries with greater levels of overall development, the status of older adults tends to be lowered, accompanied by negative appraisals of the caregiving experience (Su and Ferraro 1997; Janevic and Connell 2001; Wang, Stokes, and Burr 2021).

In eastern regions of the world, where filial relationships bear a strong sense of devotion to aging parents and in-laws, caregiving is seen as an honorable duty rather than a negative or stressful obligation (Yuqin, Jones, and Winslow 2017; Zhang, Lin, and Jiao 2019). In general, the caregiving experience can provide a sense of meaning (Janevic and Connell 2001; Zhang et al. 2019). Latinx groups view caregiving as an act rooted in cultural scripts that signify family harmony and cohesion. Caring for aging adults encompasses all the most noble characteristics of caregiving, as individuals "sacrifice" their own personal desires or goals for the service of others (Pharr et al. 2014). However, an adult child's inability to contribute to and participate in older adult care may lead to feelings of disgrace over unfulfilled responsibilities, which can exacerbate a stressful caregiving situation (Gray et al. 2009; Moon et al. 2018). Therefore, the relationship between caregiver health outcomes, and family ties and traditions of familism is relatively unclear.

Across a variety of cultural groups, familism has shown no significant relationship to affecting caregivers' burden appraisals or health outcomes (Zhong, Wang, and Nicholas 2020). However, other studies contradict these findings, suggesting that filial obligations have protective effects on caregiver burden by reducing negative effects of stressors, and enhancing positive effects of appraisal (Yiu and Zang 2020).

Beyond the distinction of individualism and familism in carework rests gender differences. Caregiving has primarily been held as women's work, especially in historically patriarchal societies. Societal norms have created and perpetuated the feminine nature of carework, whereby women are expected to be nurturing caregivers, submitting to their duties in prioritizing the needs of the family over their own

(Harrington Meyer 1999). Ethnic and cultural variation on top of gendered power differentials may produce unique effects on caregiver burden (Flores et al. 2009). Similar to the relationship between familism and the appraisal of caregiver burden, where the act of caregiving may vary in its perceived level of burden, perhaps cultural meanings attached to female obligations in care may have different effects on caregiver health outcomes.

Macro-level influences such as the welfare state in other global contexts outside of the US may also offer explanations for variation in caregiver health outcomes. Family supportive governmental policies and work environments can greatly affect caregiving and caregiver health outcomes. Out of the four countries in this study, only Russia provides guaranteed leave specifically for their adult family members' health needs (World Policy Analysis Center 2020). Thus China, India, and Mexico do not offer these state-level benefits to individuals, meaning that caregivers are left to provide care and take care of their own families and employment without government assistance. Health service use, specifically as it relates to formal caregiver support, may also affect how families choose to provide care for adult family members. Patterns of formal support usage differ in non-US settings, as each country bears its own unique health care systems. The availability of family-supportive policies and caregiving services may impact the caregiving experience and, in turn, reports of depressive symptomatology.

Therefore, this dissertation will analyze the relationship between caregiving and depressive symptomatology in four different countries – China, India, Mexico, and Russia. These countries have been chosen based on having similar family value systems whereby there are strong ties between nuclear and extended family members. These countries also provide a general comparison of caregiving phenomena in settings that have similar levels of development.

It should be noted, however, that there are cultural factors that may influence the appraisal of the caregiving experience, as well as how depression is defined - if acknowledged at all. For example, Asian populations may frame their mental health in the context of somatic complaints. According to Lin and Cheung (1999), Asian Americans tend to hold traditions that view the body and mind as one unit, resulting in a patient's focus on more physically symptomatic ailments. Further, the existence of mental illness is often only acknowledged if it presents itself with disruptive behavior (Leong and Lau 2001; Villatoro et al. 2018). However, culture itself is difficult to operationalize for sufficient measurement. Therefore, the use of depressive symptomatology – as opposed to formal depression diagnoses – as an indicator of depression enables this research to better address cultural variation in the appraisal of poor mental health.

Most of the research focusing on the relationship between employment and caregiving suggests that the engagement in paid work while also providing older adult care yields negative impacts on physical and emotional wellbeing of the caregiver (Pinquart and Sorensen 2003; Bauer and Sousa-Poza 2019). However, positive benefits such as financial support and respite from caregiving have also been reported (Hawranik and Strain 2000; Yantzi, Rosenberg, and McKeever 2007). This research will investigate the effects of being engaged in paid work on depressive symptomatology for caregivers.

Known as the "sandwich" generation, many caregivers are double-booked and called to provide care and assistance to not only their aging parents, but for their own dependent children (Hammer and Neal 2008; Gillett and Crisp 2017). For those who are married, the benefits of having a potentially higher income and assistance with the nuclear family may provide relief in allocating time towards the extended family care (Neal and Wagner 2002; Wang et al. 2018). Other studies have shown that, even after taking into account workplace responsibilities, intergenerational caregivers were not affected by having both older adult and dependent-child responsibilities (Loomis and Booth 1995; Patterson and Margolis 2019). This study will explore the impact of having children under the age of 5 in the home on caregiver depressive symptomatology.

The time and attention required to manage the care of the recipient may take from the caregiver’s ability to tend to their own needs. Self-care activities, including but not limited to exercise, nutritious meal-planning or preparing, or even hygiene can be greatly affected by caregiving duties (Dionne-Odom et al. 2017). Furthermore, the focus on the care recipient may take away from the caregiver’s ability to engage in preventive or routine care for themselves. However, the health status of the care recipient may positively impact the caregiver’s health behaviors by encouraging them to remain in good health and spirits in order to continue fulfilling their caregiver duties. This research will expand the literature on caregiver health and depressive symptomatology as it relates to the caregiver’s own chronic condition diagnoses.

In summary, this study examines the effects of occupying multiple social roles while providing older adult and child care, and the role that being diagnosed with a chronic illness plays as they relate to depressive symptomatology. It will expand the literature on caregiver health by testing the applicability of U.S. sociological theory in non-U.S. contexts, drawing attention to what positive or negative aspects of having multiple social role responsibilities impact a caregiver's mental health. It will also assess whether differences in depressive symptomatology for caregivers and non-caregivers persist in non-US settings. As a leading cause of disability and a major contributor to the overall global burden of disease, depression affects over 265 million people worldwide (World Health Organization 2020). In addition to the physiologically and emotionally debilitative effects of depressive symptomatology, such conditions are linked to other serious comorbidities placing vulnerable populations at a higher risk for poor health outcomes (World Health Organization 2020). It is imperative to highlight the health of informal caregivers as they provide care for a rapidly growing population that health care systems worldwide may struggle to serve efficiently and effectively. This research advocates for the imperative need to address caring for those who care for us.

CHAPTER 2

THEORETICAL BACKGROUND

This chapter will outline the driving theory of this dissertation: Role Strain. Existing literature regarding role strain predominantly examines the cumulative effects of work and familial roles, but this dissertation introduces the addition of a sick role. That is, the social effects of being diagnosed with a chronic condition in addition to the employment and familial responsibilities. Because this dissertation examines the overall effect of occupying multiple social roles on caregiver depressive symptomatology, I will also present opposing variants of the theory. It should be noted that this dissertation will ultimately investigate the conflictive nature of occupying multiple social roles in relation to caregiver depressive symptomatology.

Role Strain

Role strain, in a most general summation, is the experience of the difficulty and/or inability to fulfill the obligatory duties of the roles that an individual takes part in (Goode 1960). It is a value theory in the sense that it creates a hierarchical allocation of value and effort towards roles, and sets the order of priority. Role strain is multifaceted in its approaches, and is typically examined through the scarcity and stratification hypotheses (Marks 1977). The scarcity hypothesis of role strain would suggest that energy for meeting demands is low due to having too many demands, therefore requiring the negotiation of roles (Goode 1960; Slater 1963; Marks 1977). But, it is also a theory of stratification as those who cannot fulfill all of their duties may be restricted access to needed resources or simply physically unable (Goode 1960; Marks 1977). The literature on role strain is both rich and bountiful, much of which highlights the conflict an individual faces when they are unable to meet obligations they are bound to both inside and outside of the home. It should be noted, however, that role strain does not operate uniformly across all social groups. That is, if role strain suggests that the number of roles one holds can negatively impact an individual, it does not impact all individuals the same way.

In applying role strain to caregiver depressive symptomatology, it aids in highlighting the discomfort experienced when an individual is unable to efficiently allocate the energy needed to meet the demands of the various social roles they occupy (Goode 1960). The time, emotions, and energy associated with the roles they occupy take a toll on the individual. The scarcity approach in this context would draw attention to understanding human energy whereby the duties and obligations tied to having multiple social roles become overdemanding (Slater 1963). For example, work-to-family conflict or family-to-work conflict would inhibit an individual from adequately fulfilling all of their work and familial duties. The stratification approach would suggest that because of the high number of demands from multiple roles, an individual would withdraw from one or more roles to perform others better, but doing so would *still* limit their ability to fulfill the remaining duties adequately. For example, leaving employment roles to fulfill caregiving duties would now place a financial strain on the caregiving role. Both approaches, however, would suggest a negative impact on depressive symptomatology for caregivers occupying multiple social roles.

The occupying of multiple roles takes a toll on the individual. Essentially, individuals are overcommitted and overworked (Mark 1977). One way role strain is difficult on individuals is by affecting their mental health. As previously mentioned, due to the over-demanding nature of holding multiple roles, individuals are often led to make compromises by withdrawing from certain roles in order to better carry out the duties of another. However, in many cases, this is not possible. Most individuals do not have a choice to quit their roles as parent, spouse, or worker. Thus the role strain builds. In context of this dissertation, role strain theory would suggest that the effects of multiple roles are additive, whereby greater depression occurs as a consequence of a greater number of roles.

Theories of role strain have an extensive history in sociological literature regarding several matters of the family such as work-family conflict, and the negative effects of caregiving and burden (Moon and Dilworth-Anderson 2015). Generally speaking, role specifications for testing these theories focused on the three “master” roles of work, marriage, and family, while also considering commitments to one’s religion and community (Spreitzer, Snyder, and Larson 1979). The literature on role strain surged between the 1960s and 1970s, until presented with competing positions claiming more self-efficacious and beneficiary effects of occupying multiple roles. Because this dissertation examines the overall effect of occupying multiple social roles on caregiver depressive symptomatology, it is important to understand both competing theoretical stances.

Multiple Roles Theories: a Counter

Between the mid 1970s and late 1990s, theories of role accumulation (Seiber 1974) and role balance (Marks and Macdermid 1996) offered more contextualized views of occupying multiple roles whereby human energy is expandable and transferrable as a result of an individual's ability to exercise prioritized decision-making. These improvements to the theory suggested that multiple roles could also help individuals.

Role accumulation and role balance theories both posit that various social, financial, and emotional gains and resources can come from occupying multiple roles. Accumulation theory suggests that multiple roles provide a variety of socioemotional benefits to an individual, which include but are not limited to a sense of identity in the community, a buffer from the negative effects of one role to improve satisfaction in another, added financial support, and increased social integration (Barnett and Hyde 2001). Consider the ways in which employment provide in financial resources, but also can bring in social and emotional resources of being connected to a larger purpose, having coworkers to expand social networks, and so on. Having children often connects parents to other people in their age range with similar interests and a vested interest in raising a child. A caregiver relationship creates a structured time in which two individuals are together and spend time together. These supportive resources and networks can reduce the effects of the negative relationship on mental health for older adults (Ejem, Drentea, and Clay 2015). Social support for caregivers, in general, is especially important for adapting to and carrying out the caregiver role (Drentea et al. 2006).

Further improvements to the theory were made drawing on George Herbert Mead (1934) as a counter to a rather atomistic and hierarchical view to multiple roles. Marks and MacDermid (1996) offered an all-encompassing assessment of the matter that moved away from what seemed like a “game of choosing” between roles. In this view, those occupying multiple roles - rather than separating them - organize them in such a way that they can be enacted in relation to one another (Marks and MacDermid 1996). For example, a working parent engages in the working role during the day, then enters the parenting role when they pick up their child at the end of the day, and then engages in various household roles soon after. In this sense, roles are organized in a system of self-patternization (Marks and MacDermid 1996). Occupying multiple roles, then, is no longer a matter of strain, but rather a matter of role balance.

These theories also drew attention to the notion that commitments to one role do not necessarily preclude similar levels of commitment to another (Barnett and Hyde 2001). These modified versions of role theory challenged existing stances that viewed individuals as machines to perform a multitude of tasks, and shed light on the *quality* of the roles being held. That, much like other family studies such as marital satisfaction, it is the quality of role engagement that significantly affects outcomes of well-being, and not merely the role itself (Umberson 1987). Although this dissertation cannot account for caregiver-recipient relationship quality, it will still examine the effect of each role itself.

