Co-residence with married children among older adults in Lebanon: a gain or a drain?

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Title: <u>Co-residence with married children among older adults in Lebanon: a gain or a drain?</u>

Introduction: In most Middle Eastern countries including Lebanon, societies value family ties, and older adults are viewed as a resource to the family. While cultural and ethical values still protect the majority of the older people in Lebanon, it is likely that the recent changes in family structure have weakened the family as a social institution. This study, using the PAPFAM national survey, attempts to examine the living arrangements of older adults in Lebanon and its correlates, with a focus on those living with married children.

Methodology: This study utilized a nationally representative sample of 1630 Lebanese older adults (aged 65+), sampled from 5532 households based on the "Household Health Survey" conducted by the Lebanese Ministry of Social Affairs in collaboration with the League of Arab States in 2004. The dependent variable, living arrangement, was considered as a dichotomous variable (living with married children vs. others). Differentials of co-residence with a married child were examined by demographic, socio-economic and health-related characteristics.

Results: Around 17.1% of Lebanese older adults co-resided with their married children. Females (20.9%) were more likely to co-reside than their male counterparts (13.4%). Among both male and female older adults, the likelihood of co-residence was significantly lower in regions other than the capital, Beirut, (OR=0.46 & OR=0.35 respectively) and decreased with increasing socio-economic status. Marital status was found significant for both genders, with being currently unmarried increasing the odds of co-residing significantly (OR=2.94 & OR=2.98 for males and females respectively). Additionally, among females, a positive and significant association with co-residence with a married child, was observed with increasing age (OR=1.67) and vascular disease (OR=1.72).

Conclusion: Findings show that co-residence with married children among older adults in Lebanon is positively associated with low socio-economic status and declining health of the older adult. Strength of the associations differed according to gender, with females being more disadvantaged. Further research is needed to assess the dynamics of co-residence with married children.

Introduction

During the past three decades, fast declines in fertility and mortality in Lebanon have created a compressed demographic transition, a growing trend towards survival into later life, and a larger proportion of elderly people in the population. Projections show that people aged 65 years and over are expected to constitute 10.2% of the population by 2025 similar to that of contemporary Europe (Sibai, Sen, Baydoun, & Saxena, 2004). Nevertheless, changes to the structure and composition of the population remain unmatched by any corresponding increase in support measures either through formal channels such as pension plans or through health or socioeconomic security measures such as the provision of subsidies for health care, home help or any form of nursing care (Ammar, 2003; and Lunnefeld, 2008). The traditional concept of intergenerational support and provision of care and assistance to older adults is "on the brink" (United Nations, 2007), thus implying that an older person is forced to be dependent upon family support, if it exists (United Nations, 2005a).

In most Middle Eastern countries, societies value family ties and older adults are viewed as a resource to the family. While cultural and ethical values still protect the majority of the older people in Lebanon, it is likely that the recent changes in family structure with a trend towards smaller families, the numerous waves of youth migration following years of political unrest, and the increasing female work participation have weakened the family as a social institution (Sibai et al, 2004; and United Nations, 2007). Several studies have underscored the importance of living arrangements to the well-being of older adults, and presumably, co-residential arrangements are overall better than solitary living in protecting physical and emotional health of older persons (Brown, Liang, Krause, Akiyama, Sugisawa & Fukaya, 2002; Chaudhuri & Roy, 2007; and Yount & Khadr, 2008). Reasons offered to explain why co-residence is relevant to health include, among others, availability of social support, regulation of health behaviors, supply and consumption of economic resources and demands on individual roles associated with different household structures.

In Lebanon, as in other Arab countries, the norm is for adult children to co-reside with their parents till marriage, when they would leave their parental home to establish

individual households (Khadr, 1997; and Yount, 2005). However, upon widowhood and/or health decline, the older adult may resume residence with children. Studies conducted in western and south Asian countries have shown that co-residence with children is likely to bring material and non-material advantages for the older adults (Bongaarts & Zimmer, 2001; DeVos & Holden, 1988; Pal, 2007; VanWey & Cebulko, 2007; and Yount & Khadr, 2008). Nevertheless, these studies have failed to distinguish between residence with unmarried vs. married children and it remains unclear whether living with married children presents comparable advantages as living with unmarried children, or whether this relationship varies gender of the older adult (Sibai, Beydoun, & Tohme, 2008).

