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ORIGINAL ARTICLE

Long-Term Care Needs in the Context of Poverty and Population Aging: the Case of Older Persons in Myanmar

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Abstract Myanmar is one of the poorest and least healthy countries in Southeast Asia. As elsewhere in the region, population aging is occurring. Yet the government welfare and health systems have done little to address the long-term care (LTC) needs of the increasing number of older persons thus leaving families to cope on their own. Our study, based on the 2012 Myanmar Aging Survey, documents the LTC needs of persons aged 60 and older and how they are met within the context of the family. Nearly 40% of persons in their early 60s and 90% of those 80 and older reported at least one physical difficulty. Spouses and children constitute the mainstay of the financial and instrumental support of elderly including those with LTC needs. Nearly two-thirds of older persons reported receiving assistance with daily living activities. More than three quarters coreside with children, a living arrangement that in turn is strongly associated with receiving regular assistance in daily living. Daughters represent almost half and spouses, primarily wives, one-fourth of primary caregivers. Unmet need for care as well as inadequate care decline almost linearly with increased household wealth. Thus elderly in the poorest households are most likely to experience gaps in LTC. Given mounting concerns regarding health disparities among Myanmar's population, this pattern of inequality clearly needs to be recognized and addressed. This needs attention now rather than later given that reduced family size and increased migration pose additional challenges for family caregiving of frail elderly in the coming decades.

Keywords Long-term care · Unmet need for care · Intergenerational support · Myanmar

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Introduction

Myanmar is one of the poorest and least healthy countries in Southeast Asia. Many of the difficulties Myanmar faces are common in other developing countries although they tend to be particularly severe in Myanmar. Nevertheless, population aging is taking place in this country of 53-million population. The percentage of its population aged 60 and older is projected to increase from 9% in 2015 to approximately one fifth of the total population by the mid − twenty-first century (United Nations 2015). Myanmar's policy makers have only begun to pay attention to the implications of population aging for its economy and society, including the health system. At present, Myanmar's health system is severely underfunded, despite increased public funding in recent years (The Lancet 2012). The share of payments for health services that is out-of-pocket is extremely high (Grundy et al. 2014). There is virtually no official policy or program in place to provide long-term care (LTC) for older persons. Family has thus been the mainstay of financial and instrumental support for elderly in poor health conditions, especially those with LTC needs. Myanmar's demographic transitions –including fertility decline, population aging, and increased internal migration –likely challenge the current form of family caregiving for frail older persons, especially in the coming decades when the declining family size will characterize the future cohorts entering the old-age span.

This study aims to provide empirical evidence for a better understanding of LTC needs among Myanmar elderly and the roles that their families play in long-term caregiving. Our analysis is based on the 2012 Myanmar Aging Survey, the country's first nationally representative survey of persons aged 60 and above. Specifically, we use descriptive and multivariate analyses to address the following research questions: How prevalent are physical difficulties (i.e., functional limitations, difficulties in activities of daily living and instrumental activities of daily living) among older persons in Myanmar? Who among the older-aged population is more likely to have physical difficulties and thus LTC needs? Moreover, who among them experience greater chance of receiving regular assistance in daily activities? Among those that receive care, who primarily cares for them? How are these primary caregivers related to the care recipients? Who are likely to be cared for by spouse, by one of their children or by someone else including nonfamily members? Apart from the main care providers, who else helps take care of older persons requiring LTC? Furthermore, what are common gaps in LTC in older ages in Myanmar? How prevalent is unmet need for care? Among care recipients, what determines inadequate care? Given mounting concerns regarding health disparities among different segments of Myanmar's population, including among older persons (Teerawichitchainan and Knodel 2015), we pay attention to the extent to which socioeconomic differences are evident in LTC needs, care provision patterns, and gaps in LTC.

Background

Decades of political turmoil and economic isolation left Myanmar underdeveloped and unhealthy, as evidenced in economic and health indicators. Among ASEAN countries, Myanmar is only second to Cambodia in having the lowest GDP (PPP) per capita (5100 international dollars) and the lowest life expectancy at birth (65 years) (IMF 2015; PRB 2015). Many elderly in Myanmar have endured years of political strife and poor living conditions, thus bearing grave old-age health outcomes. Comparisons with neighboring middle-income country like Thailand make this obvious. For example, life expectancy at birth for Myanmar is

approximately a decade below that for Thailand. Moreover, disability is substantially higher among Myanmar elders than their Thai counterparts (Knodel 2014). A series of ongoing political and structural reforms initiated since 2010 led the Myanmar government to reengage with the international community and to increase public spending on health. While the country has witnessed rapid economic expansion in recent years and certain segments of its population has clearly experienced improved living standards, numerous barriers to healthcare remain, including underinvestment and ineffective coordination among relevant stakeholders, high level of private financing of healthcare including expenses for travel and medicines, and inaccessibility of healthcare facilities due to subpar infrastructure or armed conflicts (Risso-Gill et al. 2014; Saw et al. 2013).

Myanmar is currently facing demographic shifts, including fertility decline and population aging, epidemiological transition, and increased migration. Its total fertility rate declined from 6.1 in the 1960s to 2.25 by 2010–15 (United Nations 2015). Between 2015 and 2050, the proportion of population aged 60 and above is estimated to increase from 9% to 19%, whereas the absolute number of population in this age bracket will grow by 250%. Additionally, the number of Myanmar's oldest old (aged 80 and older) who are likely to require LTC is projected to triple within in the next 3.5 decades, totaling over 1.3 million by mid-century. Moreover, Myanmar is undergoing an epidemiological transition towards an increasing burden of non-communicable diseases (NCDs). Deaths caused by stroke, heart disease, diabetes, and kidney disease doubled during 1990–2010. Approximately 40% of all recent deaths in Myanmar are due to NCDs (WHO 2011). A recent study shows that the prevalence of hypertension was 34% among the sampled adult population in Yangon Division, with 32% of the hypertensive respondents currently taking the medication and only 11% having their hypertension controlled (Zaw et al. 2011). Given chronic nature of NCDs, the rise in proportion and absolute number of older persons who are at risk of chronic illnesses and LTC needs can potentially impose heavy burden on Myanmar's health system and the families who care for them.

Another important demographic challenge is migration, which has increased significantly since the economic reform. A recent World Bank report indicates that one in four households in Ayeyarwady region (Myanmar's second largest region in terms of population size) and one in five households in Magway region are affected by rural-urban migration (World Bank Myanmar 2016a). Migration can have long-term social and economic ramifications in rural areas, as working-age people move into cities often leaving behind their aging parents and children.