Many adulthood transitions such as education completion, marriage, and childrearing have been steadily delayed, even in modernizing societies (Harris, Lee, and DeLeone 2010). As such, the ability of adult children to care for their aging parents becomes impaired, as there may be delays in securing financial stability, and other time preoccupations that accompany adulthood role transitions. When adult child caregivers are employed, they often experience a work-life imbalance or “time bind” by which work and family life demands conflict (Hochschild 1997; Tausig and Fenwick 2001). Furthermore, the “sandwich generation” is often met with needing to meet the demands of both their own dependent families and their aging parents (Hammer and Neal 2008; Gillett and Crisp 2017).

Family relationships are complex, and although family members may be available to provide care for an aging adult, both the types and quality of assistance should be taken into consideration. Effects of role strain on caregiver well-being may vary depending on the nature of the relationship between the caregiver and care recipient. Intergenerational ambivalence is the degree to which individuals have mixed feelings towards a parent or child (Peters, Hooker and Zvonkovic 2006). These feelings can affect several aspects of caregiving such as which sibling should take responsibility for which parent, the type of care one is willing to provide, as well as one’s overall feelings regarding their provision of care. The latter, in particular, may negatively affect their appraisal of burden and well-being (Fingerman et al. 2008).

Although research on aging families has advanced theory and applied innovative statistical techniques, the literature has fallen short in fully representing diverse populations (Silverstein and Giarrusso 2010). In applying the theory to this research, role strain would suggest that employed caregivers who provide both older adult and child care would have greater reports of depressive symptomatology. This research will also offer a contribution in filling the theories’ applicability gap regarding population diversity.

Conclusion

This chapter presented an outline of role strain theory and the subsequent variants of it that lay the foundation by which this dissertation is built. This dissertation ultimately investigates the consequences of occupying multiple social roles for caregivers, but the theoretical application to non-US settings is limited and therefore warrants the need to also understand the different variants of role strain theory. While role strain suggests that occupying multiple roles presents adverse effects on one's wellbeing, other theories multiple roles such as role accumulation and role balance present counter arguments that can buffer and/or enhance mental health outcomes

In the next chapter, I provide a broad overview of existing literature on caregiver depressive symptomatology, and how the other social roles employment, being married, and caring for children under the age of 5 in the home affect caregiver well-being. I also introduce the diagnosis of a chronic condition as an additional social role. Lastly, I review the effects that providing different types of care can have. While each topic is introduced and reviewed broadly, I also include overviews of these topics as they relate specifically to each respective country in this study.

CHAPTER 3

LITERATURE REVIEW

This chapter reviews the existing literature regarding the concepts of which this dissertation is focused. Due to limited studies in certain countries, I cite findings from US findings for context. Caregiving has been an area of interest for aging scholars across various social science disciplines, and this dissertation will fill gaps in the literature by testing US theory in populations beyond that of the US, and assessing whether or not similar patterns in caregiver depressive symptomatology are found in other countries. It will also focus on a variety of different types being provided to aging adults by caregivers, and whether different types of care are correlated with different levels of depressive symptomatology.

Extant literature on caregiver mental health is robust, often citing how those who provide care to a chronically ill or aging adult family member at risk for experiencing caregiver burden, and both physical and emotional morbidity (Schulz and Beach 1999; Ejem et al. 2015). The experience of caregiving and the physiological and emotional responses to it are multidimensional, which make addressing the harmful effects of such imperative to scholarly research. While this study focuses on depressive symptomatology, it is important to note that the consequences and tolls of caregiving extend beyond psychiatric manifestations. Serious physical ailments and other comorbidities associated with the caregiving experience include arthritis, hypertension, gastric ulcers, and migraines (Sawatzky and Fowler-Kerry 2003).

Depressive Symptomatology

Adult caregiving has been found to be associated with poor health outcomes, as many studies have made note of the associations between quality of life and caregiver burden (Happe and Berger 2002). In terms of mental health, US informal caregivers are more vulnerable to depression than their non-caregiver counterparts (Waite et al. 2004). Furthermore, those providing older adult care report higher levels of depression than those whose loved ones received care from formal care institutions (Happe and Berger 2002). It is also worth noting gender differences in caregiving experiences, as US female caregivers are more likely to report higher levels of burden and depression, and lower self-rated health compared to their male caregiver counterparts (Pinquart and Sorensen 2003). The time and attention demands of caregiving often place caregivers at risk for declining mental and physical health (Ward-Griffin and and McKeever 2000). The dyadic nature between the caregiver and care recipient is particularly important to make note of, as the emotional wellbeing can affect depressive symptomatology of the care recipient (Ejem et al. 2015). Those providing care may also neglect their own health or may be unable to engage in proactive and positive health behaviors (Ward-Griffin and McKeever 2000). Furthermore, some caregivers may even withhold information about their own health problems, failing to seek and receive adequate care for their own health (Ward-Griffin and McKeever 2000).

China

Caregiving has been strongly related to depressive symptomatology including disruptions with sleep, trouble focusing, loss of interest and energy, and changes in appetite (Happe and Berger 2002). In eastern regions of the world, in particular, mental health complications often go unnoticed or ignored unless they manifest somatically in symptoms (Lin and Cheung 1999). Furthermore, Asian groups often interpret certain symptoms as normal signs of aging, therefore affecting accurate reporting of underlying conditions (Pinquart and Sorensen 2005). Given that mental distress can manifest in various ways, the use of a summative scale for depression in this study may aid in understanding the nature of depressive symptoms for caregivers residing in different contexts (Xi, Hwang, and Drentea 2012). Furthermore, Asian culture places an emphasis on the secrecy of personal problems or stress (Lee et al. 2013). As such, perhaps caregivers are more likely to report on depressive symptoms, rather than the presence of depression or a formal diagnosis.

Strong traditions of familial obligation for the care of older adults may have a unique effect on the caregiver experience and the appraisal of associated burden. Because caregiving is seen as a moral and cultural obligation – as opposed to an elective duty – familial attitudes toward caregiving can have a protective effect against depressive outcomes for caregivers (Pan, Jones, and Winslow 2017). Regardless of cultural factors influencing underreporting of mental distress related to caregiving, Chinese caregivers are found to still experience caregiver burden manifesting in depression, anxiety, and problems with sleep (Liu et al. 2016).

India

Much like China and Mexico, informal caregiving in India is commonplace. Low- and middle-income countries (LMICs) can place a unique burden on caregivers in these settings, as there is a lack of state-supported care services. The absence of social security systems and formal care in India – and countries like it – often push older adults to rely on family members for care (Brinda et al. 2014). Familial support for older adult care is often long-term, and typically carried out with little to no financial or physical assistance from the state.

In addition to these macro-level stressors, the burden of caregiving can come from the nature of the care work, itself. Conditions such as movement disorders, insomnia, and incontinence of the care recipient can greatly increase a caregiver's level of burden (Brinda et al. 2014). Perceived decreases in the quality of life of the patient are correlated with increased feelings of caregiver burden, as the caregiver feels the need to take on more responsibility and increase their efforts towards providing care (Sirari et al. 2014). These decreases in patient quality of life and increases in caregiver burden typically coincide with increased economic burden, particularly in developing countries, which can also affect the caregiver's wellbeing (Sirari et al. 2014).

Mexico

Similar to that of US caregivers, the same trend is seen amongst Mexican caregivers whereby non-caregiver counterparts have better health outcomes related to depressive symptomatology (Hernandez and Bigatti 2010). Furthermore, caregiving is also predominantly regarded as women's work in Mexico. Cultural traditions and the influence of Catholicism have idealized the role of women as the main “support and guide” of the family (DiGirolamo and Snyder 2008). The universal role of a woman as a primary caregiver has been found to conflict with additional familial responsibilities such as motherhood and marriage (Salgado-de Snyder, Acevedo, and Diaz-Perez 2000). As such, the stress related to multiple social demands are associated with depression, anxiety, feelings of guilt, repressed hostility, and psychosomatic disorders (DiGirolamo and Snyder 2008).

Familismo or familism, a core component of Hispanic culture, is the collective focus of wellbeing; it refers to the prioritized sentiment of family wellbeing over that of the individual (Landale and Oropesa 2007). Similar to Asian traditions of filial piety, familism has been shown to have strong protective outcomes on caregiver burden despite acting as a barrier to utilizing formal supportive care (Crist et al. 2017). Ironically, the protective effects of familial emotional support can be muted when caregivers have unmet needs of instrumental support (Smith et al. 2020).

Russia

Research on older adult caregiving in Russia is limited, but much like the other countries in this study, similar trends have been found whereby female caregivers report poorer health outcomes related to the caregiving experience than their male caregiver counterparts (Lambert et al. 2017). Russia’s radical economic reform caused widespread social disruption, leaving social protection systems struggling to adequately keep up and state pensions that began to fall below basic subsistence levels (Gavrilova et al. 2009). As a result, vulnerable groups, namely older adults, fell through the safety net as a two-tier health system emerged. This disruption in the availability of quality health care caused older adult care to fall onto the shoulders of informal caregivers (Gavrilova et al. 2009). Additionally, the caregiving duties often fall heavily on the shoulders of women, as they tend to outlive their male counterparts; the gender gap in years lived for Russia is the largest in the world (Cockerham 2012). It is also important to note that these political and economic changes have also led to an emergence of transnational caregiving relationships. Private welfare groups that provide social security to older adults are typically funded and staffed by foreign parties (Caldwell 2007). As such, caregivers are more likely to be strangers from other countries, rather than family members (Chudakova 2016).

This research will check for gender differences in depressive symptomatology in an effort to determine whether these disparities exist in non-US contexts. It will expand current literature on the health of caregivers as it relates to depressive symptomatology, and will further examine what happens when a caregiver has been diagnosed with a chronic condition, themselves. While other studies have found that depression is associated with poorer health, particularly for those with other chronic conditions, this dissertation will expand this research by investigating the effects of an existing condition specifically on caregiver symptomatology.

Chronic Conditions

While the presence of one or multiple chronic conditions (MCCs) can have an adverse effect on overall health outcomes, for older caregivers, chronic conditions may be especially burdensome. Extant literature suggests that the prolonged distress and physical demands of caregiving alongside the biological vulnerabilities of aging may compromise the physiological health of older caregivers (Vitaliano, Zhang, and Scanlan 2003). Although mental and emotional strains from caregiving can serve as risk factors for mortality amongst older caregivers (Schulz and Beach 1999), it is unclear as to whether or not caregiving "causes" illness. Rather, comorbidities may increase caregiver distress and interact with caregiving to exacerbate physiological dysregulation. However, feelings of self-efficacy can have protective effects of caregiver burden (Pinquart and Sorensen 2005), which can result in better positive emotions and physical health (Zhang et al. 2014).

The inclusion of being diagnosed with a chronic condition as a social role in this dissertation introduces the sick role as a social role. The sick role (1951) is a concept introduced by Talcott Parsons, whereby those who fall ill exhibit several uniformities of behavior and identity such as exemption from usual social responsibilities, to engage in, and comply with, help-seeking behaviors regarding care (Schipke 2019, Arluke, Kennedy, and Kessler 1979). Essentially, a person that is sick takes on the social characteristics of what it means to be sick, as well as the behaviors and responsibilities that come with it. Although the concept itself has lost its popularity over time, chronic illness has been shown to inhibit one's ability to carry out their usual personal and social responsibilities (Schipke 2019). I acknowledge that the sick role is multifaceted in how it is enacted and experienced, and its introduction as a social role in this dissertation is exploratory. Therefore, as a preliminary analysis of how an illness affects the caregiving experience, the diagnosis of a chronic illness will serve as measurement of this social role.

China

Research on caregivers with chronic conditions in China is limited and focus primarily on the effects that a patient's comorbidities have on the caregiver. However, the health status of a caregiver – having a chronic condition or not – has been found to affect their quality of life (Lu et al. 2019). This is similar to findings in other Asian countries whereby caregiver demands are heavier for those with poor health status (Morimoto, Schreiner, and Asano 2003). Specific outcomes such as poor sleep quality for caregivers in China are also related to their own poor health status (Zhang et al. 2014). Recent studies have also shown that caregivers' anxiety symptoms are associated with having a chronic disease, living with the care recipient, and education (Shi et al. 2020).

India

While the relationship between mental health and physical health are reciprocal, research on Indian caregivers suggest that worse or poorer physical health is a predictor of higher levels of burden and depressive outcomes (Machiko et al. 2010). In general, caregivers often report negative impacts of caregiving on their overall health and wellbeing (Rodriguez et al. 2008). Furthermore, those with existing conditions report that their health problems have been exacerbated by burdens of caregiving (Thrush and Hyder 2014).

Mexico

A large portion of research focusing on the health of caregivers in Mexico report on the effects of caregiving on health-related quality of life (HRQoL). HRQoL refers to the impacts of health conditions on daily functioning, whereby the caregivers have been found to exhibit pooer HRQoL in comparison to their non-caregiving counterparts (Arango-Lasprilla 2011). With the implementation of Mexico's universal healthcare system, Seguro Popular, many Mexican households reported gaps in coverage for chronic conditions (Mayston et al. 2017). Given the trends seen in other developing countries, it is possible that similar economic strains are placed on caregiving populations which may impact overall health outcomes.