Published studies on living arrangements of older adults in the region as well as in Lebanon remain limited in scope, and lacked health-related characteristics that are regarded in the literature as significant confounders in the older person's choice of living arrangement. Using the PAPFAM national study conducted in Lebanon in 2004, the data of which in contrast to most other demographic surveys, included a questionnaire specially designed to address older adults' issues, and provides a unique opportunity to examine correlates of living arrangements while controlling for chronic diseases and disabilities. The results of this study will enable informed decisions and policy-making in Lebanon concerning older adults and will guide those involved in social services and programs in planning and implementing intervention programs.

Data and Methods

Study design

Data for this study is derived from the "Household Health Survey", that was conducted in 2004 by the Lebanese Ministry of Social Affairs (MoSA) in collaboration with the League of Arab States as part of the "Pan Arab Project for Family Health" (PAPFAM). A three-stage, stratified cluster design was utilized to obtain the sample for the study. First, a total of 15 geographical areas from Lebanon's six governorates were randomly selected. Second, random sampling of 449 population survey units (PSU) was conducted. Finally, 7098 main dwellings were sampled, out of which, 6505 households were visited, whereas only 5532 households completed the interviews. A total of 1812 older adults (age 65 years or above) of both genders were identified, out of which 1774 completed the interviews, yielding a 97.9% response rate.

Study subjects

The objective of this study was to examine gender differentials in living arrangements of older Lebanese individuals. This study also assessed correlates of living with married children versus other living arrangements across three broad categories; demographic, socio-economic and health-related factors. Consequently, never married older adults or those who have no surviving children were excluded from the analysis because they are not at risk for the outcome (living with married children). Never-married individuals accounted for 4.3% (n=92) and those with no alive children 3.0% (n=52). The final study population comprised of 1630 older adults, 841 males and 789 females.

Variables

The outcome variable of interest in this study is "living arrangements of Lebanese older adults". Living arrangements were initially grouped into five mutually exclusive categories according to the relation of the older adult to other household members: living alone, living with spouse (no children), living with unmarried children (with or without spouse), living with at least one married child and/or offspring (with or without spouse), and living with non-spouse/non-children others. Except for those living alone, the remaining categories included those who may or may not be living with a sibling, other

relatives or non-relative others. For the objective of the study, living arrangements was dichotomized into a binary variable; 'living with married children' versus 'all other living arrangements'.

Exposure variables which assess the demographic, socioeconomic, and health status of the sample were included. These variables, according to existing literature, are expected to have an effect on the living arrangements of older adults. Demographic variables included age (grouped as 65-69, 70-74, 75-79, 80-84, and ≥85) as previous studies have stressed the importance of age in defining the living arrangement (Chucks, 2002; and Shah, Yount, Shah & Menon, 2002), gender (male and female), region (Beirut, Mount Lebanon, North Lebanon, South Lebanon/Nabatieh and Bekaa), number of alive sons and number of alive daughters (0, 1-2, 3-4, ≥5), marital status recorded as (single, married, widowed, divorced and separated); yet, because few respondents reported being divorced or separated, they were merged with those who reported to be widowed. In this analysis, gender was used as the stratification variable.

Socioeconomic variables captured educational level (no formal schooling, less than or equal to preparatory school and higher), work status (never worked, worked in past and currently works), income sufficiency for main expenses (used to assess the adequacy of the monthly income, dichotomized yes/no), monthly income per capita and funds from governmental aid (yes vs. no). These socioeconomic measures give an indication of the current economic resources that are available to the older adult.

Health-related variables, identified in previous studies as a major indicator of living arrangements of older adults (Sibai et al., 2007), included self-rated health assessed by asking the older adult "Do you think your health in general is good, fair or bad?" and responses were coded in three categories. Only diseases that require continuous monitoring or were disabling chronic diseases were taken into consideration (dichotomized yes/no); including hypertension, vascular (heart disease and/or stroke) and pulmonary diseases (chronic lung disease and/or asthma), and diabetes. Communication disabilities, a dichotomous variable (yes/no) for three senses (speech, hearing, sight). Activities of Daily Living (ADL) (Katz, Ford, Moskowitz, Jackson & Jaffe, 1963), five

categories of difficulty in (using toilet, bathing, dressing, moving in/out of chair, and eating) and the response no help or partial/total help, as well as ADL score.