Family is widely regarded as a linchpin of support for older persons in Myanmar, where a public pension, universal healthcare system, and other old-age safety nets are underdeveloped or nonexistent (Knodel 2014). Coresidence with adult children is a key vehicle for intergenerational support, especially when the elderly are frail and in need of personal care. Generally, research suggests that filial respect and support for aging parents remain a moral obligation in Asia (Croll 2006). Emerging evidence nevertheless shows a decline in coresidence in Asian societies and a major disjuncture between the desire to adhere to filial norms and the changing empirical reality (Knodel et al. 2013). Like Thailand, Myanmar is characterized by a bilateral kinship system in which property is generally divided equally among the children irrespective of sex after the death of parents (Women, Men and Families in Myanmar 2016). Moreover, daughters play an equally or more important role than sons in elderly support and matrilocal residence (i.e., coresiding with daughter) is not uncommon (Teerawichitchainan et al. 2015). While increased female labor force participation and out-migration usually improve household

economy via remittances, there are concerns regarding the adverse impact of female employment and migration on supply of care provision by women in the family.

In sum, Myanmar's recent socio-demographic trends pose challenges for the continuation of family support for frail older persons in its past and present form, as adult children with fewer siblings face longer periods of responsibility for their aging parents. These trends can create significant gaps in care for older persons. Policy initiatives are therefore needed to address the potential loss of care provided by family members for the elderly.

The Myanmar government has shown interest in the welfare of older persons, as evidenced in its constitution and commitment to a range of international conventions, including the 2002 Madrid International Plan of Action on Aging. The development of aging policies and laws has been underway. Healthcare is one of the strategic areas of intervention in Myanmar's draft plan of action on aging. Meanwhile, a draft of national policy on aging mentions the provision of LTC for Myanmar elderly. Furthermore, a draft law on aging stipulates the establishment of a national council for older persons. While compelling, these initiatives were interrupted by political changes following the November 2015 national election. Thus far, the law on older people has been approved by the Myanmar Parliament's upper house in August 2016. Under the new government, the Ministry for Social Welfare, Relief, and Resettlement is currently seeking consultations regarding Myanmar's national policy on aging which is expected to be completed in 2017. A revised action plan on aging is likely to follow. These institutions will lay the groundwork for implementing policies and programs for older persons in the future. Given the nascent stage of Myanmar's aging policies, particularly those related to provision of LTC in older ages, empirical evidence can be useful for policy makers when formulating policies and prioritizing their action plans.

Data and Methods

Data for the present analysis come from the Myanmar Aging Survey (MAS), the first national survey of its kind conducted in 2012 under the sponsorship of HelpAge International. Its sample consists of 4080 persons aged 60 and older throughout almost all of Myanmar. The multi-stage sampling involved selecting 60 townships and then 150 rural villages and 90 urban wards within them. In both stages, selection was proportional to size. Only Kachin State was excluded for security reasons. Its population is distinctive with most belonging to the Kachin ethnic minority and being Christian (Wikipedia 2014). However, because it represents only 3% of the national total population, the impact on the national representativeness of the survey sample should be minor at most (Department of Population 2014).

Among sampled households, only one respondent aged 60 and older was randomly selected for interview. In cases where the respondent was cognitively impaired, had serious hearing problems, or otherwise too incapacitated to be interviewed, a proxy was interviewed instead, typically the next-of-kin. The response rate is 92.6%. The survey design called for a modest oversampling of persons aged 70 and older compared with those aged 60–69 (Myanmar Survey Research 2012). All results provided in the present study are weighted to account for the sample design. After weighting, results are nationally representative except for the omission of Kachin state.

The analysis of long-term care needs incorporates a number of variables that are likely important covariates of such needs and the extent to which they are met. First and foremost, the extent of physical difficulties that a respondent has is a primary determinant of the need for

care assistance. Likewise, basic demographic, social and economic characteristics play likely roles both in the need for and likelihood of receiving assistance. Living arrangements including coresidence with adult children are also of particular importance since long-term care requires close proximity of a potential caregiver.

The effect of migration of adult children on long-term care of their aging parents is not explicitly addressed in the present analysis. Nevertheless, given that its influence is largely through its effects on living arrangements, the results presented below at least provide implicit evidence. Still the lack of a more explicit analysis of how migration is related to long-term care is a limitation of the present study.

Measures of Physical Difficulties

This study defines older persons with LTC needs as those reporting one or more physical difficulties. When measuring physical difficulty, we consider not only activities of daily living (ADL) and instrumental activities of daily living (IADL) difficulties but also functional limitations. Our definition of LTC need is consistent with that employed in the World Bank's 2016 report on aging in East Asia and the Pacific (World Bank 2016).

MAS incorporated questions to solicit a variety of information to assess older persons' physical difficulties. The first dimension of physical difficulty is functional limitation, which refers to difficulty in performing independently five common physical functions: lifting 5 kg, walking up and down stairs, walking 200 to 300 m, crouching/squatting, and using fingers to hold things. The second dimension refers to ADL difficulties which include inability on one own with respect to getting up after lying down, toileting, bathing, dressing, and eating. The third dimension of physical difficulty refers to IADL difficulties which include inability to independently perform household chores, using/counting money when shopping, taking medication by self, using transportation, and making a phone call. Respondents with at least one of the 15 difficulties (functional limitations, ADL or IADL) are considered as older persons with LTC needs. In most analyses, we incorporate physical difficulty as a categorical variable indicating whether the respondent reported no difficulty, 1–2, 3–4, 5–9, or 10 or more difficulties.

Measures of Receipt and Provision of Personal Care

Receipt of personal care is incorporated as a dichotomous variable indicating whether or not the respondent reported receiving regular assistance from anyone when doing things to take care of him/herself (e.g., bathing or dressing) or to carry on daily activities. In MAS, respondents were asked directly whether they received such assistance. Note that the question allows respondents to interpret what the definition of daily activities is. It is therefore plausible that some respondents may think of daily activities in a broad generic sense rather than referring narrowly to assistance in activities of daily living as specified in the gerontological literature. The fact that a substantial share of respondents who had no physical difficulty reported receiving regular care from someone suggests this to be the case.

Furthermore, MAS contains information about who the main care providers are for older persons that receive personal assistance. In our analysis, primary caregiver is incorporated as a categorical variable indicating whether the person that helps the respondent most with his/her daily activities is his/her spouse, son, daughter, child-in-law, grandchild, or other. The "other" category refers to friends/neighbors, other relatives or non-relatives/domestic helper.

Additionally, the survey probed who else provides personal assistance other than the main care provider. Respondents were allowed to give multiple answers for the question regarding minor/secondary care provider. Possible answers are similar to the categories of primary caregiver.