Russia

Similar to the trends found in other countries in this study, caregiving in Russia disproportionately falls onto the women. However, this may be due to the fact that women are more likely to outlive men into caregiving ages due to the unusually high rates of mortality and poor health (Cockerham 2007). Intergenerational households in Russia whereby the older generation requires care can negatively impact one's health, as well as exacerbate problems related to existing conditions and health problems (Permyakova and Billingsley 2017).

Working Caregivers

Over one in six Americans who currently work full- or part-time jobs also report providing elder adult care (Gallup Well-Being Index 2012). However, the precise number worldwide is relatively unknown, as current prevalence estimates are derived – and overestimated – from general household or employee surveys, whereby people are more likely to respond regarding older adult care issues if they are personally involved (Neal and Wagner 2002). Unlike their non-caregiving counterparts, working caregivers provide long-term assistance to an aging adult while also needing to maintain employment, requiring sacrifices in many other areas of their life. While there are financial and respite advantages to being an employed caregiver, it is imperative that the negative effects of caregiving on work are highlighted in order to bring attention to the need for work-based older adult care programs.

In the US, working caregivers have unique experiences that their non-caregiving counterparts do not. Providing older adult care was correlated with lost time from work, decreased productivity, and lost job or career opportunities (Hammer et al. 2005; Depasquale et al. 2018). In effort to maintain financial support, many of these workers chose to work fewer hours if possible, switch to less demanding forms of employment, or exit the workplace altogether, and/or retire early (Bookman and Kimbrel 2011).

While men were traditionally the ones who work outside of the home, women are increasingly facing the effects of being members of the sandwich generation, in which “women have to play multiple roles, such as the wife and mother who cares for her husband, child, daughter in-law, and parents. [They] also have to be a good employee at [their] job” (Zhang and Goza 2005). As such, the duties and burdens of caregiving are both disproportionately placed upon, and experienced by, women.

China

China remains the largest developing country that continues to undergo various social and economic changes. Between 2002 and 2004, the working population continued to increase as baby boomers began entering young and middle ages, with the female labor participation resting at 45% (World Bank 2019). At the same time, families decreased in size and the population of aging older adults continued to rise, resulting in unique caregiving trends. These changes raise concerns regarding the traditional family safety net, and whether it is secure for older persons in such regions. While some findings indicate the presence of family-to-work conflict (Zeng et al. 2014), others have shown that unemployed caregivers experienced greater levels of depressive symptomatology (Zhan 2005). Although caregiving and household duties have, for centuries, been considered women's work, recent studies show that unemployed male caregivers report greater levels of depressive symptoms (Liu et al. 2013).

The sociopolitical effects of China's one child per couple policy (OCP) created unique demographic consequences in fertility rates, whereby family structures and caregiving patterns were greatly affected. The combination of below replacement fertility, reduced mortality, and longer life expectancies have created unprecedented aging and caregiving challenges (Zhang and Goza 2005). Due to increased modernization and the out-migration of adult children to more urban settings for increased economic opportunities, there is an increase of older adults who live alone (Gu et al. 2009). Such household changes may have negative impacts on the availability of support and caregiving resources, but may also improve the older adults' daily functioning and sense of control (Gu et al. 2009).

Despite changing social trends as a result of economic reform, adult children's expressions of filial piety in China were the same or greater in single-child families as in multi-child families, which suggests that deficits in support may be less than expected for aging parents whose fertility was guided by the one-child policy (Deutsch 2006).

Although behaviors believed to satisfy obligations of filial piety are undergoing modification as a result of modernization, the notions of obligation and obedience still bear strong sentimental value and influence in Easter regions of the world (Cheng and Chan 2006).

India

Demographic transitions in India have led to a rapid emigration of young adults to urban settings, particularly young men. With family acting as the main source of primary caregiving, the absence of men in the home increases the care burden on women (Ajay et al. 2017). Traditionally, when a son marries, they bring their wife into the parental home and the wife is held responsible for caring for the husband's family. This often means that women are asked to leave employment, especially to take on caregiving duties (Gupta, Rowe, and Pillai 2009). While a lack of employment is typically associated with economic burden on caregivers, Asian and pacific countries have a long history of permanent or cyclical patterns of migration. As such, remittances have become increasingly important in supporting the care for older adults and those who have been "left behind" (Knodel and Chayovan 2008). Because caregiving is often viewed as an obligation and normative duty, women may underestimate the level of caregiver burden (Maji 2018). However, for those women who may have had to sacrifice employment and careers, their sense of autonomy may be overpowered by the feeling of being left-behind and a lack of respite from caregiving duties (Urgargol and Bailey 2018).

Mexico

Household structure is a strong determinant of Mexican labor force participation, and tends to affect women's employment status more than men's (Cunningham 2001; Rodriguez and Pillai 2019). As previously mentioned, domestic work and intergenerational caregiving are typically valuable duties of a woman that often occur in the home. Such duties are easier to perform if a woman has time and workplace flexibility, but these jobs are typically part of the informal sector or entrepreneurial in nature (Brachet-Marquez and Oliviera 2004). If the income needs of a family exceed the cost of staying home with young children, women are more likely to participate in the labor force. But, because mulitigenerational households are popular amongst Latinx cultures, employed caregiving tends to be feasible for these groups (Rodriguez and Pillai 2019).

Russia

The literature on the effects of employment on Russian caregivers is limited, but trends are similar to that of the other countries in this study. Caregivers in Russia are likely to remain employed beyond retirement ages due to low pensions and growing costs of living (Gerber and Radl 2014). Women are more likely to provide care across the life course than men (Patterson and Margolis 2019). The challenges of accumulating demands from employment, marital distress, adolescent children, and providing older adult care are associated with somatization and poor-self care (Remennick, 1999). While employment can be a strain on those providing care to an aging adult, employees who have multiple caregiving roles – to an adult and dependent child – experience greater levels of stress and workplace consequences (DeRigne and Ferrante 2012). However, the literature on the effect of intergenerational responsibilities is mixed. This dissertation will expand the literature on the relationship between employment and depressive symptomatology for caregivers.

Children Under 5 in the Home

Changes in the social climate of the family are also affected by employment and caregiving demands. There is an inverse relationship between the number of potential family caregivers and the number of those needing care. Changes in fertility rates, and the percentage of those ages 65 and older who are choosing to remain in the labor force are social processes have decreased the number of potential family caregivers (Heller, Caldwell, and Factor 2007). As a result, adult children are more likely to experience role strain from combining the role demands of employment *and* caregiving (Pillemer and Suitor 2014).

Mentioned briefly, the presence of young children in the home can have negative effects on a caregiver's wellbeing in all of the countries in this study. On top of providing older adult care, the demands of childcare conflict with time constraints, and can affect one's labor for participation. Literature regarding caregiving alongside the presence of young children in the home has been found to have a negative financial impact on older adult care. Caregivers reportedly offer reduced financial assistance to their aging parents when young children are present in the home (Couch, Daly and Wolf 1999). But other studies have found no significant effect of intergenerational responsibilities on a caregiver's wellbeing (Loomis and Booth 1995; DeRigne and Ferrante 2012).

Intergenerational caregiving typically operates as a familial exchange economy, whereby grandparents offer household or child-care assistance, and working parents provide monetary support (Frankenberg, Lillard, and Willis 2002). While theories of role strain would posit that childcare would have an additive impact on caregiver burden, role expansion would argue that caring for a child would not preclude one's ability to care for an aging adult, and vice versa. In fact, compared to those providing no care at all, caregivers offering assistance to one generation are twice as likely to fulfill care duties to another generation (Pyke and Bengston 1996).

China

Filial obligations in Eastern regions of the world typically require caregivers – particularly daughters – to take on responsibilities for both aging adults and their own nuclear families with their own children (Peng et al. 2019). In general, young children are seen as dependents rather than supports (Sheng and Settles 2006). Due to China's OCP, the national birth rate declined rapidly from 22.28 per 1000 in 1982 to 18.24 in 1992 and 12.86 in 2002 (Fu et al. 2017). This led to the three-person family (father, mother, and only child) becoming the main family pattern. Although having a low number of dependent children would presumably ease the load of intergenerational caregiving, China's OCP also resulted in a consequential shortage of adult caregivers; young couples were likely to provide support and care to two, four, or even six couples at a time (Sheng and Settles 2006; Xu et al. 2017).

India

Contrary to Western findings, the presence of young children in the home does not have an empirically observable negative effect on caregiver and older adult health in India (Samanta, Chen, Vanneman 2015). Intergenerational households in the West are typically the result of financial difficulty, illness, marital disruption, or low socioeconomic status of older adults (Arpino, Bordone, and Balbo 2018). Young children in these settings are said to also place older adults at higher risk for communicable diseases (Samanta et al. 2015). However, similar households in India tend to be wealthier, which may mute detrimental health effects of the presence of young children (Banjare, Dwivedi, and Pradhan 2015).

Mexico

Traditions of familism or familismo emphasize a strong sense of familial obligation to care, but also suggest that the wellbeing of the family is vital to the wellbeing of the individual (Evans, Coon, and Belyea 2014). As a result, Mexican caregivers tend to view child and adult caregiving similar in importance. That is, caring for one's own nuclear family members bears the same level of sentiment and responsibility as caring for extended family members. Young children in these settings are found to require the same amount of vigilance, time, and energy for providing quality care as aging adults (Neary and Mahoney 2005; Smith et al. 2020).

Russia

Although both sandwiched and intergenerational caregiving are common in Europe, intergenerational care tends to be more prevalent (Patterson and Margolis 2018). In Europe, caregiving for children or grandchildren peaks between the ages of 35 to 49-years old (Patterson and Margolis 2018), which is reflected in this study; the average age of caregivers in Russia is 49. Intergenerational living is relatively common in Russia, and can be attributed to cultural preferences, economic necessity due to high unemployment, and grandparental assistance with childcare (Utrata 2015). Other macro levels such as the increases in housing and mortgage costs also influence the intergenerational living (Utrata 2015). While existing literature documents intergenerational caregiving in Russia, little is known about the effects that the presence of young children has on depressive symptomatology and caregiver burden.

Intergenerational caregiving can negatively affect health, as these caregivers have been found to be more likely to engage in poor health behaviors such as choosing meals of convenience rather than nutritional value, not wearing their seatbelts, smoking, and exercising infrequently (Chassin et al. 2010; Gillett and Crisp 2017). But, intergenerational homes can offer some benefits such as supplemental caregiving whereby grandparents provide at least 50 hours of care per year to the children of working parents (Patterson and Margolis 2018). This study will examine and expand the literature on the effect that children under the age of five in the home have on caregiver's reports of depressive symptomatology.

Marital Status

Marriage has consistently been reported as protective against poor psychological health and negative health outcomes (Soulsby and Bennett 2015; Waite 1995). Social support, defined as the emotional, instrumental, or tangible aids that are exchanged between members of a particular social network (Waite and Gallagher 2000; House, Landis, and Umberson 1988). Perceived social support can act as a buffer to negative effects of stressful events. Marital status plays a significant role in being protective for differences in perceive social support and cognitive performance between caregivers and non-caregivers (Pavarini et al. 2021).

China

Amongst Chinese caregivers, perceived stress acts a strong predictor of anxiety symptoms, but social support has shown to alleviate anxiety symptoms related to the stress from caregiving (Shi et al. 2020). The social stigma of utilizing medical facilities or formal healthcare institutions for older adult care in China, coupled with political and economic barriers to care leaves older adult care in the hands of family members (Dai et al. 2015). Caregiver burden and depressive symptomatology have been found to be partially mediated by social support, whereby spouses and other family members provide caregivers with social support (Zhong 2020).

India

Instances where caregiver perceived stress was high, reports of social support

among friends and significant others was reportedly low (Sadath et al. 2017).
Social support vis-à-vis marriage has been found to be protective in India for caregivers, as caregivers who are unmarried have reported poorer mental health outcomes than their single caregiving counterparts (Kate et al. 2013). Beyond the status of marriage, marital quality is also an important factor in determining a caregiver's reports of burden (Raj, Shiri, and Jangam 2016).

Mexico

Concepts of familism cultivate a strong sense of support and unity for the family, overall. Social scripts influence by notions of machismo and marianismo hold both men and women responsible for the wellbeing and care of the family, both immediate and extended (Mendez-Luck, Kennedy, and Wallace 2008). However, in families with multiple adult children, unmarried women without children are typically those who take on the responsibilities of caring for older adults as they are viewed as having fewer responsibilities than their siblings with their own nuclear families (Gameren and Naranjo 2015). Spousal support can also come in the form of additional income for care needs (Gameren and Naranjo 2015). While the duties of the family and home typically fall on the shoulders of women, providing sufficient and adequate care to the family, including to older adults, is a sentiment that resonates regardless of marital status (Mendez-Luck et al. 2008; Smith et al. 2020).

