Published in final edited form as:

Arch Gerontol Geriatr. 2012 January ; 54(1): 55–60. doi:10.1016/j.archger.2011.02.016.

Homebound older persons: Prevalence, characteristics, and longitudinal predictors

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Abstract

The current study examines the prevalence and correlates of homebound status aiming to elucidate the predictors and implications of being homebound. Analyzed sample was drawn from two representative cohorts of older persons in Israel, including 1191 participants (mean age = 83.10 ± 5.3 years) of the first wave of the Cross-Sectional and Longitudinal Aging Study (CALAS) and 418 participants (mean age = 83.13 ± 5.2) of the Israeli Multidisciplinary Aging Study (IMAS). Cross-sectional and longitudinal analyses were conducted. Homebound prevalence rates of 17.7%–19.5% were found. Homebound participants tended to be older, female, have obese or underweight body mass index (BMI), poorer health, lower functional status, less income, higher depressed affect, were significantly lonelier (in CALAS), and more likely to have stairs and no elevators, than their counterparts. Predictors of becoming homebound include low functional IADL status, having stairs and no elevator (in both cohorts), old age, female gender, and being obese or underweight (in CALAS). The study shows homebound status is a prevalent problem in old-old Israelis. Economic and socio-demographic resources, environment, and function play a role in determining the older person's homebound status. Implications for preventing homebound status and mitigating its impact with regards to the Israeli context are discussed.

Keywords

Homebound status; Mental health; Israel

1. Introduction

Prevalence rates from early studies of homebound older persons fluctuate widely, ranging from 2.7% to 61.0%, possibly due to variance in the populations studied and various definitions used for homebound status (Ganguli et al., 1996). These included being confined

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Conflict of interest statement: None.

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to a bed or chair and not being able to get about outdoors. Alternatively, the capacity to move purposefully in one's environment had been otherwise referred to as life space (Allman et al., 2006). Recent studies, defining homebound as going outdoors once or less than once a week or as receiving medical services at home, have narrowed the range of prevalence rates for the homebound older population to 10.3%-18.6% (Ganguli et al., 1996; Fujita et al., 2006; Zeltzer and Kohn, 2006).

Community-based studies found that being homebound is significantly associated with being older, female gender, and being widowed. Also, being homebound was significantly associated with more depressive symptoms, higher prevalence of cognitive disorders, and greater functional limitations, compared with persons who went outdoors more often (Ganguli et al., 1996; Fujita et al., 2006; Zeltzer and Kohn, 2006). Additionally, environmental factors were found predictive of homebound status (Lindesay and Thompson, 1993). Particularly, being homebound was significantly associated with living on a higher floor and not having car access, compared with non-homebound persons of similar age.

In Israel, 38.9% of older persons over 80 are frail (Iecovich, 2009), with those homebound placing a significant additional load on available medical service (Vinker et al., 2000). Indeed, a study of the homebound in Israel revealed that about half of physicians' home visits are made to persons aged 65 or older, resulting most commonly in diagnoses of hypertension (24.1%) and diabetes mellitus (19.9%) (Vinker et al., 2000).

Considering the marked health care needs of homebound older persons in Israel, the current study seeks to improve the understanding of this population, which in turn may assist in improving services for the homebound older persons. Accordingly, this study examines the prevalence and correlates of homebound status in two representative cohorts of older persons in Israel, aiming to elucidate the predictors and implications of being homebound through a longitudinal study.

The specific questions are: (1) What is the prevalence of being homebound among the older Israeli population and has this prevalence changed between two cohorts? (2) What are the characteristics of homebound older persons? How do they compare to those who are not homebound? (3) What factors predict homebound status in both cross-sectional and longitudinal analyses?

2. Subjects and methods

2.1. Participants and procedure

The first sample included participants from the CALAS (Benyamini et al., 2003; Walter-Ginzburg et al., 2005; Ben-Ezra and Shmotkin, 2006; Blumstein et al., 2008). The CALAS is a multidimensional survey of a random sample of the older Jewish population in Israel, stratified by age group (75-79, 80-84, 85-89, 90-94), gender, and place of birth (Asia/Africa, Europe/America, Israel). This study examines two waves of data collection, the first collected during 1989-1992 and the second during 1993-1994, with an average of 3.5 years between them.