Statistical Analysis

Frequency distributions and mean (± SD) of living arrangements as well as baseline characteristics (demographic, socioeconomic and health-related conditions) were evaluated for the total sample and for males and females separately. Differences by gender were assessed using t-test or Pearson's chi square (χ^2) tests of association for continuous and categorical variables, respectively. Age and multivariate-adjusted analysis were estimated to examine the association between the outcome variable (living with married children) and the various correlates (demographic, socio-economic and health-related). Variables included in the multivariate model were age, marital status, region, number of alive sons and daughters, literacy, financial role in household, per capita income/month, self-rated health, chronic diseases (hypertension, diabetes, vascular, and pulmonary disorders), ADL score, and communication problems (speech, hearing, and sight). Odds ratios and their corresponding 95% confidence intervals were obtained, and the significance was assessed via the Wald test statistic. All statistical analyses were performed using SPSS (v.16) and a p-value of (<0.05) was considered statistically significant.

Results

Overview of the study population

The total sample included 1630 individuals, 841 males (51.6%) and 789 females (48.4%). Table (1a) shows the distribution of demographic, socio-economic and health-related characteristics among the study population stratified by gender. Compared to male individuals, females were significantly more likely to be currently unmarried (55.8% vs. 14.0%; $p<0.001$), and to be living in Beirut (16.8% vs. 10.8%; $p=0.007$). Around 41.3% of the individuals had 1-2 alive sons and 43.2% had 1-2 alive daughters. In regard to literacy, 59.0% of the older adults had no formal schooling, with females being significantly more likely to have no formal schooling (66.8% vs. 51.5%; $p<0.001$). Males were significantly more likely to report financial independence in the household or even have other members financially dependent on them. Around 40% of the older adults reported a monthly per capita income of less than \$100, with the minimum monthly wage being \$200 in Lebanon (Saget, 2008) and there was no significant difference observed between males and females (table 1a).

The distribution of health-related conditions among both males and females is presented in table (1b). Around 51% of the sample considered their health to be "fair", with significant differences among genders. Females were slightly more likely to suffer from illnesses and co-morbidities than males. These included hypertension (44.2% vs. 29.4%; $p<0.001$), vascular disease, diabetes (25.2% vs. 18.9%; $p=0.002$) and pulmonary disease. A total of five items constituted the scale for Activities of Daily Living (ADL). Females were significantly more likely to report needing help according to the ADL score. Difficulty in speech, hearing and sight were higher for females compared to males, but the difference was not statistically significant.

Living Arrangements

Findings revealed (Table 2), that the highest percentage of older adults (47.3%) live in a nuclear family with their unmarried children with or without their spouse. Living with at least one married child accounted for 17.1% of the total sample, with females

being 1.6 times more likely to be living with their married children than their male counterparts (20.9% vs. 13.4%; *p*<0.001). Around 10% were living alone, with females being 2.6 times more likely to live alone (15.4% vs. 5.9%; *p*<0.001). In regard to "satisfaction with current living arrangements", the majority of the older adults (91.0%) reported being satisfied and there was no significant difference observed between males and females.

Associations between co-variables and living with married children

Binary logistic regression was carried out to assess associations with our main outcome variable, living with married children compared to other living arrangements. Table (3) presents the age-adjusted odds ratio for three broad groups of categories; demographic, socio-economic, and health related factors. The likelihood of living with married children increased significantly with increasing age. In general, older adults in Beirut were more likely to co-reside with their married children compared to all the other governorates. For both genders, being currently unmarried, significantly increased the odds of living with a married child (males: OR=2.63; 95% CI=1.62-4.26 and females: OR=2.78; 95% CI=1.87-4.13).

Overall, for the socio-economic factors, the results showed that males and females with higher socio-economic status were less likely to be living with married children. Higher levels of education decreased the likelihood of living with a married child, but was significant only for females (OR=0.66; 95% CI=0.44-0.98). This was also evident for monthly per capita, as it increased the likelihood of living with married children significantly decreases. Receiving financial assistance, either from governmental sources or from children, also increased the odds of living with married children, being significant in case of child remittances for males (OR=2.73; 95% CI=1.72-4.33). Older adults who are financially dependent in the household were more likely to co-reside, statistically significant for males (OR=2.49; 95% CI=1.65-3.75).