Russia

Studies on caregiving in Russia are limited, but because of the gender gap in life expectancy, data on older married couples is difficult. Shorter life expectancies for men leads to disproportionate numbers of men and women in the older adult population. As a result, the majority of data collected on aging in Russia is based on samples of women. In general, however, marital status is a strong predictor of loneliness for older adults as marriage serves as a primary form emotional and instrumental support (Hainsworth et al. 2019).

Types of Care Provided

Early literature on caregiving suggested that caregiving was predominantly women's work. However, men are becoming increasingly involved in care (Spillman and Pezzin 2000; Wolff et al. 2018). Men in the US are typically found to help with more financial and objective matters, and women are more likely to help with emotional, household, and personal care (Drentea 2018). With regard to employment, full-time employment does not necessarily conflict with caring for an aging parent or providing support. Rather, full-time employment can affect the *kind* of care administered. Those who work full-time are more likely to assist with daily living activities or ADL activities (e.g., eating, dressing, bathing) than instrumental daily living activities or IADL activities (e.g., household work, meal preparation, laundry) (Wolf and Soldo 1994; Glauber 2019). Although ADL activities may be more physically laborious, they are found to be less time-intensive than IADL activities; difficulties with time allocation tend to be the predominant complaint of working caregivers and intergenerational caregivers (Lai 2010; Glauber 2019).

China

In general, Chinese caregivers provide various types of care to an aging adult. Whereas traditional obligations of filial piety urged for sons in particular to take care of aging parents, newer studies suggest that both sons and their wives are involved in providing ADL and IADL assistance, as well as emotional support (Li and Dai 2018).

India

In India, with young adult males typically residing away from their families due to career demands, women providing care to their in-laws and their own nuclear families are often responsible for providing mostly medical and personal care (Ajay et al 2017). Similar to other developing countries, a large portion of India's older adults reside in rural settings whereby caregivers are, as a result, more likely to provide a wider range of care (Ajay et al. 2017). So long as the caregiver and care recipient reside in the same home, caregivers in India are likely to provide both ADL and IADL assistance (Ajay et al. 2017).

Mexico

Subsidized long-term or elder care services are very limited in Mexico, which is associated with the popularity of intergenerational households mentioned above. Therefore, informal caregivers tend to be responsible for providing all types of care – medical, personal, and instrumental. Older children in the home are often asked to assist with household and care duties, which allows caregivers the ability to provide a range of assistance (Cunningham 2001; Rodriguez and Pillai 2019). The strong traditions of filial piety in Eastern regions of the world, and familism in Mexico, render caregiving duties as essential which tend to be protective against negative appraisals of caregiver burden (Lai 2009).

Russia

As previously mentioned, coresidence and intergenerational households in Russia are commonplace for both macro and microlevel reasons. While studies on caregiving in Russia are limited, caregivers in Russia have been shown to spend a significant amount of time providing personal care in particular (Lambert et al. 2017).

Conclusion

In this chapter I reviewed the nature depressive symptomatology in caregivers, as well as the impacts of the additional social roles of employment, caring for young children, and also being diagnosed with a chronic condition. I also assessed the varied effects of providing different types of care. While much of this literature is broadly discussed as it relates to its popularity in US settings, I also examine these topics in relation to each respective country in this study. Overall, similar patterns in caregiver depressive symptomatology are seen in these other countries, but the differences in the appraisal of other social duties and how they ultimately affect mental health outcomes may be rooted in sociocultural sentiment and practice.

Based on the literature review and theoretical framework, this dissertation will investigate the following hypotheses:

Caregiver Status

H1: Caregivers will report greater levels of depressive symptomatology than non-caregivers.

Country

H2: Levels of depressive symptomatology for caregivers will differ by country.

Chronic Conditions

H3: Having a chronic condition will partially explain the relationship between caregiver status and depressive symptomatology.

Employment

H4: Employment status will partially explain the relationship between caregiver status and depressive symptomatology.

Children under 5 in the home

H5: The presence of children under 5 in the home will partially explain the relationship between the caregiver status and depressive symptomatology.

Marital Status

H6: Marital status will partially explain the relationship between caregiver status and depressive symptomatology.

Role Accumulation

H7: Depressive symptomatology will differ by the type of social roles a caregiver holds.

Caregiving Type

H8: Levels of depressive symptomatology will differ by the type of care provided.

CHAPTER 4

DATA AND METHODS

Secondary data analysis was performed using data gathered from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004. As part of a longitudinal cross-national dataset of ageing and older adults, SAGE was designed to collect information on the ageing process in nationally representative samples across China, Ghana, India, Mexico, Russia and South Africa. Due to data limitations regarding the variables of interest, this dissertation excludes Ghana and South Africa. The survey focuses on several aspects of health, health-related outcomes and their determinants. Data were collected from adults aged 18+ years, with an emphasis on populations aged 50+ years. I will limit my description to these four countries of interest.

All countries used stratified multistage cluster designs for sampling. Data were collected using face-to-face interviews, with computer-assisted telephone technology when needed. Response rates at the household and individual levels were as follows: China: 92.8 percent and 100 percent; India: 95.6 percent and 97.1 percent; Mexico: 96.5 percent and 99.7 percent; and Russian Federation: 99.8 percent and 99.9 percent (World Health Organization 2013). The targeted sample sizes for each country were: China 4300, India 10750, Mexico 40000, and Russian Federation 4427. Due to a high rate of missingness on variables pertaining to depressive symptomatology in Wave 1, this dissertation focuses on Wave 0. The final analytic sample size for Wave 0 was N=52,661.

Variables

Country

Each country has been recoded as a dummy variable.

Depressive Symptomatology

Respondents were asked the following questions reporting symptoms of depression during the past 12 months: (1) *Have you had a period lasting several days when you felt sad, empty or depressed?* (2) *Have you had a period lasting several days when you lost interest in most things you usually enjoy such as hobbies, personal relationships or work?* (3) *Have you had a period lasting several days when you have been feeling your energy decreased or that you are tired all the time?* (4) *Was this period [of sadness/lossof interest/low energy] for more than 2 weeks?* (5) *Was this period [of sadness/loss of interest/low energy] most of the day, nearly every day?* (6) *During this period, did you lose your appetite?* (7) *During this period, did you notice any slowing down in your thinking?* Responses were dichotomized as (0)=no, (1)=yes. The individual questions used to assess these symptoms were based on the World Mental Health Survey version of the Composite International Diagnostic Interview (Moussavi et al. 2007). A summative scale was created, ranging from 0-7, and has a chronbach's alpha of .82

Chronic Conditions

Respondents were asked to indicate whether they had been diagnosed with the following conditions: (1) *Have you ever been diagnosed with arthritis (a disease of the joints)?* (2) *Have you ever been diagnosed with angina or angina pectoris (a heart disease)?* (3) *Have you ever been diagnosed with asthma (an allergic respiratory disease)?* While diabetes is a condition that is commonly addressed in studies, this condition was excluded for the current study due to high rates of missingness. Responses are not mutually exclusive and a new dummy variable was created whereby those present on *any* existing condition variable will be set equal to (1).

Employment

Respondents were originally asked to report their current job. Missingness on this variable was high, and thus could not be used in this dissertation. However, in a second variable, respondents were asked *why* they were not currently working. Cross-tabulations confirmed that these respondents were also those originally classified as missing on the employment variable. Therefore, I created a new variable to reclassify those who were missing on the employment variable as unemployed. The current variable for employment was created by grouping together different types of unemployment, such as those who are retired, currently looking for work, and not working for pay; and categorizing them as unemployment, all else were coded into employed. This is a dummy variable whereby (0)=unemployed and (1)=employed.

Children Under 5 in the Home

A new variable was created from the household roster to indicate the number of children present in the home. It is a continuous variable ranging from 0 to 6. Because the majority of respondents report having no more than one child under the age of 5 in the home, a dummy variable has be created where 0=no children in the home, and 1=one or more children in the home.

Marital Status

Marital status was originally coded (1)=never married (2)=currently married (3)=separated (4)=divorced (5)=widowed (6)=cohabiting. However, to address the disproportionate number of people who were married in these countries, over half of individuals report being married, this variable has been recoded as a dummy variable where (0)=single (includes never married, separated, divorced and widowed and (1)=married.

Role Accumulation

A new variable was created to capture the total number of roles being held by the individual. It includes the cumulative roles of having a chronic condition, being employed, and having a child under the age of 5 in the home, and being married. However, preliminary analyses concluded that these variables should remain as categorical. Therefore, the effect of role accumulation is tested using the categorical variables mentioned above.

Type of Care Provided

For caregiving type, respondents were asked to indicate what types of care they provided to the adult if they answered yes to providing care: (1) *You helped with personal care, such as going to the toilet, washing, getting dressed, or eating* (2) *You helped with medical care, like changing bandages and giving medicines* (3) *You helped with household activities, such as meal preparation, shopping, cleaning, laundry* (4) *You watched over them since their behaviour can be upsetting or dangerous to themselves or others* (5) *You helped them to get around outside the home.* This question was only asked to those indicating they were caregivers. Responses are not mutually exclusive and will be coded as dummy variables where (0)=no and (1)=yes.

Controls

Other variables to be included are *age* coded as continuous and ranges from 18 to 80*,* and sex (0)=male (1)=female. To tap into SES, I will also control for level of education using a continuous measure of total number of years of formal schooling. The education variable ranges from 0 to 20. I will also control for wealth, which is coded as quintiles whereby (0)=poorest (1)=poor (2)=middle (3)=rich (4)=richest. See Table 1 for all means and standard deviations.

Analytic Plan

The total analytic sample size for this study is N=52,661. Missingness for all variables of interest were minimal and inconsequential - less than 5% - and accounted for using listwise deletion (Schafer 1999; Dong and Peng 2013). To confirm, a series of sensitivity analyses and data comparisons with analyses using multiple imputations were also performed.

The analytical strategy is a three-step process. First, I examine overall sample statistics and characteristics by country. Second bivariate analyses are conducted to check for significant association between the outcome variable and main predictor variables. I also compare caregivers to non-caregivers on depression. Third, I perform regression analyses – negative binomial regression is the primary statistical method. To assess which type of regression analysis was appropriate, I assessed the variation of the distribution. Negative binomial regression is suitable for over-dispersion in outcome variables. Given that the variance for depressive symptomatology in this study was greater than the mean, a negative binomial model was deemed appropriate (UCLA 2020).

A total of 8 models were fitted, with Model 1 assessing differences in depressive symptomatology by caregiver status net of controls as proposed by Hypothesis 1. Model 2 examines differences in depressive symptomatology by country addressing Hypotheses 2. Models 3-6 include the effects of the main predictors of caregiver social roles: chronic conditions, employment, the presence of children under 5 in the home, and marital status addressing Hypotheses 3-6, respectively. Controls are added in Model 7 to assess if these associations are still significant. Model 7 also checks for the effect of role accumulation using interactions between caregiver status and the role accumulation variables of chronic condtions, employment, children under 5 in the home, and marital status corresponding to Hypothesis 7. Lastly, Model 8 addresses Hypothesis 8, checking for the differences in depressive symptomatology by the type of care being provided. Models 1-7 are nested, and Model 8 pertains to caregivers only.

The beta coefficients from these models are presented as Incidence Rate Ratios (IRR). The IRR was calculated by specifying the IRR option after the full model is specified in Stata 15. As an additional step to confirm, IRRs were calculated by hand via exponentiation of the beta coefficients in Excel. In order to interpret the coefficients in terms of IRRs, it is important to understand how one can go from interpreting the regression coefficients as a difference between the logs of expected counts, to incidence rate ratios. Regression coefficients are interpreted as the difference between the log of expected counts, and the difference of two logs is equal to the log of their quotient (Bruin 2006). Therefore, this explains the "ratio" in incidence rate ratios. Lastly, a rate is defined as the number of events – in this case, depressive symptomatology. Therefore, the regression coefficients can be interpreted as the log of the IRR, which explains the "rate" in incidence rate ratio. For example, a coefficient of .49 for depressive symptomatology for females compared males can be interpreted as: the difference in the logs of expected counts is expected to be 0.49 unit higher for females compared to males. Therefore, the IRR for this same value can be interpreted as: females are expected to have a 1.65 greater expected rate of depressive symptomatology compared to their male counterparts.

Conclusion

In this chapter, I provided an overview of the data set used in this dissertation, the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004. In addition to listing the variables of interest, I explained how these variables are operationalized and coded for analysis. Lastly, I presented the analytic plan with an explanation regarding the usage of negative binomial regression, and how the IRRs can be interpreted. The next chapter presents the results of the analyses. Tables are also presented that provide an overview of the descriptive statistics and incidence rate ratios for the data.