Measures of Gaps in Long-Term Care

We assess two indicators of gaps in LTC. The first indicator is unmet need, which refers to a situation whereby an older person expresses need for personal assistance in daily activities but does not receive it. This study incorporates unmet need as a dichotomous variable indicating whether or not the respondent's need for personal care is fulfilled. The second type of care gaps refers to a situation whereby an elderly care recipient reports not receiving sufficient care. We include insufficient care as a dichotomous variable indicating whether the care recipient considered the assistance in daily activities he/she received to be inadequate.

Socio-Demographic Variables

Socio-demographic variables incorporated in our analysis are age, sex, marital status, number of children, location of residence, educational attainment, and household wealth. Age is incorporated as a categorical variable divided into 5-year age groups up to 80 and over. Marital status is measured as a dichotomous variable indicating whether the respondent is married at the time of survey, as opposed to being widowed and to a lesser extent, being separated/divorced or never-married. Number of children is measured as a categorical variable indicating whether the number of respondent's living children is zero, one, two, three, or four or more.

Location of residence is a dichotomous variable indicating whether the respondent lives in an urban or rural location at the time of the survey based on Myanmar's official definition. Educational attainment is measured as a categorical variable indicating whether the respondent had no education, some primary, completed primary, or beyond primary education. A sizeable proportion of older persons in Myanmar who received monastic education are considered as having some primary education. Household wealth is measured by an index based on the respondent's ownership of household assets and housing quality, such as radio, television, telephone, computer, store-bought furniture, refrigerator, motorcycle, a floor constructed with modern materials, and an access to safe water sources. The index is derived from multiplying a normalized score for each household possession by its weight, which is determined using factor scores derived from the first principal component in a principal component analysis. Respondents are ranked by their household wealth index and divided into quintiles from the lowest to highest quintiles.

Measures of Living Arrangement

In Myanmar and other Asian settings, living arrangement, particularly intergenerational coresidence, is considered the main vehicle for intergenerational support for older persons, including provision of LTC in old age. This study incorporates living arrangement as a mutually exclusive categorical variable indicating whether the respondent a) lives alone with no child nearby; b) lives alone but adjacent or very nearby to at least one child; c) lives with spouse only, regardless of whether children live nearby; d) coresides with at least one child

regardless of whether others are present; e) lives in other types of living arrangement. The residual "other" category in terms of living arrangements is a mixture of quite different situations such as living with a spouse and others (e.g., a grandchild or a relative) but not with a child or living only with a grandchild.

Analytical Approach

Our analyses proceed as follows. First, we describe the sample in terms of socio-demographic characteristics and types of living arrangement and to examine how these characteristics differ across respondents' status of physical difficulties. Second, we examine prevalence and differentials in physical difficulties–a proxy for LTC needs—among Myanmar elders in the sample. Subsequently, using descriptive statistics and logistic regression analysis, we assess the likelihood of receiving regular assistance in daily living among sampled elderly. For example, the correlates of receipt of personal care among older persons in the sample are examined using binary logistic regression. More specifically, we examine whether socio-demographic characteristics and living arrangement are independently associated with the likelihood of receiving regular assistance in daily activities. We also investigate whether physical difficulty is a significant determinant of care receipt once other variables are taken into consideration.

Furthermore, we examine the patterns of primary and secondary caregivers of older persons in Myanmar. We are particularly interested in addressing the odds of having a spouse and having a daughter as the main care provider. Finally, to identify gaps in LTC, we investigate the correlates of unmet need among Myanmar elders who report needs for personal assistance as well as assess the determinants of inadequate care among care recipients in the sample. In this study, we pay particular attention on how LTC needs, care provision patterns, and gaps in LTC vary across respondents' socioeconomic status.

Results

Sample Description

The general characteristics of older persons covered by the Myanmar Aging Survey are presented in Table 1 with a comparison between those that have one or more physical difficulties and those that lack such difficulties. Slightly over half of the total weighted sample is in their 60s with a mean age just over 70. Those with one or more physical difficulties, however, are five and a half years older on average than those with no physical difficulty reflecting the fact that the likelihood of experiencing physical difficulties increases with advancing age. Overall the sample contains more women than men but the predominance of women is restricted to those older persons that are experiencing at least some physical difficulty. Among those without a difficulty the majority are actually men. With respect to marital status, somewhat over half of the sample is currently married but this differs according to the presence of having physical difficulties. Less than half of those with physical difficulties are currently married but about two thirds of those who have no physical difficulty are currently married. This reflects not only that increasing age is associated with being more likely to have physical difficulties but also a greater likelihood of being widowed.

Overall, Myanmar elders in the sample have somewhat more than four living children and average a slightly higher number of living daughters than sons undoubtedly reflecting higher

Table 1 Characteristics of older persons in the sample by status of physical difficulties

	Total	1+ physical difficulties[a]	No physical difficulty
Age (%)			
60–64	28.2	19.2	40.3
65–69	23.6	19.1	29.5
70–74	19.1	20.1	17.7
75–79	14.8	19.4	8.6
80+	14.3	22.1	3.9
Mean age	70.46	72.82	67.28
Sex (%)			
Male	46.0	38.5	55.9
Female	54.0	61.5	44.1
Marital status (%)			
Currently married	54.2	46.0	65.3
Not married	45.8	54.0	34.7
Mean number of living children	4.27	4.25	4.29
Mean number of living sons	2.08	2.06	2.11
Mean number of living daughters	2.19	2.19	2.18
Location (%)			
Urban	31.4	33.2	29.0
Rural	68.6	66.8	71.0
Education			
No education	22.1	26.2	16.6
Some primary	44.9	45.3	44.4
Complete primary	14.9	13.6	16.7
Beyond primary	18.1	15.0	22.3
Household wealth quintile (%)			
Lowest	21.9	22.8	20.6
2nd	18.1	18.7	17.3
3rd	20.0	19.7	20.4
4th	20.0	19.7	20.3
Highest	20.0	19.0	21.4
Living arrangement (%)			
Alone with no child nearby	2.8	3.0	2.5
Alone with child nearby	2.2	2.6	1.6
With spouse only	7.4	6.1	9.2
With child	77.2	78.4	75.6
Other	10.4	10.0	11.1

2012 Myanmar Aging Survey

[a] Physical difficulties refer to having one or more functional limitations, ADL difficulties, and IADL difficulties

male mortality among their children. The overall average number of children as well as the number of sons and daughters does not differ much regardless of the presence of physical difficulties. Modestly over two thirds of the sample lives in rural rather than urban areas. This is somewhat higher among those with no physical difficulties reflecting lower reporting of physical difficulties among rural dwellers. A substantial majority of Myanmar elders have received at least some formal education although less than one fifth studied past the primary level. The educational level of those with a physical difficulty is somewhat lower on average than those free of such difficulties. This likely reflects the older age composition of those with difficulties given that educational levels are higher among younger than older persons in the sample (Knodel 2014). Not only the total sample but also those with and without physical difficulties are fairly evenly distributed with respect to household wealth quintiles based on household possessions. Living arrangements are fairly similar according to their status of

physical difficulty. The large majority of older persons live with at least one child with only a small difference between those with and without a difficulty.