The second sample consists of participants from the IMAS (Shmotkin et al., 2010). The IMAS conducted a similar multidimensional assessment of a random sample of the older Jewish population in Israel again stratified by age group, gender, and place of birth. The study included one wave of data collection, during 2000-2002. The IMAS used the same questionnaire as the CALAS, with slight modifications as in the categorization of subjective health rating (5 categories vs. 4, respectively). For the analysis, two of the categories in the IMAS (reasonable health, not that good health) were grouped together to the parallel

category in the CALAS (OK health). In both studies, interviews were conducted in participants' homes after they had signed informed consents. The CALAS and IMAS were approved for ethical treatment of human participants by the Institutional Review Board of the Chaim Sheba Medical Center in Israel.

The present analyses include only self-respondent participants of parallel age groups (75-94) from the two surveys. Thus, the sample consists of 1191 participants from the first CALAS wave and 418 participants from the IMAS. The longitudinal analyses included all of the participants from the first CALAS wave who were located and alive at the second wave of data collection ($n = 721$), of whom 621 were able to provide self report.

2.2. Measures

Background—Socio-demographics include gender, age, place of birth, marital status, having children (number of children alive/deceased), education (in years), and financial status (whether the participant had income additional to the basic National Insurance pension).

Homebound status—In line with Ganguli et al. (1996), being homebound was defined as going out of the house once a week or less and was measured by asking participants how often they go outside of their homes (more than once a week, or once a week or less, i.e., homebound).

Health—Subjective health (terrible, OK, good, or great); Number of medications as inspected and counted by the interviewer (range 0–8); BMI: the interviewer measured the participant's weight and height and BMI was calculated (< 22 = underweight, 22-25, 25-30, > 30 = obese; Alfaro-Acha et al., 2006). Comorbidity was assessed by the number of diseases the participant had been diagnosed with from a list of 18 chronic diseases (range: 0-18).

Function—Activities of daily living (ADL), (Katz et al., 1970). Participants rated their difficulty in performing seven different vital activities such as washing and dressing, on a scale from “no difficulty” (0) to “complete disability” (3). Sum score range was 0-21. Cronbach's alpha coefficients were 0.88 and 0.91 in the CALAS and IMAS, respectively. Instrumental activities of daily living (IADL) (Lawton and Brody, 1969) is a scale of seven items, each rating the difficulty of performing an activity (e.g., preparing meals, daily shopping) on a scale similar to that used for ADL (range: 0-21). Cronbach's alpha coefficients were 0.87 in the CALAS and 0.96 in the IMAS. Mobility difficulties (Rosow and Breslau, 1966; Nagi, 1976) referred to seven relatively strenuous activities such as pushing a heavy object. Each was rated from “without difficulty” (1) to “cannot perform” (4), and the score summed up the ratings for each activity (range: 0-28). Difficulty manipulating stairs was measured by the 4th item of the difficulties in mobility scale (Rosow and Breslau, 1966; Nagi, 1976), on which participants rated the perceived difficulty of climbing 10 steps without resting (1 = without difficulty to 4 = cannot perform). Bedbound status was measured by asking participants whether they stayed in bed all or most of the time due to a medical situation or any other situation. Using assistive devices for walking: the respondents were asked whether they used a wheelchair, walker, or a cane (never, sometimes or always). Cognitive difficulties were measured by the Orientation-Memory-Concentration Test (OMCT) (Katzman et al., 1983). Seven items tested basic cognitive functions such as counting backwards. Errors were multiplied by prefixed weights and added up (range: 0-28; normal range = NR: 0-8; Blumstein et al., 2008). Alpha coefficients were 0.73 and 0.72 in the CALAS and IMAS, respectively. Hearing was measured by four questions targeting the frequency of experiencing difficulties talking on the phone,

difficulties understanding or following conversations between a number of people, complaints from others about turning the volume of the radio or television up too high, and difficulties hearing conversations in a non-quiet environment (1 = never to 3 = nearly always). Vision was measured by asking participants to describe their vision (1 = sees without difficulty to 3 = sees with great difficulty or not at all).

Environment—Having stairs and/or an elevator – The respondents were asked if they could enter their home without climbing any stairs and whether their building had an elevator.

Mental health—Depressed affect was measured by the Center for Epidemiological Studies Depression Scale (CESD; Radloff, 1977). Respondents rated the frequency of experiencing 20 different depressive symptoms in the past month on a scale from 0 (not at all) to 3 (almost every day). The score was the respondents' mean rating after reversing four positive items (range: 0-3; NR = 0-0.8). Alpha coefficients were 0.88 and 0.87 in the CALAS and IMAS, respectively. Item 10 was removed from the analysis and was treated as a separate variable measuring loneliness. Loneliness was measured by asking whether the respondent had felt lonely in the last month (0 = no to 3 = almost every day).