CHAPTER 5

RESULTS

Descriptive Statistics

Table 1 presents the means and percentages of the sample characteristics for the overall sample and by country. In each country, the population was mostly female, with Russia having the highest percent of female respondents. In terms of age, India has the youngest population, and Russia has the oldest. The majority of individuals in each country indicate being married. It should be noted, however, that Russia has higher rate of widowhood (not shown). This mirrors the aforementioned gender gap in life expectancy whereby women in Russia tend to outlive men due to the unusually high rates of mortality and poor health behaviors (Shkolnikov 2004; Cockerham 2007).

In general, the majority of individuals in each country indicate having at least secondary schooling as their highest level of education. According to the World Bank, secondary educational stages for China and India begin at year 5, year 6 for Mexico, and year 5 in Russia (UNESCO 2011). I confirmed whether respondents completed secondary school by crosstabulations of both the categorical and continuous variables of education stages and the number of formal years of formal education (not shown). However, India has the lowest levels of education, which may be an indication of the country’s overall lower-middle level of development. Compared to the rest of the countries in the study, Russia has considerably high levels of educational attainment, which may also be an indication of the country’s level of development as well as its mass-education system and student mobility (Smolentseva 2016). Also, these countries have changed dramatically in the past 40-50 years. In all four countries, levels of education have been steadily rising with the sharpest increases in China and Russia after their notable political and economic reform (World Bank, 2019). Since this population is older, this group of respondents have lower educational achievement than if we had sampled a younger cohort of individuals.

Overall, the majority of the individuals fall into the rich and richest quintiles. Not surprisingly, given that Russia is the most developed nation in this study, it has the most individuals falling in the richest quintile, as well as the least number within the poorest quintile. In Mexico, despite being more developed than India (World Bank 2019), the majority of individuals are in the poorest quintile, shortly followed by those in the middle and richest quintiles.

In all four countries, levels of depressive symptomatology are relatively low. Not surprisingly, China has the lowest reports of depressive symptomatology which reflects findings from existing literature on the nature of mental health appraisal in Asian settings. Reports of depressive symptomatology are highest in Russia, which may be attributed to higher prevalence estimates in depression being found in wealthier countries (Bromet et al. 2001).

The majority of individuals in each country reported *not* providing care to an adult in the past year. Despite China, India, and Mexico having similar values of familial obligation to care, Russia has the most caregivers compared to the rest of countries in question. This may be in part due to this population being older, and perhaps an indication of the common practice of multigenerational households (Utrata 2015).

The majority of individuals in each country indicated being employed, which is not surprising given that the average ages of individuals fall below their country's age of retirement (Organisation for Economic Co-operation and Development 2018). It should also be noted that over half of those who are caregivers also report being employed (not shown).

The majority of respondents in each country do not report having a diagnosis of a chronic condition. However, of those who do, most of them are from India and Russia. This is particularly noteworthy as these two countries are vastly different in country-level development. Russia has the highest level of development in this study at 32.45%, but counterintuitively also has the highest percentage of those report a chronic condition. India is the least developed of the countries, with the second-highest percentage of chronic conditions at 29.97%.

The majority of respondents do not report the presence of a child under the age of 5 living in the home. Considering the respective average ages, it is not surprising that the country with the highest average age of 49 years old, has the lowest level of children under 5 in the home at 6.33%. In stark difference, over a quarter of those in Mexico and India have children under 5 in the home.

Lastly, as further illustration of common multigenerational household practices in Russia, household assistance being the most common type of care provided by Russian caregivers. In general, household assistance is the most common type of care being provided in all countries, except in Mexico where personal care is most common.

Next, I turn to the regression analyses and hypotheses. Table 2 tests hypotheses 1-5. Table 3 tests hypothesis 6 as this model tests for the effects of role accumulation whereby the chronic condition, employment, and presence of young children variables are removed for parsimony. Table 4 tests hypothesis 7 as this model tests for differences in depressive symptomatology by the type of care being provided. This model only pertains to caregivers. Figure 1 provides an overview of the regression equations for each model and its corresponding hypothesis.

Figure 1. Hypotheses and Corresponding Negative Binomial Regression Equations*

Caregiver Status Caregivers will report greater levels of depressive symptomatology than non-caregivers.	$log(depress) = int + b_1(caregiver)$
Country Levels of depressive symptomatology for caregivers will differ by country.	$log(depress) = int + b_1(caregiver) + b_2(country)$
Chronic Conditions Having a chronic condition will partially explain the relationship between caregiver status and depressive symptomatology.	$log(depress) = int + b_1(caregiver) + b_2(country) + b_3(chronic)$
Employment Employment status will partially explain the relationship between caregiver status and depressive symptomatology.	$log(depress) = int + b_1(caregiver) + b_2(country) + b_3(chronic) + b_4(employed)$
Children under 5 in the home Employment status will partially explain the relationship between caregiver status and depressive symptomatology.	$log(depress) = int + b_1(caregiver) + b_2(country) + b_3(chronic) + b_4(employed) + b_5(children)$
Marital Status Marital status will partially explain the relationship between caregiver status and depressive symptomatology.	$og(depress) = int + b_1(caregiver) + b_2(country) + b_3(chronic) + b_4(employed) + b_5(children) + b_6(marriage)$
Role Accumulation$^+$ Depressive symptomatology will differ by the type of social roles a caregiver holds.	$log(depress) = int + b_1(caregiver) + b_2(country) +b_3(age) + b_4(sex) + b_5(education) + b_b(wealth) + b_7(caregiverXchronic) + b_8(caregiverXemployed) + b_9(caregiverXchildren) + b_{10}(caregiverXmarriage)$
Caregiving Type$^+$ Levels of depressive symptomatology will differ by the type of care provided.	$log(depress) = int + b_1(caregiver) + b_2(country) + b_3(roles) +b_4(age) + b_5(sex) + b_6(marriage) + b_7(education) + b_8(wealth) +b_9(personal) + b_{10}(medical) + b_{11}(household) + b_{12}(watch) +b_{13}(mobility)$

*Coefficients have an additive effect in the log(y) scale and the IRR have a multiplicative effect in the y scale.
Ex: $\log(\text{depress}) = \text{int} + b_1(\text{caregiver}) + b_2(\text{country})$ *implies* $\text{depress} = \exp(\text{int} + b_1(\text{caregiver}) + b_3(\text{country}) = \exp(\text{int})*\exp(b_1(\text{caregiver}))*\exp(b_2(\text{country}))$

Hypothesis 1

Hypothesis 1 states that caregivers will report greater levels of depressive symptomatology than non-caregivers. As shown in Table 2, Model 1, being a caregiver is positively associated with depressive symptomatology. Compared to non-caregivers, caregivers are expected have a 1.64 greater rate of depressive symptomatology. Note that the confidence intervals correspond to the raw coefficient (.49) of this IRR. This supports Hypothesis 1.

Hypothesis 2

Model 2 checks for differences in depressive symptomatology by country, as proposed by Hypothesis 2. Compared to China, India has over twice the expected rate of depressive symptomatology, as shown in Table 2, Model 2. Post-tests confirmed that expected rates of depressive symptomatology are significantly different in China, India, Mexico, and Russia thus supporting Hypothesis 2. Additional analyses (not shown) also show that although expected rates of caregiver depressive symptomatology for are greater in each country compared to China, rates are lower for caregivers in Mexico in comparison to caregivers in both India and Russia. Rates of depressive symptomatology are no different for caregivers in India than in Russia. After controlling for country, caregivers still have significantly greater expected rates of depressive symptomatology than their non-caregiving counterparts. However, the IRR for caregiver depressive symptomatology decreases by .07 (1.64 in Model 1 to 1.57 in Model 2), suggesting that these differences are partially explained by country differences.

Hypothesis 3

Hypothesis 3 states that having a chronic condition will partially explain the relationship between caregiver status and depressive symptomatology. Table 2, Model 3 shows that those who have been diagnosed with a chronic condition have over twice the rate of depressive symptomatology compared to those without a chronic condition. Controlling for chronic conditions also partially explained country differences in depressive symptomatology for India and Russia. Expected rates for depressive symptomatology in Mexico compared to China increased by .18. After controlling for chronic conditions, caregivers remain significantly different in depressive symptomatology than their non-caregiver counterparts. The IRR for caregiver depressive symptomatology decreases slightly from 1.57 to 1.56, suggesting that chronic conditions may partially explain the relationship between caregiver status and depressive symptomatology thus supporting Hypothesis 3.

Hypothesis 4

Table 2, Model 4 addresses Hypothesis 4 which states that employment status will partially explain the relationship between caregiver status and depressive symptomatology. Compared to those who are unemployed, those who are employed have .72 lower rate of depressive symptomatology. Once employment was added to the model, the IRRs for country differences in depressive symptomatology decreased, suggesting partial attenuation in the relationship between country and depressive symptomatology. The addition of employment status in the model increases the IRR from 1.56 to 1.59 for caregiver depressive symptomatology, thus suggesting that caregiver status has a stronger relationship to depressive symptomatology than was the case prior to controlling for employment. That is, if caregivers and non-caregivers were to have the same level of employment, the disparity in depressive symptomatology would be much greater. Thus, Hypothesis 4 is not supported.

Hypothesis 5

Hypothesis 5 states that the presence of children under 5 in the home will partially explain the relationship between the caregiver status and depressive symptomatology. As shown in Table 2, Model 5, those with one or more children under the age of 5 in the home have a .89 lower rate of depressive symptomatology compared to those without young children in the home. Once the presence of young children in the home is controlled for, the IRR for those with chronic condition decreases from 1.98 to 1.96, suggesting that young children in the home attenuates the relationship between having a chronic condition and depressive symptomatology. IRRs for depressive symptomatology in India and Mexico increase. Adding the presence of children under the age of 5 in the home does not change the rate of depressive symptomatology in caregiver status. Thus, Hypothesis 5 is not supported.

Hypothesis 6

Hypothesis 6 states that marital status will partially attenuate the relationship between caregiver status and depressive symptomatology. As shown in Table 2, Model 6, those who are married have a .90 lower rate of depressive symptomatology compared to those who are single. Marital status partially attenuates the relationships between depressive symptomatology and country, chronic conditions, employment, and the presence of children under 5 in the home, respectively. Marriage does not attenuate the relationship between caregiver status and depressive symptomatology as the IRR remains unchanged. Thus, Hypothesis 6 is not supported.

Model 7

Table 2, Model 7 is a continuation of Model 6, but includes all other controls to test whether the above associations continue to hold significance once sex, age, marital status, education and wealth are accounted for. An additional IRR plot summary of this model is displayed in Figure 2. This model also tests for role accumulation by testing for significant differences in the impact of caregiver status on depressive symptomatology by social roles.

Controls

Compared to men, women have 1.50 greater expected rates of depressive symptomatology. For every additional year of age, rates of depressive symptomatology increase by 1.00. For every additional year in education, rates of depressive symptomatology decrease by .98. Compared to those in the poorest quintile, those who are considered poor have a 1.10 greater expected rate in depressive symptomatology; those in the richest quintile have a .91 lower expected rate.

Children under 5 in the Home

Once sex, age, education, and wealth are controlled, the effect of children under the age of 5 in the home is no longer significant suggesting that these factors have a stronger impact on depressive symptomatology than the presence of young children in the home, alone. However, additional analyses indicate that when caregiver status is interacted with the presence of young children, the effect of young children in the home significantly affects depressive symptomatology, but *only* for caregivers (not shown). That is, caregivers who have a child under the age of 5 in the home have significantly higher scores of depressive symptomatology than non-caregivers with children.

The addition of controls in the model increases the IRR for employment, thus suggesting that employment has a stronger relationship to depressive symptomatology than was the case prior to controlling for all other factors. The relationship between having a chronic condition and depressive symptomatology is partially attenuated, as illustrated by the subsequent IRR decrease. Inclusion of all other controls does not change country differences in depressive symptomatology in Mexico, and these differences are suppressed for India and Russia. Lastly, the IRR for caregiver depressive symptomatology increases from 1.59 to 1.66, suggesting that caregiver status has a stronger relationship to depressive symptomatology than was the case prior to controlling for all other factors. Note that the fit statistics suggest that each subsequent model is a better fit.

Hypothesis 7

Role Accumulation

Hypothesis 7 states depressive symptomatology will differ by the type of social roles a caregiver holds. Interactions between social roles (chronic conditions, employment, children under 5 in the home, and marital status) and caregiver status were performed. As seen in Table 2, Model 7, analyses indicate that the effect of caregiver status on depressive symptomatology does vary significantly by the types of social roles a person holds, but only for having a chronic condition and being employed ($p<.05$).

Hypothesis 8

Table 3, Model 8 addresses Hypothesis 8 which states that depressive symptomatology will differ by the type of care provided. This analysis only applies to caregivers, as only caregivers were asked about the type of care they provide. Each type of care was added into the model individually and each model was run separately. Preliminary analyses showed that adding them individually, rather than pooled in one analysis, was the best method. The provision of personal care, medical care, and watching over the care recipient are both associated with greater expected rates of depressive symptomatology. Thus, Hypothesis 8 is supported.