Prevalence and Differentials in Physical Difficulties

Table 2 indicates the prevalence of physical difficulties among older persons in Myanmar. Results are shown separately for functional limitations, ADL and IADL as well as all three types of physical difficulties combined. Although the survey asked about the same number of each type of difficulty, reporting ADL difficulties is least common and reporting functional limitations is most common. The pattern of differentials in the prevalence of these difficulties, however, is quite similar. Regardless of the type of difficulty, both the prevalence and mean number increases with age. Women and urban older persons report higher prevalence and larger mean numbers of each type of difficulty compared to men and rural older persons.

Table 2 Prevalence and differentials in physical difficulties among persons aged 60 and above

	Functional limitations[a]		ADL difficulties[b]		IADL difficulties[c]		All physical difficulties combined[d]	
	(maximum = 5)		(maximum = 5)		(maximum = 5)		(maximum = 15)	
	% with any	Mean	% with any	Mean	% with any	Mean	% with any	Mean
All	50.5	1.40	22.0	0.51	37.0	0.62	57.3	2.54
Age								
60–64	31.9	0.75	11.9	0.22	20.3	0.31	39.0	1.26
65–69	38.2	0.90	12.5	0.24	28.4	0.42	46.6	1.56
70–74	53.4	1.45	21.5	0.47	40.4	0.66	60.5	2.58
75–79	68.1	1.95	29.3	0.67	48.8	0.83	75.2	3.45
80+	85.0	2.93	50.7	1.43	67.3	1.33	88.4	5.68
Sex								
Male	41.4	1.11	17.8	0.42	30.6	0.51	48.1	2.03
Female	58.2	1.66	25.6	0.59	42.4	0.72	65.2	2.98
Location								
Urban	54.1	1.52	23.0	0.53	39.6	0.68	60.6	2.73
Rural	48.8	1.35	21.6	0.50	35.8	0.60	55.8	2.45
Education								
No education	61.6	1.82	28.6	0.66	43.8	0.78	67.8	3.26
Some primary	49.9	1.41	22.9	0.56	40.1	0.66	57.7	2.64
Complete primary	45.9	1.15	18.3	0.37	28.3	0.46	52.1	1.99
Beyond primary	41.6	1.08	14.5	0.33	27.3	0.47	47.4	1.87
Household wealth quintile								
Lowest	54.8	1.57	20.7	0.52	38.6	0.66	59.8	2.74
2nd	49.8	1.44	25.0	0.61	40.4	0.66	59.2	2.71
3rd	49.1	1.40	23.6	0.56	36.0	0.65	56.5	2.61
4th	50.6	1.34	22.2	0.48	36.0	0.60	56.7	2.42
Highest	47.5	1.27	19.0	0.41	34.3	0.56	54.4	2.23

2012 Myanmar Aging Survey

[a] Functional limitations refer to difficulty in walking 200–300 m, lifting 5 kg, crouching/squatting, using fingers to grasp, and walking up/down a set of stairs

[b] ADL difficulties refer to difficulty in eating, getting dressed, bathing, getting up when lying down, and toileting

[c] IADL difficulties refer to difficulty in doing household chores, counting money, taking medication, using transportation, and making phone calls

[d] Physical difficulties refer to functional limitions and ADL as well as IADL difficulties

With only a few irregularities, the prevalence and mean number of difficulties of each type decreases with increased education. Unlike the gradient relationship between education and physical difficulties, the relationship with wealth level is less regular, although for each type of difficulty those in the highest wealth quintile experience the lowest prevalence and number of difficulties. The pattern among the first four quintiles nevertheless is irregular.

Patterns and Correlates of Receiving Personal Care

Figure 1 presents the percentage of older persons that receive care by types and counts of physical difficulties. The results are quite consistent regardless of the type of difficulty being considered. For all three types of difficulties the percentage that receives care increases with the number of difficulties experienced. When considering all of the difficulties together, there is a consistent increase in the likelihood of receiving care with the number of difficulties experienced which rises from 42% of those who do not report any difficulty to almost all of those (94%) of those that have 10 or more difficulties. Among the three different types of difficulties, approximately three fifths of those with no such difficulty receive regular assistance in daily living. However, having multiple ADL difficulties generates assistance more than having multiple functional or IADL difficulties, suggesting that ADL difficulties are indeed more problematic to deal with on one's own.

Table 3 examines the covariates of self-reported regular receipt of daily living assistance in a multivariate framework. We incorporate three models. Model 1 considers care receipt as a function of socio-demographic characteristics; Model 2 adds living arrangement and; Model 3 incorporates physical difficulty. Coefficients are expressed as the odds ratios of receiving regular assistance versus not receiving any assistance for each category relative to the comparable odds of the reference category for each variable. Odds ratios above 1 indicate that the particular category is associated with higher chances than the reference category that the respondents receive regular assistance, whereas values below 1 indicate the contrary. To

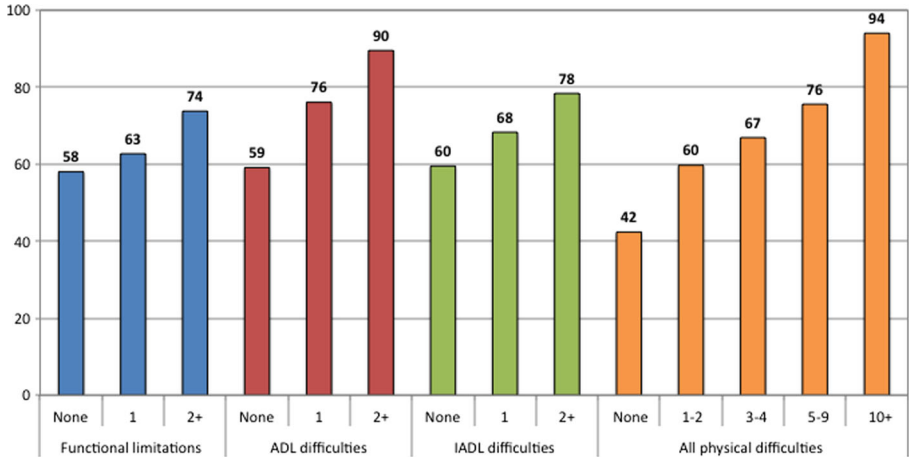

Fig. 1 Percentage receiving care by types and accounts of physical difficulties, older persons aged 60 and above. Source: 2012 Myanmar Aging Survey. Receipt of care refers to a self-reported measure indicating whether or not the respondent receives regular assistance from anyone when doing things to take care of oneself (e.g., bathing or dressing) or to carry on daily activities