Data also showed that both males and females living with married children were more likely to report chronic diseases. For females, hypertension, vascular disease, and pulmonary disorders were significantly associated with living with married children

(OR=1.57; 95% CI=1.11-2.24, OR=1.95; 95% CI=1.36-2.81, and OR=2.04; 95% CI=1.10-3.79 respectively). Difficulty in performing ADL was also associated with living with married children but not significant for both genders. Similarly, older adults living with married children were significantly more likely to report communication problems, in specific hearing and sight with higher odds being noticed among males (OR=2.35; 95% CI=1.43-3.84 and OR=1.79; 95% CI=1.10-2.91) than females (OR=1.80; 95% CI= 1.16-2.80 and OR=1.62; 95% CI=1.07-2.46).

Table (4) shows the multivariate-adjusted analyses for the selected variables and living with married children. Age was found significant only for females (OR=1.67; 95% CI=1.01-2.74), whereas region was a significant predictor for both males and females (OR=0.46; 95% CI=0.24-0.88 and OR=0.35; 95% CI=0.22-0.58 respectively) noticing a negative association with other regions compared to Beirut. Marital status was also a significant predictor for co-residence among males and females (OR=2.94; 95% CI=1.73-4.99 and OR=2.78; 95% CI=1.89-4.68 respectively).

A significant association was observed with monthly per capita, as monthly per capita increased, older adults were less likely to live with their married children. Among chronic diseases, only vascular disease among females retained its significant association with living with a married child (OR=1.72; 95% CI=1.12-2.64).

Discussion

Living with others, in particular children, has been considered as one arrangement in which the older persons are closer to their social networks and are more likely to receive support when needed. It is expected that co-residence is associated with mutual benefit for both the older adult and their children by increasing material and non-material resource exchanges between the generations (Mitchell, 2005 and Yount, 2008) , as well as expanding their supportive networks. However, it is not clear whether the advantages conferred by living with married children are comparable to those of living with unmarried children (Sibai et al, 2008).

The main purpose of this study was to assess the living arrangements of older adults and the correlates of living with married children among older adults in Lebanon. In the Lebanese context, the norm is for children to live with their parents till they are married, at the time when they are then expected to leave their parents' home and establish their own households. Results of this study show that overall 17.1% of older adults in Lebanon live with at least one married child. This percentage is similar to that of a previous study conducted in Beirut (1993-1994), where the percentage of older adults living with at least one married child was 19.1% (Sibai et al, 2007). The likelihood of living with married children was around 1.6 (table 2) times more among females when compared to male older adults (20.9% vs. 13.4%), entailing that females are more in need of this particular living arrangement. The majority of older adults reported that they were living in their own homes (90.5%), yet females were almost three times more likely to be living in a family member's home, rather than their own home compared to males (14.2% vs. 5.1%; $p<0.001$).

Consistent with other studies, this study demonstrates that older adults co-residing with married children is positively associated with the availability of living children and age of the older adult (Bongaarts & Zimmer, 2001; DaVanzo & Chan, 1994; Shah et al, 2002; Sibai et al, 2008; Yount, 2005; Yount, 2008; and Zimmer & Korinek, 2008). In the Lebanese context, due to strong family relations, increase in the age and the dependence of the older adult both financially and physically, is often accommodated by the family.

This fact is enhanced by scarcity and absence of formal older-age care and pension plans to support older adults.