Table 4

Table 4 shows a continuation of Model 8 *by country*. Each country is a separate model. Because this is exploratory research, initial models led to this ad hoc analysis examining depressive symptomatology for caregivers only in their respective countries. As previously mentioned, expected rates of depressive symptomatology for caregivers are higher in each country when compared to China, lower in Mexico when compared to India and Russia, and no different for India when compared to Russia.

China

Only the social roles of having a child under 5 in the home and being married have significant impacts on depressive symptomatology. The presence of a child under 5 in the home is associated with a 1.44 greater expected rate of depressive symptomatology, and being married lowers rates by .55. Female caregivers in China have over twice the expected rate of depressive symptomatology than their male caregiver counterparts (2.08, $p<.001$). Expected rates of depressive symptomatology increase by 1.02 with every additional year of age. Although education is not protective, wealth lowers expected rates of depressive symptomatology for those in the middle, rich, and richest quintiles compared to those in the poorest. Depressive symptomatology was not significantly associated with any type of care provided.

India

Having a chronic condition is the only social role that has a significant impact on depressive symptomatology, and is associated with a 1.52 greater expected rate of depressive symptomatology. Female caregivers in India have a 1.09 greater expected rate of depressive symptomatology compared to their male caregiver counterparts. Age is positively associated with depressive symptomatology. Although education has no significant effect on depressive symptomatology, greater wealth is associated with a .75 lower expected rate of depressive symptomatology compared to the poorest quintile. The provision of household care, watching over the care recipient, and helping them outside of the home are all associated with greater expected rates of depressive symptomatology.

Mexico

Caregivers in Mexico with a chronic condition have one and half times greater expected rates of depressive symptomatology than those who do not. This is the only social role that is significantly associated with depressive symptomatology. Female caregivers in Mexico also have a 1.5 greater expected rate of depressive symptomatology than their male caregiver counterparts. Age, wealth, and type of care provided are not significantly associated with depressive symptomatology. Education is protective, whereby expected rates of depressive symptomatology decrease by .98 with every additional year of education. Depressive symptomatology for caregivers in Mexico does not differ by the type of care provided.

Russia

Having a chronic condition, employment, and marital status are all significantly associated with depressive symptomatology for caregivers. While employment and marriage are protective, having a chronic condition is associated with a 1.42 greater expected rate of depressive symptomatology. Female caregivers in Russia have a 1.12 greater expected rate of depressive symptomatology than their male caregiver counterparts. Age does not significantly impact depressive symptomatology. Although education is not significantly associated with depressive symptomatology, wealth offers protective effects for those in the highest quintile. The provision of household care and watching over the care recipient are associated with greater expected rates of depressive symptomatology.

Variation by Country

Table 3, Model 8 highlights variation in the effects of each independent variable on caregiver depressive symptomatology by country. While certain variables in the model may have significant effects on depressive symptomatology within each respective country, these effects may not be significantly different between countries. Post-estimations were used to perform Wald tests for comparing coefficients between countries. Model 8 indicates that only the effects of employment, being female, and age on depressive symptomatology vary by country.

Conclusion

This chapter discussed the results from the analyses examining the hypotheses driving this dissertation. In addition to the results of the initial negative binomial regression analysis, an ad hoc analysis was included to examine trends in caregiver depressive symptomatology in their own respective countries. Hypotheses 1-3 are supported, as well as Hypotheses 7 and 8. The effect of caregiver status on depressive symptomatology significantly varies by the social roles of having a chronic condition and being employed. There was no support for Hypotheses 4-6. Once controls were added to the model, the effect of the presence of children under the age of 5 in the home was no longer significant. However, additional analyses showed that the presence of children under the age of 5 in the home is positively associated with depressive symptomatology for caregivers *only.* The effect of caregiver status on depressive symptomatology is neither attenuated nor moderated by marital status, despite being significantly associated with lower rates of depressive symptomatology.

Women have greater depressive symptomatology compared to their male counterparts, and depressive symptomatology increases with age. Greater levels of wealth and education have protective effects on depressive symptomatology. Providing personal care and watching over an aging adult are the only types of care that significantly impact depressive symptomatology.

When looking at caregivers only, those in China have the lowest expected rates of depressive symptomatology compared to all other countries. Depressive symptomatology is lower for caregivers in Mexico compared to both India and Russia, but no different in India than in Russia. Women in all countries have significantly greater rates of depressive symptomatology. Age is positively associated with depressive symptomatology, but only for China and India. Being married is protective for depressive symptomatology, but only in China and Russia. Education lowers rates of depressive symptomatology, but only for caregivers in Mexico. Across all countries, greater wealth lowers depressive symptomatology.

The effect of social roles on depressive symptomatology does not vary by country, except for the role of employment. The effects of being female and age also vary significantly different in their impact on depressive symptomatology by country. The next chapter further discusses these results and what implications they have.

Table 1. Descriptive Statistics* and Variables for Analysis (N=52,661)

	China Mean	**SD**	**India Mean**	**SD**	**Mexico Mean**	**SD**	**Russia Mean**	**SD**	**Total Mean**	**SD**
Sex %										
Female	50.55		50.04		57.61		64.61		56.50	
(Male)	49.45		49.96		42.39		35.39		43.50	
Age	44.75	15.25	38.60	15.23	40.98	16.71	49.65	17.75	41.47	16.67
Marital Status %										
Married	82.55		77.02		68.59		50.95		69.63	
(Not married)	17.45		22.98		31.41		49.05		30.37	
Education	7.56	4.35	5.23	5.12	7.21	4.96	11.90	3.49	7.26	5.06
Wealth										
Poor	19.80		19.14		19.97		19.91		19.83	
Middle	20.17		19.73		20.01		20.11		19.99	
Rich	20.20		20.56		19.99		21.25		20.17	
Richest	20.12		21.32		20.01		21.55		20.30	
(Poorest)	19.72		19.25		20.02		17.18		19.70	
Dep. Symptomatology	.63	1.47	1.70	2.32	1.12	2.08	1.88	2.25	1.21	2.11
Caregiver %										
Yes	11.68		16.58		10.97		22.37		12.55	
(No)	88.32		83.42		89.03		77.63		87.45	
Chronic Condition %										
Yes	16.19		30.02		8.98		32.48		13.98	
(No)	83.81		69.98		90.02		67.52		86.02	
Employment Status %										
Working	65.19		52.28		49.45		56.76		51.44	

(Not working)	34.81	47.72	50.55	43.24	48.56
Children Under 5 %				.	
One or more	11.62	26.48	27.69	6.22	24.99
(None)	88.38	73.52	72.31	93.78	75.01
[+] **Types of Care+ %**					
Personal	5.64	12.54	6.67	9.70	7.62
Medical	3.77	11.60	5.96	15.10	7.19
Household	8.76	11.14	6.09	15.92	7.62
Watching	1.74	8.13	3.71	4.08	4.22
Mobility	4.09	10.71	6.12	10.47	6.90
N	3,743	7,414	38,093	3,411	52,661

* Mean and standard deviation for continuous variables, percent reported for nominal variables.

[+] Caregivers only; categories are *not* mutually exclusive. Percentages represent only those indicating “yes” to providing each respective type of care.

Table 2. Negative Binomial Regression for Depressive Symptomatology Using Data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI) (N=52,661)

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	IRR	**95% CI**	**IRR**	**95% CI**	**IRR**	**95% CI**	**IRR**	**95% CI**
Caregiver Status								
Yes	1.64***	(1.55, 1.74)	1.57***	(1.48, .1.66)	1.56***	(1.47, 1.65)	1.59***	(1.49, 1.68)
Country								
India			2.63***	(2.40, 2.90)	2.41***	(2.19, 2.65)	2.33***	(2.14, 2.58)
Mexico			1.77***	(1.63, 1.93)	1.95***	(1.80, 2.12)	1.82***	(1.67, 1.98)
Russia			2.84***	(2.55, 3.18)	2.63***	(2.36, 2.94)	2.60***	(2.32, 2.89)
Chronic Conditions								
Yes					2.08***	(1.96, 2.20)	1.98***	(1.86, 2.09)
Employment								
Currently employed							0.72***	(.68, .74)
Children Under 5								
One or more								
Marital Status								
Married								
AIC	3.029317		2.999683		2.959913		2.946531	
BIC	-490073.20		-491607.10		-493692.60		-494388.40	

(Table continued on next page)

Table 2 (continued). Negative Binomial Regression for Depressive Symptomatology Using Data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI) (N=52,661)

(continued)	**Model 5**		**Model 6**	
	IRR	**CI**	**IRR**	**CI**
Caregiver Status				
Yes	1.59***	(1.49, 1.68)	1.59***	(1.49, 1.68)
Country				
India	2.40***	(2.18, 2.64)	2.38***	(2.16, 2.61)
Mexico	1.85***	(1.70, 2.01)	1.80***	(1.66, 1.97)
Russia	2.58***	(2.31, 2.88)	2.49***	(2.23, 2.78)
Chronic Conditions				
Yes	1.96***	(1.84, 2.07)	1.95***	(1.84, 2.06)
Employment				
Currently employed	0.72***	(.68, .74)	.71***	(.67, .74)
Children Under 5				
One or more	0.89***	(.87, .96)	.92***	(.86, .94)
Marital Status				
Married			.90***	(.86, .94)
AIC	2.945497		2.944449	
BIC	-494434.00		-494480.3	

(Table continued on next page)

Table 2 (continued). Negative Binomial Regression for Depressive Symptomatology Using Data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI) (N=52,661)

(continued)	**Model 7**	
	IRR	**95% CI**
Caregiver Status		
Yes	1.66***	(1.56, 1.76)
Country		
India	2.53***	(2.29, 2.78)
Mexico	1.85***	(1.69, 2.00)
Russia	2.64***	(2.36, 2.95)
Chronic Conditions*		
Yes	1.78***†	(1.68, 1.88)
Employment*		
Currently employed	0.91***†	(.87, .95)
Children Under 5*		
One or more	1.00	(.95, 1.05)
Marital Status*		
Married	0.92***	(.88, .96)
Sex		
Female	1.50***	(1.43, 1.57)
Age	1.00***	(1.00, 1.01)
Education	0.98***	(.97, .99)
Wealth	1.10**	(1.03, 1.16)
Poor	1.00	(.93, 1.05)
Middle	0.96	(.89, 1.02)
Rich	0.91***	(.84, .97)
AIC	2.913951	
BIC	-496024.30	

* Role accumulation variables

† Tested for significant differences in the impact of caregiver status on depressive symptomatology by social roles using interactions between role accumulation variables (chronic conditions, employment, children under 5 in the home, marital status) and caregiver status, indicates significance p<.05. Each interaction model is run separately.

Figure 2. Adjusted and Unadjusted Incidence Rate Ratio (IRR) Plot Summary for Model 7, Full Model with Controls (N=52,661)

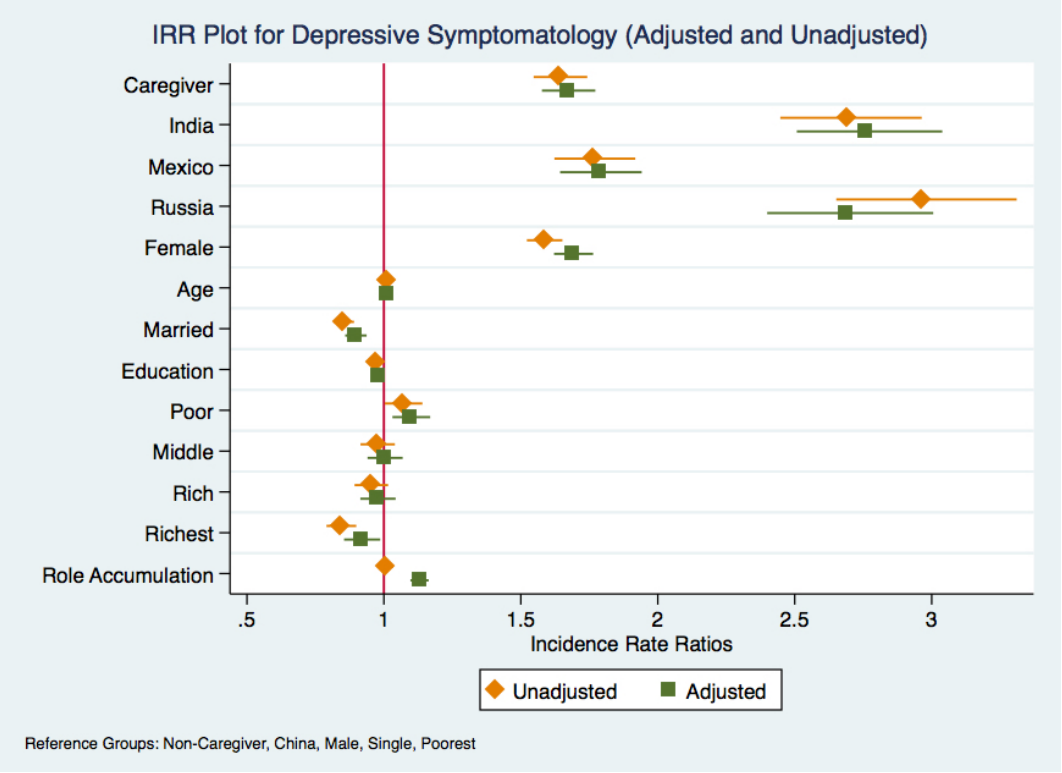

Table 3. Negative Binomial Regression for Effects of Type of Care Provided on Depressive Symptomatology, and Variation by Country, for Caregivers Only Using Data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI) (N=6,608)

	Model 8	
	IRR	**95% CI**
Country		
India	2.32***	(1.91, 2.84)
Mexico	1.68***	(1.41, 2.01)
Russia	2.17***	(1.77, 2.68)
Chronic Conditions		
Yes	1.48***	(1.33, 1.64)
Employment		
Currently Employed	.97†	(.88, 1.06)
Children Under 5		
One or more	.99	(.90, 1.09)
Marital Status		
Married	.91*	(.83, .99)
Sex		
Female	1.42***†	(1.29, 1.56)
Age	1.00†	(1.00, 1.00)
Education	.98**	(.98, 1.00)
Wealth		
Poor	1.02	(.88, 1.17)
Middle	0.93	(.79, 1.06)
Rich	1.00	(.86, 1.14)
Richest	0.87	(.74, .1.01)
Care Provided[x]		
Personal	1.14**	(1.04, 1.24)
Medical	1.09*	(1.00, 1.18)
Household	1.04	(1.00, 1.18)
Watching	1.08*	(1.02, 1.21)
Mobility	1.05	(.97, .1.13)

[x] Each type of care added into the model separately. No significant changes in other independent variables.