Table 3 Odds ratios and two-tailed *p* values (in parentheses) from binary logistic regression models predicting self-reported receipt of regular assistance in daily activities among persons aged 60 and above

Independent variables	Model 1		Model 2		Model 3	
Age (60–64 = ref)						
60–64	1.000		1.000		1.000	
65–69	1.083	(0.378)	1.086	(0.365)	1.067	(0.483)
70–74	**1.455**	(0.000)	**1.456**	(0.000)	**1.277**	(0.018)
75–79	**1.822**	(0.000)	**1.841**	(0.000)	**1.494**	(0.001)
80+	**2.463**	(0.000)	**2.557**	(0.000)	**1.580**	(0.001)
Female (male = ref)	0.961	(0.607)	0.970	(0.697)	0.901	(0.199)
Currently married (not married = ref)	1.047	(0.562)	1.004	(0.964)	1.035	(0.694)
Number of living children (4 or more = ref)						
None	**0.618**	(0.000)	1.083	(0.630)	1.032	(0.853)
One	**0.709**	(0.009)	0.787	(0.076)	**0.740**	(0.030)
Two	**0.766**	(0.013)	0.824	(0.076)	0.837	(0.108)
Three	**0.825**	(0.051)	0.847	(0.097)	0.826	(0.060)
Four or more	1.000		1.000		1.000	
Urban residence (rural = ref)	**0.822**	(0.017)	**0.826**	(0.022)	**0.782**	(0.004)
Education (no education = ref)						
No education	1.000		1.000		1.000	
Some primary	1.045	(0.635)	1.018	(0.850)	1.012	(0.898)
Complete primary	1.104	(0.405)	1.088	(0.483)	1.120	(0.351)
Beyond primary	**0.767**	(0.032)	**0.769**	(0.036)	**0.777**	(0.047)
Household wealth quintile (lowest = ref)						
Lowest	1.000		1.000		1.000	
2nd	**1.483**	(0.000)	**1.373**	(0.003)	**1.379**	(0.003)
3rd	**1.336**	(0.005)	1.175	(0.125)	1.201	(0.086)
4th	**1.544**	(0.000)	**1.287**	(0.021)	**1.364**	(0.005)
Highest	**1.469**	(0.001)	1.203	(0.114)	**1.315**	(0.022)
Living arrangement (with children = ref)						
With children			1.000		1.000	
Alone, with no child nearby			**0.262**	(0.000)	**0.278**	(0.000)
Alone, with child nearby			**0.256**	(0.000)	**0.266**	(0.000)
With spouse only			**0.506**	(0.000)	**0.515**	(0.000)
Other			**0.559**	(0.000)	**0.568**	(0.000)
Physical difficulty (none = ref)						
None					1.000	
1–2					1.039	(0.665)
3–4					**1.370**	(0.005)
5–9					**2.077**	(0.000)
10+					**10.198**	(0.000)
−2 Log Likelihood	5154.448		5060.038		4916.156	

2012 Myanmar Aging Survey. Odds ratios significant at the 0.05 level are shown in bold type

make it easier to identify patterns, odds ratios significant at least at the 0.05 level are shown in bold type.

Having more than two physical difficulties significantly increases the likelihood of receiving assistance in daily activities. We find a gradient relationship between the number of physical difficulties and the odds of receiving care. The most striking finding is that the likelihood of getting regular assistance increases by tenfold when older persons reported 10 or more physical difficulties versus reporting none. Another important determinant of receiving care is living arrangement. Intergenerational coresidence is strongly and significantly correlated with greater likelihood of receiving assistance in daily activities. Compared to the reference group, solo-living older persons experience nearly

75% lower likelihood of getting care. The differences between solo-dwellers with or without children nearby are negligible. Living with spouse only is associated with 50% lower odds of receiving care. The coefficients for living arrangement categories change only slightly when physical difficulty in older ages is controlled.

Socio-demographic characteristics that are independently associated with the odds of receiving care include age, location of residence, household wealth, and to a lesser extent, educational attainment. Multivariate results indicate that persons aged 70 and older have significantly higher chance than their younger counterparts of receiving assistance in daily activities. After considering living arrangement and levels of physical difficulties, positive associations between age and care receipt are mitigated moderately but remain statistically significant. Other characteristics being equal, older persons in urban areas are significantly less likely than their rural counterparts to receive care. Location of residence demonstrates consistent statistical significance, even after living arrangement and physical difficulty are controlled. Furthermore, results suggest that elders in the bottommost wealth quintile experience significantly lower odds of receiving care than those who are economically better off. Note that there is no gradient association among the wealth quintiles beyond the first and the likelihood of receiving care. Moreover, results show the relationship between educational attainment and receiving care to be irregular. All else equal, elders with more than primary education are 22% less likely than those without any schooling to get assistance, whereas other educational levels are not significantly related to receipt of care.

While Model 1 suggests that childless elderly and those with fewer than 4 children experience significantly lower odds of getting assistance in daily activities, the statistical significance of this covariate nearly disappears when living arrangement and physical difficulty are introduced in subsequent models. Lastly, results indicate that gender and marital status do not significantly explain differences in the likelihood of receiving care.

Patterns of Primary and Secondary Care Providers

Table 4 presents percent distribution of primary caregivers by levels of physical difficulties and age groups among older persons who receive care. Approximately 64% of the total sample reported receiving regular assistance in daily activities. Results suggest that caregiving is largely a family matter in Myanmar. Children are the most common care providers, accounting for 55% of those providing the main assistance in daily activities. It is much more common for a daughter to be the main caregiver than a son. Of all primary caregivers, 47% are daughters, while only 9% are sons. Spouses are the second most common care providers, consisting of 26% of the primary caregivers in the sample. Compared to spouses and children, it is less common for children-in-law and grandchildren to be the main care providers. They account for 5% and 7% respectively of those providing the main assistance in daily activities. Together immediate family members (spouses, children, children-in-law, and grandchildren) constitute of 94% of primary care providers for Myanmar elders in the sample. Most of the remaining 6% are other relatives, friends, neighbors, and domestic workers. In an analysis not shown, we find that a majority of main caregivers in the "other" category are other relatives (e.g., siblings, nieces/nephews). It is extremely rare in Myanmar for non-family members such as friends, neighbors, or domestic workers to be the main provider of care for the elderly. Together they account for less than 1% of all primary caregivers in the sample.