Living with married children was inversely associated with socioeconomic status, including education of the older person and monthly income per capita. Also, those co-residing with married children were more likely to be receiving aid from governmental sources than their counterparts. These results are consistent among male and female older adults, although the intensity of the association was stronger among the females. Receiving child remittances was significantly associated with living with a married child for male older adults (OR=2.73; CI=1.72-4.33) , though the same was for females, but the association was not significant. This indicates that for male older adults, economic need is a player in the decision to co-reside with a married child. Findings in the literature on this regard have been inconsistent. For example, studies in the Arab region show co-residence with adult children is associated with higher socio-economic status. Studies conducted in Kuwait by Shah et al. (2002) and in Egypt by Yount (2005), clearly stated that high income and standards of living encourage co-residence due to the financial ability of the older adult to keep his/her children close. In contrast, studies conducted in the west (Elman & Uhlenberg, 1995; Martikainen, Nihtila & Moustgaard, 2008; McGarry & Schoeni, 2000; and Mutchler & Burr, 1991) and in selected countries in the far east (DaVanzo & Chan, 1994) have shown an inverse relationship between co-residence and socio-economic status. The association between lower socio-economic status and co-residence implies that pooling of resources, in an aim to overcome scarcity of financial resources, is the driving factor for such an arrangement. Higher living standards enable purchase of privacy. Similar results, stressing that intergenerational co-residence is highly associated with economic factors, were found in a study of intergenerational co-residence in a number of developing countries (Minnesota Population Center, 2008)

The rationale of "pooling of resources" was supported by our finding that co-residence is more likely to occur in Beirut compared to other governorates. The high costs of living and housing associated with residing in the capital, Beirut (Laithy, Abu-Ismail & Hamdan, 2008) may explain these results. Our findings concur with those found in Turkey, where living in Metropolitan areas was associated with co-residence due to

high costs of housing and living (Aykan & Wolf, 2000; and Aytac, 1998). The dynamics of living with married children (who moved in with whom and why?) cannot be totally disentangled in the current study.

With regard to health-related factors, this study showed that selected co-morbid conditions such as vascular disorders, pulmonary disease and hypertension, and communication disabilities were associated with living with a married child, and findings were only significant among the female older adults. An earlier follow-up study conducted in Beirut showed that, co-residence with a married child was the most disadvantaged amongst all other living arrangements with highest all-cause and CVD mortality risk (Sibai et al, 2007). The intensity of the health conditions differed across gender, with the females being more disadvantaged than their male counterparts. This finding is typical, as females are more susceptible to health disadvantages and vulnerability than males, and is consistent with other international studies (Arber & Cooper, 1999; United Nations, 2005b; Roy & Chaudhuri, 2008; and Rueda, Artazcoz, & Navarro, 2008). However, difficulty in performing activities of daily living had no relationship with co-residence with married children. The latter result is similar to findings from PHS data in Lebanon among unmarried older Lebanese females using a crude measure of disability (Obeid, 2004). Follow-up studies and in-depth interviews as well as an objective assessment of the health status of the older adult may assist in interpreting such results.

Overall, the results of the study show an advantage of male older adults over their female counterparts. The males are more likely to host within their own households their married children, and this living arrangement did not indicate a positive outcome whether in terms of economic assets or health indicators. The driving forces behind co-residence among male older people were mainly of socio-economic origin. While among female older adults, these included additionally health status. Female older adults usually tend to be more dependent and have fewer choices when compared with their male counterparts (Bongaarts & Zimmer, 2001; Chen, 2005; DaVanzo & Chan, 1994; Elman & Uhlenberg, 1995; Grau, 2002; Yount, 2005; and Stuifbergen, Van Delden & Dykstra, 2008). Studies conducted in Egypt reveal that, older adults may resume living with a child when they

require financial assistance, when they are widowed, or when they need assistance in activities of daily living due to declining health (Yount, 2005).

There are some limitations in this study worth mentioning. First, co-residence involves two parties, the older adult and the married child. Thus, an understanding of the determinants and correlates of living with a married child requires studying also the health and economy of the co-resident adult children as well as the preference of the older adult in terms of the gender of the co-residing child. Furthermore, while studies have utilized urban/rural classification for examining associations with place of residence, the PAPFAM data relied on governorate as a proxy measure. Nevertheless, in this study the use of "Governorates" with Beirut evaluated as a separate category from the remaining districts may represent a distinction between areas characterized by high costs of living and other less expensive areas.

CONCLUSION

In conclusion, the findings revealed that a number of demographic, socio-economic as well as health-related factors are correlated with co-residence with married children among older adults in Lebanon. Results show that co-residence differs by the gender of the older adult, with higher percentages of co-residing with a married child among the females than males. Among the males, co-residence with a married child appeared to be triggered by and/or trigger lower socio-economic status. Among the females, study findings indicate that, additionally, and declining health elicit co-residence with married children.