[†] Tested for significant differences in the impact of each independent variable on depression by country using interactions between each independent variable and country, indicates significance p<.05. Each interaction model is run separately.

Table 4. Negative Binomial Regression for Depressive Symptomatology for Caregivers Only, Individually by Country, Using Data from the WHO Study on Global AGEing and Adult Health (SAGE): Wave 0, 2002-2004, Incidence Rate Ratios (IRR) and 95% Confidence Intervals (CI) (N=6,608)

	China$^+$		**India**		**Mexico**		**Russia**	
	IRR	**CI**	**IRR**	**CI**	**IRR**	**CI**	**IRR**	**CI**
Chronic Conditions								
Yes	1.44	(.87, 2.36)	1.52***	(1.32, 1.77)	1.50***	(1.23, 1.77)	1.42***	(1.18, 1.71)
Employment								
Currently Employed	1.21	(.71, 2.01)	1.02	(.86, 1.22)	.92	(.81, 1.05)	.79*	(.64, .96)
Children Under 5								
One or more	1.82*	(1.01, 3.31)	.91	(.77, 1.07)	.97	(.84, 1.13)	.77	(.52, 1.12)
Marital Status								
Married	.55*	(.29, .99)	1.12	(.94, 1.35)	.89	(.78, 1.01)	.81*	(.68, .96)
Sex								
Female	2.08***	(1.34, 3.21)	1.09	(.91, 1.31)	1.50***	(1.31, 1.72)	1.12**	(1.15, 1.63)
Age	1.02***	(1.01, 1.04)	1.01*	(1.00, 1.01)	1.00	(.99, 1.01)	1.01	(.99, 1.01)
Education		(.99, 1.13)	0.98	(.96, 1.00)	.98**	(.96, .99)	0.99	(.98, 1.04)
Wealth								
Poor	0.81	(.41, 1.62)	0.87	(.68, 1.11)	1.11	(.90, 1.38)	1.33	(.97, 1.79)
Middle	.50**	(.24, .98)	0.84	(.66, 1.07)	0.97	(.78, 1.20)	0.72	(.67, 1.02)
Rich	.51**	(.22, .97)	0.82	(.64, 1.04)	1.09	(.88, 1.34)	1.49	(.98, 1.62)
Richest	.39***	(.15, .73)	0.75*	(.61, .84)	0.97	(.78, 1.21)	.42*	(.34, .57)

Care Provided[x]								
Personal	1.30	(.80, 1.95)	1.04	(.86, 1.24)	1.09	(.95, 1.23)	1.03	(.86, 1.23)
Medical	1.16	(.74, 1.83)	0.93	(.79, 1.09)	1.07	(.95, 1.22)	1.09	(.91, 1.31)
Household	1.11	(.71, 1.83)	1.07*	(.89, 1.27)	1.01	(.89, 1.15)	1.23*	(1.03, 1.48)
Watching	0.92	(.48, 1.58)	1.18**	(1.09, 1.29)	1.02	(.88, 1.17)	1.25*	(.96, 1.35)
Mobility	0.96	(.58, 1.57)	1.10**	(.92, 1.32)	0.96	(.84, 1.09)	1.13	(.93. 1.33)
N		437		1,229		4,179		763

[+] Each country model ran separately.
[x] Each type of care added into the model separately.

CHAPTER 6

DISCUSSION

Caregiver Status

Caregiver status is associated with greater levels of depressive symptomatology whereby those who are caregivers have greater expected rates than those who are not caregivers. Even after controlling for other sociodemographic measures of sex, age, marital status, education and wealth, caregivers remain with worse mental health outcomes than their non-caregiving counterparts.

Having a chronic condition and being employed are significantly associated with greater levels of depressive symptomatology, and moderate the relationship between caregiver status and depressive symptomatology. The effect of a child under the age of 5 in the home is significantly associated with depressive symptomatology, but only amongst caregivers. These points illustrate support for non-US settings, rather than later versions of role theory suggesting positive effects of multiple social roles. Although marriage is protective, it does not significantly impact depressive symptomatology differently for caregivers and non-caregivers.

In assessing depressive symptomatology amongst caregivers *only*, depressive symptomatology is higher for those with chronic conditions. Females also have greater expected rates for depressive symptomatology than males, and also increases with age. Being more educated and having greater levels of wealth have protective effects on depressive symptomatology.

The nature of caregiving itself is multifaceted and although several variables were included in these analyses to control for confounding effects of caregiver status on depressive symptomatology, this study is limited in specifically looking at variation in the caregiver role, itself. Differences in depressive symptomatology were found to differ by the type of care provided in that personal care, medical care, and watching over the care recipient are significantly associated with greater levels of depressive symptomatology. However, I was unable to account for other aspects of caregiving that may affect levels of depressive symptomatology such as the quality of the caregiver-care recipient relationship and the time spent engaging in caregiving duties.

Chronic Conditions

The disparity in depressive symptomatology between caregivers and non-caregivers is partially explained by the diagnosis of a chronic condition. Expected rates of depressive symptomatology are over twice that of those without. Furthermore, the effect of caregiver status on depressive symptomatology significantly varies by having a chronic condition. This expands the literature regarding the impacts of physical limitations, which claim that one’s own physical health can both affect, and be affected by, caregiver experiences (Pavalko and Woodbury 2000; Lippert and Damaske 2019).

Employment

While employment can have protective effects on depressive symptomatology vis-à-vis provision of income and therefore improved resource access, role strain theory suggests that employment responsibilities can conflict with caregiving duties which is seen in this dissertation. Controlling for employment suppressed the disparity in depressive symptomatology by caregiver status, suggesting that if caregivers and non-caregivers were to have the same levels of employment, the disparity in depressive symptomatology would be greater. The relationship between caregiver status and depressive symptomatology significantly varies by employment. Future studies should examine other aspects of employment such as the time spent at a job, the type of labor that one works in, as well as work satisfaction to gain a clearer understanding of the relationship between employment and caregiver status, and how they affect depressive symptomatology.

Children Under 5 in the Home

The presence of children under the age of 5 in the home was associated with a have a .90 lower rate of depressive symptomatology compared to those without young children in the home. Once sex, age, marital status, education, and wealth are controlled, the effect of children under the age of 5 in the home is no longer significant. This led to additional analyses which indicated that when caregiver status is interacted with the presence of young children, the effect of young children in the home significantly affects depressive symptomatology, but only for caregivers. In other words, caregivers who have a child under the age of 5 in the home have significantly higher scores of depressive symptomatology than non-caregivers with children. This is particularly interesting as this captures the phenomena of caregiver burden for the "sandwich generation," while also doing so in non-US settings. However, it should be noted that the effect of children in the home does not significantly differ across countries.

Marital Status

Marriage is associated with lower rates of depressive symptomatology, and partially explains the relationship between caregiver status and depressive symptomatology. The effect of caregiver status on depressive symptomatology does not vary by caregiver status, nor does this relationship vary by country. This may be an indication of the role that marriage plays in social and/or financial support in caregiving and in non-US settings, but should examined further in future studies.

Sex, Age, Education and Wealth

For both caregivers and non-caregivers, being female and age are both negatively associated with depressive symptomatology. Findings for female caregivers are particularly pertinent to caregiving research, as caregiving has traditionally been considered women's work. This study found that female caregivers have greater levels of depressive symptomatology than both male caregivers, as well as non-caregiver females. This illustrates how caregiver burden disproportionately affects women than men, which expands current literature on gendered patterns in caregiving in that these patterns persist in non-US settings. These findings also contribute to extant findings regarding the detrimental effects of caregiving on mental health outcomes, in general. Having greater education and wealth all have protective effects on depressive symptomatology, which continues to reiterate the importance of social support and SES for mental health outcomes.

Type of Care Provided

Personal care, medical care, and watching over the care recipient are all associated with greater levels of depressive symptomatology. This mirrors findings in the literature that highlight the physical and emotional strains that these types of labor can produce. Watch care is particularly laborious, as caregiving of this type often calls for monitoring and surveillance at night which can disrupt a caregivers sleep patterns, leading to adverse effects on one's mental and physical health (Rosenthal et al. 2014).

Caregiver Differences by Country

Only the effects of employment and sex on depressive symptomatology vary country. However, having a chronic condition, sex, marital status, education, wealth, and types of care provided still have significant impacts on caregiver symptomatology within each country respectively. That is, while many of these relationships do not differ between countries, they still differ within countries. These within country differences are explained below.

Chronic Conditions

Those who have been diagnosed with a chronic condition have greater expected rates of depressive symptomatology than those who have not. The effect of having a chronic condition also moderates the relationship between caregiver status and depressive symptomatology. Chronic conditions are associated with greater levels of depressive symptomatology in every country except for China. However, the effect of chronic conditions does not vary by country.

Employment

As previously mentioned, employment moderates the relationship between caregiver status and depressive symptomatology. Employment lowers rates of depressive symptomatology for caregivers, but only in Russia. In addition to having a significant impact on caregiver depressive symptomatology within Russia, employment also impacts caregivers differently between countries.

Female Caregivers

In each country, being female was positively associated with depressive symptomatology. This relationship also varies by country. As previously stated, this shows that caregiver burden disproportionately affects women when compared to men even in non-US settings. Being married offers protective effects in each country except for India. This may be an indication of the previously mentioned phenomena whereby working-aged men in India migrate to the city, leaving their spouses with feelings of being left-behind and a lack of respite from caregiving duties (Urgargol and Bailey 2018).

Education

Mexican caregivers benefit from greater levels of education. This may be attributed to a combination of several things. First, education is tied to feelings of competence and autonomy, which can positively impact mental health outcomes (Riley 2015). As previously mentioned, feelings of autonomy for caregivers in India tend to be lost, as the patriarchal tradition of marriage often meant that women were asked to leave employment, especially to take on caregiving duties (Gupta et al 2009). The same may be the case in China, another historically patriarchal society. Perhaps the effect of education is muted in countries like China and India, where the tendency for women to abandon pursuits of personal and professional development as a result of patriarchal family demands is more common (Gupta et al. 2009; Warmenhoven, Hoebink, and Janssen 2018). That is, in comparison to Mexico, which is traditionally a matriarchal society as a result of the powerful Catholic venerations (Chant 1997; Rodriguez and Pillai 2019). Thus, education may have a significant impact on caregivers – who are predominantly female - in Mexico as opportunities for educational success may be more attainable in places like Mexico.

Secondly, being more educated may be associated with opportunities for employment, which was shown in this study to be associated with lower rates of depressive symptomatology. Women in Mexico are more likely to participate in the labor force if the income needs of a family exceed the cost of staying home with young children (Rodriguez and Pillai 2019). And, because multigenerational households are popular in Mexican families, employed caregiving tends to be feasible for these groups and have less of a negative impact on depressive symptomatology (Rodriguez and Pillai 2019). Therefore, the protective effects of education on depressive symptomatology for Mexican caregivers may be tied to a combination of greater educational value and feelings of autonomy.

But what about the effect of education being lacking significance in Russia? Multigenerational household structures are also popular in Russia, which is also the wealthiest country in this study. Note that wealth lowers rates of depressive symptomatology in Russia, but not in Mexico. Whereas multigenerational households may offer flexibility for education (and perhaps employment) to have significantly protective effects on depressive symptomatology in Mexico, perhaps when in combination with wealth, education is less significant. That is, the benefits of education in Russia may be muted by the benefits of multigenerational household support and wealth.