Traumatic events—Number of traumatic events was recorded. Participants were asked whether they had experienced any traumatic events which influenced their lives (range 0-3).

3. Results

3.1. The prevalence of older homebound persons in each cohort and a comparison of the two cohorts

In the first cohort 19.5% of participants were homebound, defined as going out of the house once a week or less, whereas in the more recent cohort the percentage was 17.7%. The difference between the cohorts was not significant.

3.2. The characteristics of homebound older persons and a comparison to their non-homebound counterparts

The comparison of homebound participants to non-homebound participants on background, health, and functional variables is presented in Table 1 for both cohorts. Homebound participants were significantly older, more likely to be female, unmarried (in CALAS), had more children (both alive and deceased, though the former only reached significance in the CALAS), less education, and less income than their counterparts. Homebound status was not affected by trauma. Regarding health, the homebound had a significantly larger number of medications, more comorbidity, and reported worse current subjective health than non-homebound participants. The BMI of homebound persons was significantly more likely to indicate underweight or obesity in comparison to their counterparts.

Functionally, the homebound were significantly more impaired in cognitive function, ADL, IADL, mobility, hearing, and vision. Less than half of the homebound participants were bedbound. The majority of homebound who were not bedbound used a wheelchair, walker, cane, or several of these concurrently. Over 90% of the home-bound participants in both samples reported difficulty manipulating stairs (Table 1).

Regarding the environment (Table 1), only 5.7% of homebound participants in the early CALAS cohort had an elevator, contrasting with 10.8% in the later cohort. Non-homebound participants were twice as likely to have elevators compared with homebound participants in both cohorts.

Homebound persons were more depressed than the non-homebound, and significantly lonelier in the CALAS cohort. In the IMAS cohort, the difference in loneliness, although in the same direction, did not reach significance. The level of loneliness among the homebound was similar across cohorts.

3.3. Factors predicting homebound status in cross-sectional and longitudinal data

The results of the cross-sectional logistic regressions show that low functional status on IADL and having stairs and no elevator, were significantly associated with being homebound in both cohorts (Table 2). In the CALAS, old age, female gender, being obese or underweight, low functional ADL status, and having depressed affect, were additional significant predictors of being homebound.

Due to colinearity among the health variables, only comorbidity and BMI were included as health variables in the longitudinal logistic regression analysis (Table 2). The most important independent predictors of being homebound at wave 2 are homebound status (at wave 1), old age, female gender, more comorbidity, having underweight BMI, and poor IADL functional status at wave 1.

4. Discussion

Previous surveys in many countries estimate housebound rates among persons over 65 range from 10%-30% (Ganguli et al., 1996; Fujita et al., 2006; Zeltzer and Kohn, 2006). In order to determine the prevalence in Israel we defined homebound as going out of the house once a week or less and pooled data from two population surveys. We found that a substantial proportion of the old-old, between 17.7%-19.5% of self-respondent participants aged 75-94, are homebound. This finding is worrisome considering homebound status was found to be indicative of low levels of mental health (Cohen-Mansfield et al., in press).

Comparing housebound to non-housebound in the pooled samples, we found the following differences: Demographically, homebound participants tended to be female, older, unmarried (in CALAS), and with less income than the non-homebound. Their scores showed significantly poorer health and lower functional status on all measures. After multiple variable adjustments, old age, female gender, and poor function remained independent predictors of homebound status. Findings mirror similar results from other studies on older persons (Farquhar et al., 1993; Lindesay and Thompson, 1993; Ganguli et al., 1996; Inoue and Matsumoto, 2001; Fujita et al., 2006) and are in line with previous findings linking the development of frailty to life space constriction (Xue et al., 2008). Xue et al. (2008) theorized that life space constriction is an adaptive response to a decline in physiologic reserve and capacity to meet environmental challenges. Our cross-sectional and longitudinal regressions found functional and background variables significantly predict homebound status, and suggest that economic, and socio-demographic resources, play a role in determining homebound status. Indeed, in the current sample, as in many others of older persons, female gender correlated with lower education and lower income (unpublished data). Obesity had been previously shown to predict homebound status (Jensen et al., 2006), and to be associated with poor functional performance in severely obese homebound older persons (Sharkey et al., 2006). Our findings suggest that in addition to obesity, low body weight may also be a risk factor for being homebound.