Percentages of main care providers that are spouses decrease linearly with increasing number of physical difficulty and age. For example, 36% of elders without any difficulty

Table 4 Percent distribution of primary caregivers by physical difficulties and age groups, care recipients aged 60 and above

	Percent distribution of primary caregivers among those receiving care[a]					
	spouse	son	daughter	child-in-law	grandchild	other[b]
All	25.8	8.6	46.8	5.3	7.1	6.3
Physical difficulty						
None	36.0	7.9	42.7	3.4	4.1	6.0
1–2	26.3	11.1	45.2	5.3	6.9	5.3
3–4	16.8	6.1	51.1	6.4	10.9	8.7
5–9	16.2	9.0	51.8	7.0	9.8	6.2
10+	15.2	9.3	50.6	8.9	9.3	6.8
Age						
60–64	38.2	6.0	40.7	4.4	3.5	7.2
65–69	32.0	10.2	42.7	3.3	4.7	7.0
70–74	25.6	7.7	47.0	6.6	7.3	5.8
75–59	14.8	10.2	53.4	6.0	8.6	7.0
80+	10.1	10.1	54.1	7.4	14.1	4.3

2012 Myanmar Aging Survey

[a] Primary caregiver refers to the person that helps the respondent most with his/her daily activities

[b] Other includes friends, neighbors, other relatives (e.g., siblings, nieces/nephews), or domestic workers

and 38% of those aged 60–64 reported having spouses as their primary caregivers. Proportion of spouses as main caregivers declines to 15% among those with 10 or more physical difficulties and 10% among those aged 80 and older. On the contrary, percentages of main caregivers who are children, children-in-law, or grandchildren rise steadily with increasing levels of physical difficulties and with increasing age. For instance, approximately 43% of those without difficulty reported to be primarily cared for by a daughter. The percentage increases to over 50% among those with 10 or more difficulties. Likewise, about 4% of elders aged 60–64 have grandchildren as primary caregivers. Nevertheless, the proportion jumps to 14% among the oldest old in Myanmar. What drives the observed relationship is the association between level of physical difficulties and age. Older persons with greater demands for LTC (i.e., more physical difficulties) are usually older than those with no or lower level of physical difficulties (Table 1). Furthermore, increased age is also associated with greater likelihood of widowhood, thus explaining unavailability of spouse to provide assistance in daily activities. The percentages of others (besides spouses, children, children-in-law, and grandchildren) as main care providers appear to be trendless regarding associations with level of physical difficulties or age.

Table 5 shows odds ratios from binary logistic regression models that examine correlates of having a spouse and having a daughter as the main provider of assistance in daily activities. We restrict the analysis of spouse as primary caregiver to care recipients in the sample who are married at the time of survey. Meanwhile, our multivariate analysis of daughter as primary caregiver focuses on care recipients who have at least one living daughter and one living son. For each of these analyses, we incorporate socio-demographic characteristics, living arrangement, and physical difficulties.

We find that age, gender, and living arrangement are important determinants of the likelihood of having spouse as the primary care provider. The likelihood of having spouse providing main assistance significantly declines with increasing age, particularly for those

Table 5 Odds ratios and two-tailed p values (in parentheses) from binary logistic regression models predicting spouse as primary caregiver among currently married care recipients and predicting daughter as primary caregiver among care recipients with at least one daughter and one son

Independent variables	Spouse as primary caregiver among currently married care recipients		Daughter as primary caregiver among care recipients with at least one daughter and one son	
Age (60–64 = ref)				
60–64	1.000		1.000	
65–69	0.742	(0.067)	0.934	(0.634)
70–74	**0.529**	(0.000)	1.019	(0.898)
75–79	**0.411**	(0.000)	1.277	(0.147)
80+	**0.297**	(0.000)	1.132	(0.493)
Female (male = ref)	**0.137**	(0.000)	**2.276**	(0.000)
Currently married (not married = ref)	–	–	**0.425**	(0.000)
Number of living children (4 or more = ref)				
None	1.337	(0.571)	–	–
One	1.100	(0.764)	–	–
Two	0.892	(0.575)	0.789	(0.226)
Three	1.326	(0.135)	0.887	(0.411)
Four or more	1.000		1.000	
Urban residence (rural = ref)	1.146	(0.373)	1.042	(0.741)
Education (no education = ref)				
No education	1.000		1.000	
Some primary	0.753	(0.166)	1.311	(0.052)
Complete primary	0.902	(0.659)	1.095	(0.605)
Beyond primary	0.961	(0.873)	1.032	(0.873)
Household wealth quintile (lowest = ref)				
Lowest	1.000		1.000	
2nd	0.906	(0.629)	1.056	(0.733)
3rd	0.711	(0.087)	0.932	(0.657)
4th	0.931	(0.722)	1.188	(0.283)
Highest	1.225	(0.353)	1.128	(0.491)
Living arrangement (with child = ref)				
With child	1.000		1.000	
Alone with no child nearby	–	–	**0.195**	(0.001)
Alone with child nearby	–	–	**0.436**	(0.039)
With spouse only	**6.747**	(0.000)	**0.226**	(0.000)
Other	**3.232**	(0.000)	**0.081**	(0.000)
Physical difficulty (none = ref)				
None	1.000		1.000	
1–2	1.174	(0.329)	0.817	(0.134)
3–4	**0.631**	(0.027)	1.024	(0.885)
5–9	0.725	(0.092)	0.984	(0.918)
10+	1.198	(0.537)	0.779	(0.224)
−2 Log Likelihood	1601.416		2408.482	

2012 Myanmar Aging Survey. Odds ratios significant at the 0.05 level are shown in bold type

aged 70 and older. While the odds of having spouse as main caregiver are not significantly different between those in early 60s and late 60s, care recipients aged 70–74 and 75–79 experience 47% and 59% lower chances respectively of being taken care of by their spouse, compared to those in their early 60s. Once reaching age 80 and older, the likelihood is 70% lower than the reference category. Since wives tend to outlive their husbands, women experience significantly much lower odds than men to be cared for by their spouse. Living arrangements are an important vehicle for care provision in the family. Compared to living with adult child, coresidence with spouse only increases the likelihood of having spouse as the

primary caregiver by over six-fold. Unlike age, gender, and living arrangement, the effects of physical difficulty on having one's spouse as the main caregiver are less clear. Generally, physical difficulty is not significantly associated with having spouse as the main caregiver, when other characteristics are controlled. The only exception are care recipients with 3–4 physical difficulties who demonstrate significantly less likelihood of receiving care primarily from their spouse.