While solitary living has been traditionally the focus of attention by policy makers and service providers, study findings show that living with married children may confer a vulnerable living arrangement as well. Thus, the results of this study reveal some of the characteristics of this vulnerable group, i.e. older adults living with a married child, particularly among females. Thus, attention to this vulnerable group, i.e. older adults living with married children, is an important aspect in ensuring equal opportunities of development for older adults.

Because of the cross-sectional design of this study, further in-depth and follow-up studies are needed to disentangle the dynamics of living with married children and address the remaining unanswered questions. How do living arrangements change with advancing age, declining health and limited socio-economic resources? Who moved in with whom and whether headship assignments vary by socio-economic status of both the parent and/or child, or by health of the older adult? Further follow-up of the subjects in this study can provide a clearer picture and help in better understanding the dynamics of this particular living arrangement.

Table 1a: Socio-demographic factors of older adults in Lebanon, PAPFAM data 2004

Variable	Total		Males		Females		p-value
	N=1630	100%	n=841	100%	n=789	100%	
Age							
65-69	504	30.9	248	29.5	256	32.4	0.618
70-74	540	33.1	290	34.5	250	31.7	
75-79	325	19.9	166	19.7	159	20.2	
80-84	178	10.9	91	10.8	87	11.0	
≥ 85	83	5.1	46	5.5	37	4.7	
Mean ± SD	73.22 ± 6.09		73.34 ± 6.06		73.08 ± 6.12		
Marital Status							
Married	1071	65.7	723	86.0	348	44.2	<0.001
Unmarried	558	34.3	118	14.0	440	55.8	
Region							
Beirut	224	13.7	91	10.8	133	16.8	0.007
Bekaa	177	10.9	97	11.5	80	10.1	
Mount Lebanon	632	38.7	323	38.4	309	39.1	
Nabatieh	124	7.6	63	7.5	61	7.7	
North	311	19.1	173	20.6	138	17.5	
South	163	10.0	94	11.2	69	8.7	
No. Alive Sons							
0	111	6.8	55	6.5	56	7.1	0.681
1-2	673	41.3	342	40.7	331	42.0	
3-4	577	35.5	296	35.2	281	35.6	
≥5	268	16.4	147	17.5	121	15.3	
Mean ± SD	1.62 ± 0.84		1.64 ± 0.85		1.60 ± 0.83		
No. Daughters							
0	107	6.6	54	6.4	53	6.7	0.394
1-2	703	43.2	378	44.9	325	41.2	
3-4	540	33.1	264	31.4	276	35.0	
≥5	279	17.1	145	17.2	134	17.0	
Mean ± SD	1.61 ± 0.84		1.60 ± 0.85		1.62 ± 0.84		
Literacy							
No formal schooling	948	59.0	430	51.5	518	66.8	<0.001
≤ Preparatory	526	32.6	316	37.8	210	27.1	
Higher	136	8.4	89	10.7	47	6.1	
Per Capita Income/Month							
≤ $50	270	16.6	147	17.4	124	15.7	0.511
$50 - ≤ $100	375	23.0	188	22.3	187	23.7	
$100 - ≤ $150	273	26.7	135	16.0	138	17.5	
$150 - ≤ $200	177	10.9	100	11.9	77	9.8	
≥ $200	375	23.0	196	23.3	179	22.7	
Financial role in HH							
Independent	315	19.3	190	22.6	125	15.8	<0.001
Others depend on elderly	457	28.0	324	38.5	133	16.9	
Dependent	859	52.7	328	39.0	531	67.3	
Sources of finance							
Governmental aid	46	2.8	22	2.6	24	3.0	0.604
Child remittances	1074	65.8	474	56.3	600	76.0	<0.001
Income sufficient (%yes) (for vital expenses)	1033	63.4	522	62.1	511	64.8	0.272

Table 1b: **Health-related factors of older adults in Lebanon, PAPFAM data 2004**