Wealth

As a follow up to the results of educational effects on caregiver depressive symptomatology, greater wealth is associated with lower rates of depressive symptomatology in each country, except for Mexico. At the same time, education has no significant effect on caregiver depressive symptomatology in all of countries where wealth is. This suggests that wealth matters more in China, India, and Russia than it does in Mexico. Russian caregivers may also rely more on wealth and accumulated capital than education.

Types of Care Provided

Caregiver depressive symptomatology was not affected by the type of care provided in any country, except for India and Russia. For caregivers in India, the provision of household care, watching over the care recipient, and helping the care recipient with mobility out of the home were all associated with greater rates of depressive symptomatology. Give the preceding findings and what is known from existing literature, because Indian caregivers often feel a lack of autonomy from being “left behind” and a lack of respite from caregiving duties, it is possible that watch care is particularly detrimental for rates of depressive symptomatology (Urgargol and Bailey 2018). Watching over a sick and/or aging adult can often be time consuming, especially if they require round-the-clock supervision. As previously mentioned, this constant supervision at all hours of the day and night may also inhibit a caregiver’s ability to sufficiently tend to and complete other caregiving duties such as household care and even their own self-care (Rosenthal et al. 2014).

Furthermore, all of these types of care are considered IADLs, and are therefore more time-consuming. These findings mirror trends in existing literature whereby caregivers with multiple social roles may be more inclined to provide ADL assistance; although these tasks are more physically taxing, they require less time than IADL assistance (Lai 2010; Glauber 2019). It is unclear as to why caregiver depressive symptomatology was not significantly affected by the type of care provided in China and Mexico. Future studies should continue to investigate the effects of different types of caregiver duties in order to better assess the needs in assistance and resources of a caregiver.

Level of State Support

In addition to the microlevel aspects of the caregiving experiences, it is important to consider the macrolevel dimensions that can greatly affect caregiving and its related outcomes. Family-supportive policies and welfare states can determine whether or not a caregiver is able to sufficiently meet the needs of the roles that they hold, and how those responsibilities affect their overall well-being. Parental leave policies would alleviate caregiver burden as there would be opportunities for financial compensation, and adjustments in allocating one's time from formal employment to caregiving. But, while the countries in this study do provide some level of parental leave, that is just one piece of the puzzle.

China

Assistive policies to caregivers and long-term care systems are not nearly as universal as other family-supportive interventions. China, India, Mexico and Russia have each undergone modification over time to its policies and services geared towards older adult care and caregiver assistance. Chinese government has actively promoted home-based care as the primary pillar of services for older adults, but even these services are "spotty" and lack regulatory oversight (Feng et al. 2012). Although institutional elder care is expanding rapidly, this is primarily in the private sector *and* these services face a lack of a qualified and professional workforce in long-term care due to poor training and insufficient pay (Zheng 2011; Feng et al. 2012).

India

While informal caregiving is the primary practice in India, these caregivers do not receive any form of caregiver allowance or government assistance. As such, caregivers make typically leave cut back on their work to provide care at home – or leave the workforce, altogether (Shaji and Reddy 2012). This is particularly problematic as financial expenses for providing care combined with reduced family incomes can lead to further impoverishment of low income households. However, family leave benefits can be provided by an employer. In 2016, Microsoft India introduced a new Family Caregiver leave benefit: four weeks of paid leave at 100 percent to take care of an immediate family member with a serious health condition (Microsoft News Center India 2017).

Mexico

Although Mexico has specific laws, norms, and programs for the elderly and/or disabled, it lacks public programs to provide support services to people in a status of dependency. Furthermore, many family programs and policies only apply to those working in the public sector, leaving out a large group of those who work in the domestic and informal sector, farmers, domestic workers, and even informal caregivers (Gomes, 2014). The role of the state with regard to supporting long-term care is virtually non-existent, nor is there paid leave for adult family member care needs (World Policy Analysis Center 2020; Aguila, Lopez-Ortega, and Angst 2019).

Russia

In 2017, Russian government approved a national strategy aimed towards the creation of a long-term care system for people in need, which would include older and disabled people (World Health Organization 2020). However, these reforms to Russia's current system of older adult care are not set to be fully implemented until 2024. As it stands currently, there is government assistance for families caring for elderly and sick relatives, but these services and support are not easy to attain. Seeking assistance is often a lengthy process requiring a considerable amount of effort from the care-recipient and/or their (usually unpaid) caregiver; going to multiple agencies in order to getting his disability papers, his rehabilitation equipment, arranging his pension, and so on (Hainsworth et al. 2019). There is also a large disconnect in care coordination as government agencies do not seek out older people who might need help. Hospitals and social services often report to different agencies and fail to coordinate their work (Hainsworth et al. 2019). Lastly, while there are “advanced” nursing homes available, they are expensive and the more affordable nursing homes fall short in comparison in quality (Hainsworth et al. 2019).

CHAPTER 7

CONCLUSION

Overall, similar trends in caregiving as it relates to mental health outcomes are found in non-US settings. Caregivers in China, India, Mexico, and Russia have significantly greater rates of depressive symptomatology than their non-caregiver counterparts. This study shows support for role strain theories and the negative effects of holding multiple social roles in these non-US settings as findings suggest that caregivers are more likely to have greater rates of depressive symptomatology when they are also involved in other social roles. Furthermore, this study introduced the diagnosis of a chronic condition as an additional social role – a “sick” role – that may have detrimental effects on a caregiver’s rates of depressive symptomatology.

Limitations

There are several limitations to this study that must be addressed. Firstly, caregiving can often be mentally and emotionally taxing. The ways by which caregiver burden is experienced is subjective, complex, and can also be missed when examined solely through quantitative methods of analysis. Conversely, more objective measures of mental health outcomes would also aid in accounting for the lack of sociocultural uniformity in the appraisals of mental health. Secondly, this dissertation uses cross-sectional analyses. While caregiving can occur in situations where the recipient requires acute or chronic care, longitudinal studies would help capture how caregiving experiences change over time. Lastly, I was unable to account for macrolevel influences that can greatly impact the caregiver experience and burden which, in turn, can impact mental health outcomes. These limitations are discussed in further detail below.

Caregiver Measures

As previously mentioned, the caregiver experience is multidimensional, and can be affected by both micro- and macrolevel influences. More consideration should be given to measures of the caregiving experience that are more qualitative in nature, such as how the caregiver is related to the care recipient, the relationship quality between the two, satisfaction with the other social roles a caregiver holds, and how the adjustment to the caregiver role is affected by whether it is entered abruptly or gradually over time. Other traits that may have protective effects on the negative impacts of caregiving, such as feelings of efficacy, control, and resilience should also be considered. Continuing to address more qualitative aspects of caregiving in non-US settings will also expand our knowledge on the effects of appraisal in perceived burden.

Mental Health Outcomes

This dissertation used depressive symptomatology, as opposed to a formal diagnosis of depression, as an indication of how caregiving affects mental health outcomes. Recall that there is cultural variation in both the definitions and appraisal of depression and other formal diagnoses of mental illness. Using depressive symptomatology allowed this dissertation to capture multiple symptoms that are indicative of distress, rather than one single measure (i.e., depression) which may be lost in translation and perception across ethnic groups. However, future studies that seek to further our understanding of mental illness in ethnically diverse populations would benefit from using interdisciplinary methods that include more objective biomarkers of distress, such as cortisol, alpha-amylase, pro-inflammatory cytokines (Takahashi et al. 2018).

Change Over Time

This study is unable to capture the longitudinal nature of caregiving over time. Longitudinal studies would be able to assess the effects of multiple roles on depressive symptomatology over time. That is, what do mental health outcomes look like for working caregivers once they retire? Do mental health outcomes improve or worsen when the recipient recovers or passes away? While young children have a negative effect on caregiver depressive symptomatology, do these effects improve over time when children become more independent? When they are able to contribute instrumentally? Furthermore, longitudinal studies that specifically focus on program evaluation will allow us to understand whether interventions and policies geared towards caregiver support are effective. Periodic assessment of such structural changes will enable us to address gaps and areas for improvement. Taking into account changes and patterns in caregiving and its related needs ensures that needs are met, and helps control for excessive financial losses in fueling support and services that do not truly remedy what they may have been intended to.

Formal and Informal Support

Informal caregiving can be an indicator of structural inadequacies, such as lack of health insurance coverage, low income, limited access to formal health care services, and a lack of supportive work-family policies. However, due to data limitations and high levels of missingness, this dissertation was unable to account for the effects of health insurance coverage, income, access to formal services and formal leave policies. This dissertation was also unable to account for the effects of informal support that can come from a multigenerational household structure, such as whether the caregiver receives any type of support from those within the home. Future studies should account for not only the availability of formal and informal support and services to caregivers, but whether caregivers utilize these aids. Racial and ethnic minorities are often less likely to use formal health services, often relying on family and informal relationships for care, as well turning to complimentary and alternative forms of medicine (CAM) (Abe-kim et al. 2007; Alegria et al. 2007; Gallant, Spitze, and Grove 2010; Kung et al. 2019). Taking into account these types of measures as they relate to other ethnic groups will help address cultural sensitivity when creating and implementing effective caregiver interventions.

Future Research

While findings suggest that chronic conditions are associated with worse depressive symptomatology, future studies should draw attention to the personal health of the caregiver, and whether a diagnosis encourages a caregiver to engage in positive health behaviors, or enables them to engage in poor health behaviors.

Because the predicted experiences of a caregiver can be impacted sociodemographic characteristics, it is imperative that future studies be sensitive to the societal contexts under which caregiving is being provided. That is, more qualitative facets of caregiving should be considered, including but are not limited to one's perceived quality of the relationship to the care recipient, feelings of efficacy and autonomy, satisfaction with the other roles and duties that the caregiver is responsible for.

Furthermore, while this study examines providing care for an older adult, future studies should examine the type of relationship between the caregiver and care recipient (e.g., spousal, sibling, etc.) and should also consider whether the caregiving relationship is considered on- or off-time. That is, did the care arrangement come about as a naturally sequenced event such as impairment with old age, or abruptly vis-à-vis an accident or an early onset of serious and/or chronic illness? Declines in health are a normatively expected life change in later life and, therefore, people are often more prepared for it (Idler 1993 as cited in Wurm, Tomasik, and Tesch-Romer 2008). However, it is less clear how the timing of caregiving - whether on- or off-time – affects the caregiver.

The results of this study show that caregiving remains predominantly women's work, and its related burden continues to fall disproportionately on the shoulders of women. There is continued support in showing that marriage and SES have protective effects on poor mental health outcomes, specifically on depressive symptomatology. However, there is variation in terms of what dimensions of SES operate for which social groups, and under what conditions. Future research should consider examining caregiver mental health and how it is affected by multiple SES measures, and the sociocultural contexts in which they exist.

This study was able to tap into experiences of the “sandwich generation,” or those held to the obligations of caring for both older and younger generations. Caregivers who have a child under the age of 5 in the home have significantly higher scores of depressive symptomatology than non-caregivers with children. Many of these sandwiched caregivers are also still employed, which can exacerbate poor mental and overall health outcomes (Chassin et al. 2010). While the wellbeing of the caregiver is in large part the focus of this study, these findings also hold strong implications for the impacts on the care recipient. Increased stress of the caregiver can lead to a negative effect on care for the elderly parent (Solberg, Solberg, and Peterson 2014). As such, it is imperative that effective and sustainable assistive services and coping strategies be identified in order to support both the caregiver and the care recipient.

This research contributes greatly to existing literature that examines caregiver mental health outcomes, and how it is impacted by various sociodemographic measures, and expands current knowledge on how these processes carry out in non-US settings. But it also has global implications for current social climates, as the world has been confronted with the COVID-19 pandemic. With more people working at home, they are being immersed into their multiple social roles not only at the same time, under the same roof, but also in greater levels of isolation. Understanding the effects of multiple social roles on physical and mental health outcomes has always been a vital focus of scholars and researchers, but the current state of sociopolitical affairs alongside the rapidly changing dynamic of relationships both professional and personal serve as a time when effective and sustainable interventions and services be implemented. These interventions and services should be aimed towards family-supportive work policies, health- and instrumentally-assistive services and resources to caregivers, as well as coping strategies for both the caregiver and care recipients.

As a closing note, it would be fruitful to acknowledge that the language and vernacular of caregiving is changing. The term “informal caregiving” is undergoing modification, as increasingly-aware social climates are beginning to recognize that there is nothing “informal” or unessential about the care that “informal caregivers” provide (Stall et al. 2019). Although there is not yet an official consensus on what terminology is preferred, it is still best to recognize these changes. It is important that future studies be attuned to the value of the care that unpaid, personal, or family caregivers provide, and be conscious so as not to use language that diminishes or discredits it.

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