Daughters are the most common providers of main assistance in daily activities apparently reflecting a cultural preference in the context of Myanmar. Among care recipients who have at least one son and one daughter, gender, marital status, and living arrangement significantly determine the likelihood of receiving care primarily from daughter. All else equal, older women are much more likely than their male counterparts to be cared for by a daughter. Being married at the time of survey lowered the odds of being cared for a daughter. Furthermore, coresidence with adult child significantly improves the chances of having a daughter as the primary caregiver reflecting the higher frequency of coresidence with daughters than sons (Knodel 2014). Older persons in other types of living arrangement are much less likely to be taken care of by their daughters. Elders living alone with a child nearby had significantly lower odds of being cared for by a daughter than those coresiding with a child but somewhat greater chances than other solo-dwellers or those living with spouse only.

Table 6 presents percent distribution of secondary caregivers by type of primary care provider. For each column (type of primary caregiver), percentages do not sum up to 100% because survey respondents were allowed to give multiple answers for their secondary care providers. Approximately 11% of care recipients reported not having any secondary caregiver. Among those with spouse as the primary caretaker, more than half (57%) reported a daughter and nearly two fifths reported a son as their secondary caregivers. About 15% reported being assisted by a grandchild in daily activities. It is far less common for this group to receive assistance from children-in-law or from others.

For care recipients whose main caretaker is a daughter, the most common secondary caregivers are grandchildren (37%) and sons (34%). About one fifth reported spouse as a secondary provider of care. Approximately 18% of this group reported daughter as a secondary caretaker. In these instances whereby respondents indicated daughter as both primary and secondary care providers, it is likely that the respondents refer to different daughters as the

Table 6 Percent distribution of secondary caregiver by primary caregiver among older-aged care recipients

Secondary caregiver[a]	Primary caregiver					
	Spouse	Son	Daughter	Child-in-law	Grandchild	Other[b]
No secondary caregiver	17.3	10.1	15.0	6.4	19.1	35.5
Spouse	0.0	23.3	21.5	15.7	8.0	4.8
Son	39.4	14.5	33.7	69.3	24.5	6.0
Daughter	57.0	35.2	17.5	17.7	38.8	7.2
Son-in-law	5.2	1.8	12.1	0.7	8.6	0.0
Daughter-in-law	8.1	30.8	6.7	17.9	16.5	2.4
Grandchild	15.4	31.7	37.3	43.6	23.4	6.0
Other[b]	8.0	7.5	9.7	2.9	17.0	49.4

2012 Myanmar Aging Survey

[a] Multiple secondary caregivers are possible

[b] Other includes friends, neighbors, other relatives (e.g., siblings, nieces/nephews), or domestic workers

primary and secondary caregivers.[1] Furthermore, we observe a slightly different pattern of secondary carers, when son is the main care provider. About 35% refer to a daughter and 32% to a grandchild as the person providing secondary assistance in daily activities. Almost one third cited a daughter-in-law as providing some care; however, it is rather rare to have a son-in-law as a secondary caregiver in these circumstances. This is in contrast to when a daughter is the main caregiver because it is more common then for son-in-law to provide some assistance.

Results suggest that in uncommon circumstances whereby a child-in-law (most likely daughter-in-law) is the main care provider, nearly 70% also reported son and 44% grandchild as the persons providing minor assistance in daily activities. Only 6% of care recipients in this group reported no secondary caregivers. This seems to depict a story of multiple family members collectively providing care for older persons. When older persons reported a grandchild as the primary caregiver, nearly 40% and 25% reported their daughter and son respectively to provide care, even though in a secondary role. Interestingly, nearly a quarter of them reported another grandchild to provide minor assistance in daily activities, suggesting that it is not uncommon for elderly to be assisted by multiple grandchildren.

When older persons are primarily cared for by caregivers who are not their immediate family members, over 35% did not have secondary caregiver. In this care configuration, it is far less common to have a spouse, children, children-in-law or grandchildren as secondary caregivers. Nearly half of care recipients in this category reported others as providing secondary assistance in daily activities.

Care Gaps: Unmet Need for Care and Inadequate Care

The analyses shown in Table 7 address two aspects of gaps in LTC for older persons using binary logistic regression models to examine determinants of 1) unmet need for care and 2) receipt of inadequate care. For the analysis of unmet need for care, we restrict the sample to older persons who reported needing assistance in daily activities. We consider unmet need as a function of socio-demographic characteristics and physical difficulty. For the analysis of inadequate care, we restrict the analytic sample to care recipients. We use the same set of covariates as the former analysis but add an additional covariate –primary caregiver. Odds ratios and their statistical significance are reported.

Results indicate that living arrangement and levels of physical difficulty are strongly related to the odds of experiencing unmet need for care. We find that compared to those coresiding with children, older persons living alone (regardless of whether a child live nearby) are 7 times more likely to report unmet need for care, while those living with spouse only are 4.5 times more likely to experience unmet need for care. Furthermore, evidence indicates that the odds of unmet need for care significantly increase with increasing presence of physical difficulties. The only exception is among those with 10 or more physical difficulties. Apart from living arrangement and physical difficulty, women are about 50% more likely than men to report unmet need for care. The oldest old are less likely to report unmet need, all else equal, compared to the younger old.

For inadequate care, we find that higher levels of physical difficulty linearly increase the likelihood of experiencing inadequate care, except for those with 10 or more difficulties. Interestingly, by and large, living arrangement and primary caregiver are not strongly

[1] Unfortunately, the survey does not contain detailed information about each care provider, thus not allowing us to precisely establish the relationship between primary and secondary caregivers.

Table 7 Odds ratios and two-tailed p values (in parentheses) from binary logistic regression models predicting unmet need among older persons who reported needing help and predicting inadequate care among care recipients

Covariates	Unmet need for care among older person who reported needing help*		Inadequate care among care recipients	
Age (60–64 = ref)				
60–64	1.000		1.000	
65–69	1.136	(0.527)	0.851	(0.419)
70–74	0.966	(0.875)	0.771	(0.210)
75–79	0.641	(0.074)	**0.532**	(0.008)
80+	**0.528**	(0.016)	**0.383**	(0.000)
Female (male = ref)	**1.502**	(0.020)	0.811	(0.233)
Currently married (not married = ref)	0.999	(0.996)	0.968	(0.861)
Number of children (4 or more = ref)				
None	0.693	(0.211)	0.777	(0.530)
One	1.132	(0.654)	1.283	(0.355)
Two	1.049	(0.841)	0.913	(0.709)
Three	1.120	(0.593)	1.103	(0.637)
Four or more	1.000		1.000	
Urban residence (rural = ref)	1.345	(0.101)	1.081	(0.666)
Education (no education = ref)				
No education	1.000		1.000	
Some primary	0.835	(0.328)	0.913	(0.617)
Complete primary	1.222	(0.406)	0.775	(0.312)
Beyond primary	1.620	(0.070)	0.750	(0.317)
Household wealth quintile (lowest = ref)				
Lowest	1.000		1.000	
2nd	**0.401**	(0.000)	**0.592**	(0.005)
3rd	**0.368**	(0.000)	**0.349**	(0.000)
4th	**0.190**	(0.000)	**0.331**	(0.000)
Highest	**0.210**	(0.000)	**0.320**	(0.000)
Living arrangement (with child = ref)				
With child	1.000		1.000	
Alone with no child nearby	**7.531**	(0.000)	1.795	(0.204)
Alone with child nearby	**7.134**	(0.000)	1.424	(0.459)
With spouse only	**4.537**	(0.000)	**2.713**	(0.000)
Other	**2.532**	(0.000)	0.995	(0.987)
Physical difficulty (none = ref)				
None	1.000		1.000	
1–2	**2.459**	(0.000)	**1.995**	(0.000)
3–4	**2.920**	(0.000)	**2.039**	(0.002)
5–9	**2.863**	(0.000)	**2.674**	(0.000)
10+	1.396	(0.328)	1.533	(0.165)
Primary caregiver (daughter = ref)				
Spouse	–	–	0.854	(0.475)
Son	–	–	**2.129**	(0.001)
Daughter	–	–	1.000	
Child in law	–	–	1.146	(0.677)
Grandchild	–	–	1.651	(0.073)
Other	–	–	1.704	(0.181)
-2 Log Likelihood	1425.540		1496.026	