The older person's environment plays a major role in determining homebound status. Homebound persons in our study were more likely to have stairs and no elevator than persons who went out more often. This finding is of particular significance in the Israeli context as most of the population lives in multi-floor apartment houses. Previous findings show older persons who require assistance were willing to engage in more activities than

they had the environmental support to do (Lilja and Borell, 1997), and points to the functional benefits of improving older persons' home environment (Wahl et al., 2009). In line with that, the aforementioned finding supports the contention that type of housing and accessibility affect homebound status (Lindesay and Thompson, 1993), thus revealing an environmental barrier to going out in face of mobility problems. Furthermore, it may also reflect an economic barrier; while in both samples persons with lower income were less likely to live in a building with an elevator, the difference was not significant in the CALAS and only approached significance in the IMAS. Social isolation is another important factor related to homebound status and its outcomes. Specifically, limited social contact was previously found predictive of homebound status in community dwelling older persons (Watanabe et al., 2007), while social isolation from family and friends and the frequency of social interaction were found to be significant predictors of mortality in older persons (Blazer, 1982; Seeman et al., 1987). Specifically, Seeman et al. (1987) reported that greater social isolation significantly predicted increased 17-year mortality risk for older persons aged 70 and older, after adjusting for background variables and baseline health status. Taken together, these findings underscore the consideration of environmental needs of the homebound older person and their social implications. Regarding trauma, considering that Israel is populated by refugees from prosecution and Holocaust as well the country's war history, one may expect later life function to be affected by traumatic life events. Alternatively, the Israeli context may serve to increase trauma resilience in the population, as exhibited among those who survived to the age of 75. Our finding of homebound status not being affected by trauma suggests that a delicate balance exists between increased vulnerability and increased resilience, on a group level. The latter finding may further indicate that regarding trauma, the effect of proximal and current life circumstances, i.e., in old age, overshadows that of distal life events.

A unique feature of the database is the availability of national random samples of two cohorts. The two cohorts, assessed within a span of years, yielded very similar results, especially in the bivariate analyses, thus providing corroborating evidence to the findings and suggesting a bona fide subpopulation of older adults needing attention and targeted health care services. The prevalence of homebound status was similar across cohorts, and the difference was not statistically significant. The results do show a lower prevalence rate by 1.8% in the more recent sample, yet the sample size was insufficient to examine whether this effect size is significant (a sample of about 5,800 per group would be needed to detect this difference with a power of 0.8).

As findings show homebound status is a prevalent problem with significant detrimental outcomes (Cohen-Mansfield et al., in press), they have important implications for preventing the homebound status and mitigating its impact. Regarding the former, programs that affect mobility through rehabilitation, physical activity, technological aids, and environmental modifications should be used to decrease the rates of the phenomenon. Regarding the latter, programs that address the social, medical, and functional needs of persons in their homes need to both be expanded and made affordable. Larger longitudinal studies with detailed evaluation of medical status, function, mental health, environment, and homebound status are needed to tease out the complex relationships that affect homebound status.

A cross national comparison with previous studies reveals different strategies generated for the care of homebound older persons; e.g., in the USA, care for the homebound via implementation of models of multi-disciplinary care yielded successful outcomes (Farquhar et al., 1993; Inoue and Matsumoto, 2001). Alternatively, In Israel, the care needs of the older population are currently tackled by a multitude of approaches. These include care services that operate across social, medical and functional domains. Social initiatives include friendly visits of volunteers from the National Insurance Institute and other volunteers such as those

performing national service and high school students in programs of social engagement. Also, Internet sites promoting socialization, such as 'motke' (<http://www.motke.co.il/>), and other technologies such as Short Message Service (SMS) could be used for regular daily contact. Medical needs can be addressed via physician home visits, as documented by Vinker et al.'s (2000) experiences, but those are costly and therefore potentially out of reach for a significant portion of this population with very low financial resources. Additionally, the use of telemedicine is expected to increase. In terms of functional needs, support in the form of a limited number of nursing hours is provided through the National Insurance Institute and is available at no cost to those with ADL limitations. Others employ labor migrants as care-givers who reside with the care-receiver (Iecovich, 2009). Also, to a minor extent, the Ministry of Construction and Housing provides some indoor adaptations for the homebound targeting functional obstacles. In addition, various voluntary organizations provide meals to persons' homes. However, the extent to which all of these services address the needs of the homebound, often financially limited, population that requires them is yet to be determined. Further research is needed to establish whether current strategies are effective in improving health care delivery, quality of life, health outcomes, and mortality rates in older persons.