Variable	Total		Males		Females		*p*-value
	N=1630	100%	n=841	100%	n=789	100%	
Self-rated health							
Good	332	20.4	225	26.8	107	13.6	<0.001
Fair	831	51.1	411	49.0	420	53.2	
Poor	464	28.5	202	24.1	262	33.2	
Chronic Diseases (% yes)							
Hypertension	596	36.6	247	29.4	349	44.2	<0.001
Vascular	435	26.7	209	25.9	226	28.6	0.084
Diabetes	358	22.0	159	18.9	199	25.2	0.002
Pulmonary	100	6.1	51	6.1	49	6.2	0.902
ADL Score							
0	1387	85.0	743	88.2	644	81.6	<0.001
1	52	3.2	24	2.9	28	3.5	
2	46	2.8	10	1.2	36	4.6	
3	34	2.1	11	1.3	23	2.9	
4	30	1.8	9	1.1	20	2.5	
5	83	5.1	45	5.3	38	4.8	
Mean ± SD	0.48 ± 1.29		0.40 ± 1.24		0.56 ± 1.34		<0.001
Communication disabilities (% yes)							
Speech	97	6.0	47	5.6	50	6.3	0.523
Hearing	234	14.4	117	13.9	118	15.0	0.542
Sight	278	17.1	131	15.6	147	18.6	0.101

Table 2: Living arrangements of older adults in Lebanon, PAPFAM data 2004

Variable	Total		Males		Females		*p*-value
	N=1630	100%	n=841	100%	n=789	100%	
Living Arrangements							
Alone	170	10.4	49	5.9	121	15.4	<0.001
Spouse& non-children others	396	24.3	247	29.3	149	18.8	
Unmarried child with/out others	772	47.3	431	51.3	341	43.2	
≥1 married child with/out others	278	17.1	113	13.4	165	20.9	
Non-spouse and non-children others	15	0.9	1	0.1	14	1.7	
Older adult lives:							
In own home	1475	90.5	798	94.9	677	85.8	<0.001
In family member's home	155	9.5	43	5.1	112	14.2	
Satisfied with current living arrangement							
Yes	1483	91.0	760	90.4	723	91.6	0.372
No	147	9.0	81	9.6	66	8.4	

Table 3: Age-adjusted logistic regression of living with married children among older adults in Lebanon

Variable (reference)	Males						Females					
	MC n=113		Others n=728		Age-adjusted analysis		MC n=165		Others n=624		Age-adjusted analysis	
	n	%	n	%	OR	95% CI	n	%	n	%	OR	95% CI
Socio-demographics												
Age (65-79)												
≥ 80	30	26.5	107	14.7	2.12[a]	(1.33, 3.38)	44	26.7	80	12.8	2.43[a]	(1.60, 3.68)
Marital stat. (Married)												
Unmarried	32	28.3	86	11.8	2.63[a]	(1.62, 4.26)	125	75.8	316	50.6	2.78[a]	(1.87, 4.13)
Region (Beirut)												
Others	91	80.5	659	90.4	0.47[a]	(0.28, 0.80)	117	70.9	539	86.4	0.39[a]	(0.26, 0.60)
No. Alive Sons (0)												
≥ 1	107	94.7	679	93.3	1.11	(0.48, 2.58)	156	94.5	577	92.5	1.44	(0.68, 3.05)
No. Daughters (0)												
≥ 1	107	94.7	680	93.4	1.39	(0.57, 3.37)	153	92.7	583	93.4	1.03	(0.52, 2.04)
Literacy (No formal school)												
Some schooling	51	45.9	353	48.5	0.93	(0.62, 1.39)	41	25.5	216	35.2	0.66[a]	(0.44, 0.98)
Per capita income/month (≤ $50)												
$50- ≤ $150	54	47.8	268	36.8	0.96	(0.57, 1.61)	67	40.4	258	41.3	0.38[a]	(0.24, 0.29)
≥ $150	23	20.4	273	37.5	0.38[a]	(0.21, 0.71)	28	16.9	229	36.7	0.18[a]	(0.10, 0.31)
Financial role in HH (independent)												
Dependent	68	59.6	260	35.7	2.49[a]	(1.65, 3.75)	119	72.1	412	66.0	2.19	(0.93, 5.15)
Government aid (No)												
Yes	5	4.4	18	2.5	1.77	(0.61, 5.09)	9	5.5	15	2.4	1.44	(0.93, 2.24)
Child remittances (No)												
Yes	87	76.3	387	53.2	2.73[a]	(1.72, 4.33)	135	81.8	465	74.5	1.26	(0.86, 1.85)
Health-related characteristics												
Self-rated health (good)												
Other	95	84.1	519	71.3	1.99[a]	(1.16, 3.40)	149	90.3	533	85.4	1.55	(0.88, 2.72)
Co-morbidities												
Hypertension												
Yes	43	38.1	205	28.2	1.50	(0.99, 2.27)	85	51.5	264	42.3	1.57[a]	(1.11, 2.24)
Vascular disease												
Yes	33	29.2	176	24.2	1.24	(0.79, 1.93)	66	40.0	160	25.6	1.95[a]	(1.36, 2.81)
Diabetes												
Yes	27	23.9	132	18.1	1.51	(0.94, 2.43)	44	26.7	155	24.8	1.16	(0.78, 1.72)
Pulmonary disease												
Yes	9	8.0	41	5.6	1.45	(0.69, 3.06)	18	10.9	31	5.0	2.04[a]	(1.10, 3.79)
ADL Score	19	16.8	77	10.6	1.14	(0.99, 1.31)	47	28.5	98	15.7	1.11	(0.98, 1.25)
Communication disabilities												
Speech												
Yes	14	12.4	33	4.5	2.92[a]	(1.50, 5.66)	17	10.3	33	5.3	1.85	(0.99, 3.45)
Hearing												
Yes	30	26.5	86	11.8	2.35[a]	(1.43, 3.84)	38	23.0	80	12.8	1.80[a]	(1.16, 2.80)
Sight												
Yes	28	24.8	103	14.1	1.79[a]	(1.10, 2.91)	44	26.7	103	16.5	1.62[a]	(1.07, 2.46)