2012 Myanmar Aging Survey. Odds ratios significant at the 0.05 level are shown in bold type

*This include people who reported receiving regular assistance in daily activities and those reported needing help

associated with inadequate care, with a few exceptions. Results show that other characteristics being equal, older persons living with spouse only are significantly more likely (2.7 times)

than those living with adult children to receive inadequate care. Other types of living arrangement show no statistically significant difference. Furthermore, those whose primary caregiver is a son are far more likely to report inadequate care compared to having a daughter as the caretaker. Like unmet need for care, those in their late 70s and those aged 80 or older are much less likely to report inadequate assistance in daily activities.

Results indicate that gaps in LTC (either unmet need or inadequate care) are significantly associated with household wealth. Almost gradient relationships exist between care gaps and wealth, suggesting that those who are economically better off are less likely to report experiencing unmet need or inadequate care. For both analyses, other socio-demographic characteristics such as marital status, number of children, location of residence, and education are not significantly associated with gaps in care.

Discussion and Conclusion

Given the lack of statistical data infrastructure in Myanmar, very little is known about the wellbeing of its older-aged population. Based on the analysis of the 2012 Myanmar Aging Survey, this study provides empirical evidence for understanding 1) patterns of physical difficulties and LTC needs, 2) the roles that family members play to support frail elderly, and 3) gaps in long-term care in a resource-poor, moderately rapid aging setting. The World Bank strongly recommends that countries in East Asia and the Pacific consider early adoption of systematic LTC programs, ideally before the frail, elderly population becomes too large (World Bank 2016). Our study is thus timely and particularly relevant given that Myanmar policy makers are formulating policies and action plans to address population aging and its implications for the economy, health system, and society.

The findings demonstrate that physical difficulties are quite common among persons aged 60 and older in Myanmar. Comparison with neighboring developing countries such as Thailand shows that older persons in Myanmar scored considerably worse on physical functioning (Knodel et al. 2015: Table 6.3). Nevertheless, older persons commonly receive regular assistance in daily activities from family members. Older person's living arrangements, particularly coresidence with adult children, is an important avenue for providing support to older persons with physical difficulties. Family networks are very strong in Myanmar, particularly when it comes to care provision for frail older persons. Nearly all care recipients reported receiving the main assistance of daily activities from an immediate family member. It is very rare that care for older persons is outsourced to non-family members (e.g., domestic workers, friends or neighbors). The observed patterns of caregivers are consistent with Myanmar's bilateral kinship system which influences gender relations and gender role expectations within the family. They likely also condition living arrangement preferences and intergenerational support for older persons. In this context, daughters are typically perceived to be emotionally closer to parents, more dependable, and more skilled in providing personal care for elderly parents (Knodel et al. 1992).

Furthermore, our study highlights strong intergenerational support that spans across multiple generations. We find that grandchildren sometimes play an important role in providing older persons assistance in daily activities especially as providers of secondary assistance in daily living. Our evidence is consistent with past studies. Croll (2006) argues that in Asia intergenerational contract remains strong and is maintained through a process of re-negotiation in which exchange of services between aging parents and adult children, including grandchild

care, plays an essential role. Knodel and Nguyen (2015) further posit that grandparental care is not always one-directional, since grandchildren can also be of help to grandparents. These features of the care chain reflect Southeast Asia's cultural context that views acceptance of intergenerational obligations in either or both directions as normal.

Poverty is widespread in Myanmar. The country's rapid economic development in recent years is contributing to poverty reduction and improvement in livelihoods and living standards in certain segments of the population (World Bank Myanmar 2016b). This change has put social inequality into sharp relief, as evident in our findings related to gaps in LTC. Given that care for frail elderly is almost always provided by family members who typically coreside with them, households that are economically better off are thus more capable of caring for their older-aged members. This is an area where communities and state can play a role to fill in the gap.

Currently, LTC care policies do not exist in Myanmar. Nevertheless, the government is keen to invest in social protection programs directed to the most vulnerable in society. It is important that these social protection policies include frail older persons who need LTC. The National Social Protection Strategic Plan launched in December 2014 by the Ministry of Social Welfare, Relief and Resettlement is particularly promising. It incorporates two programs directed to the elderly involving establishing social pensions and promoting Older Person Self-Help Groups (OPSHGs). The latter program is relevant to community-based care. It supports OPSHGs at the village level with key objectives to meet economic and health needs of older persons. Community-based care for the elderly is to be delivered by trained volunteers recruited from OPSHGs. These programs are not yet effective nationwide. At present, the OPSHG program remains in the pilot stage, covering less than 1% of the population aged 60 and older (Ministry of Social Welfare, Relief and Resettlement 2015). Investing in a LTC system that puts the emphasis on family home-based care as well as community-based care are key recommendations put forth by the World Bank and governments in other more-advanced economies in Asia (World Bank 2016). In the context of Myanmar, it is thus important that the practice of traditional (family) and community based care needs are reinforced as these are effective existing structures and should be strengthened and not replaced.

Our analysis of LTC needs has several important limitations. As noted above, it does not directly address the impact of migration on provision of LTC by adult children or other family members, which remains an important topic for future exploration. The MAS on which our analysis is based does not include information about the quality of LTC provided which remains another important aspect for future research to document. More generally, the MAS is a cross-sectional survey and cannot provide definitive evidence on how the provision or receipt of LTC change over the life cycle of providers and recipients. To adequately do this requires a longitudinal approach. The need for such research hopefully will be addressed by future studies of LTC in Myanmar.

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