[a] Statistically significant at alpha level of 0.05

Table 4: Multivariate logistic regression of living with married children among older adults in Lebanon

Variable (reference)	Living with married children vs. all other living arrangements			
	Males		Females	
	OR	95% CI	OR	95% CI
Socio-demographics				
Age (65-79)				
≥ 80	1.42	(0.81, 2.50)	1.67[a]	(1.01, 2.74)
Marital stat. (Married)				
Unmarried	2.94[a]	(1.73, 4.99)	2.98[a]	(1.89, 4.68)
Region (Beirut)				
Others	0.46[a]	(0.24, 0.88)	0.35[a]	(0.22, 0.58)
No. Alive Sons (0)				
≥ 1	0.82	(0.33, 2.00)	1.80	(0.77, 4.20)
No. Daughters (0)				
≥ 1	1.31	(0.51, 3.33)	0.71	(0.34, 1.51)
Literacy (no formal schooling)				
Other	1.18	(0.75, 1.86)	0.82	(0.51, 1.32)
Per capita income/month(<$50)				
$50- < $150	0.84	(0.48, 1.49)	0.29[a]	(0.17, 0.48)
> $150	0.37[a]	(0.18, 0.75)	0.13[a]	(0.07, 0.24)
Financial role in HH (independent)				
Dependent	1.36	(0.80, 2.32)	0.92	(0.56, 1.49)
Government aid (No)				
Yes	2.22	(0.73, 6.75)	2.24	(0.88, 5.68)
Child remittances (No)				
Yes	1.77	(0.99, 3.15)	1.04	(0.60, 1.79)
Health-related characteristics				
Self-rated health (good)				
Other	1.21	(0.66, 2.23)	0.69	(0.36, 1.34)
Co-morbidities				
Hypertension				
Yes	1.16	(0.72, 1.88)	1.35	(0.89, 2.05)
Vascular disease				
Yes	0.92	(0.55, 1.54)	1.72[a]	(1.12, 2.64)
Diabetes				
Yes	1.18	(0.68, 2.05)	0.91	(0.57, 1.46)
Pulmonary disease				
Yes	1.05	(0.44, 2.52)	1.46	(0.71, 3.00)
ADL Score	0.96	(0.81, 1.15)	0.97	(0.82, 1.14)
Communication disabilities				
Speech				
Yes	1.69	(0.71, 4.03)	1.78	(0.75, 4.21)
Hearing				
Yes	1.41	(0.66, 2.98)	1.24	(0.64, 2.41)
Sight				
Yes	0.81	(0.40, 1.66)	0.97	(0.53, 1.76)

[a] Statistically significant at alpha level of 0.05

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