One limitation of the study involves the definition of 'homebound' used, as it did not examine differences in distances and destinations travelled (if at all) by the homebound older person. Future studies focusing on spatial mobility may benefit from assessing the actual space accessible to the individuals involved (e.g., via applying the Life Space Questionnaire; Stalvey et al., 1999). Also, much of the older population studied immigrated from various origins and holds a multitude of distinct and shared cultural characteristics unique to the Israeli society, which may limit current external validity.

5. Conclusions

The study shows homebound status is a prevalent problem in old-old Israelis. Economic and socio-demographic resources, environment, and function play a role in determining the older person's homebound status. The results portray a similar profile of the homebound older person in terms of characteristics, functional capacity, and health to that emerging from studies of homebound elders in United States (Ganguli et al., 1996), UK (Lindesay and Thompson, 1993), and Japan (Inoue and Matsumoto, 2001; Fujita et al., 2006), in both urban and rural areas. Future research may further explore the meaning of 'home' and 'homebound' for older persons and its effects on behavior.

Acknowledgments

This work was supported by the U.S. National Institute on Aging [grant numbers R01-5885-03, R01-5885-06 to the Department of Clinical Epidemiology at the Chaim Sheba Medical Center]; and the Israel National Institute for Health Policy [grant number A/2/1998]. Funding sources had no role in study design; in subject recruitment; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the paper for publication.

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Table 1

Comparison of the variables between the two cohorts (CALAS and IMAS) and of HB vs. NHB persons in the two cohort, $n(\%)$ or mean $\pm$ S.D.

Parameters	CALAS	IMAS	Comparison		CALAS		Comparison		IMAS		Comparison	
			t or χ^2		HB	NHB	t or χ^2		HB	NHB	t or χ^2	
$n(\%)$	1191	418				234(19.5)				74(17.7)		344(81.7)
Demography												
Age	83.1 $\pm$ 5.32	83.09 $\pm$ 5.13	$t = 0.049$		85.05 $\pm$ 5.23	82.62 $\pm$ 5.23	$t = 6.37^c$		85.50 $\pm$ 5.47	82.57 $\pm$ 5.03	$t = 4.48^c$	
Women	533(44.8)	181(49.3)	$\chi^2 = 0.26$		68	39	$\chi^2 = 63.38^c$		62	38	$\chi^2 = 19.23^c$	
Place of birth							$\chi^2 = 7.70^a$				$t = 1.66^a$	
Israel	366(30.2)	133(31.8)	$\chi^2 = 0.65$		32	30			31	32		
Europe	441(37.0)	146(34.9)			29.5	39			30	36		
East	390(32.7)	139(33.3)			38.5	31			39	32		
Married	554(46.6)	207(49.5)	$\chi^2 = 1.04$		27.5	51	$\chi^2 = 42.78^c$		43	51	$\chi^2 = 1.42$	
Had children	1093(92)	398(95.2)	$\chi^2 = 4.80^a$		94	91.5	$\chi^2 = 1.61$		96	95	$\chi^2 = 0.11$	
No. of children												
alive	3.35 $\pm$ 2.56	3.39 $\pm$ 2.15	$t = 0.26$		3.93 $\pm$ 2.81	3.2 $\pm$ 2.48	$t = 3.58^c$		3.70 $\pm$ 2.46	3.32 $\pm$ 2.08	$t = 1.18$	
dead	0.55 $\pm$ 1.29	0.29 $\pm$ 0.78	$t = 4.47^c$		0.71 $\pm$ 1.44	0.51 $\pm$ 1.25	$t = 1.99^a$		0.53 $\pm$ 1.15	0.24 $\pm$ 0.66	$t = 2.02^a$	
Education	2.24 $\pm$ 1.04	2.64 $\pm$ 1.05	$t = 6.52^c$		6.29 $\pm$ 5.21	7.94 $\pm$ 5.53	$t = 3.99^c$		7.67 $\pm$ 5.47	9.72 $\pm$ 5.04	$t = 2.88^c$	
Financial status												
Additional income	671(58.4)	308(76.0)	$\chi^2 = 40.02^c$		52	60	$\chi^2 = 4.72^a$		57	80	$\chi^2 = 17.55^b$	
Traumatic events												
No. of events	0.67 $\pm$ 0.84	0.47 $\pm$ 0.74	$t = 4.54^c$		0.75 $\pm$ 0.89	0.65 $\pm$ 0.83	$t = 1.51$		0.49 $\pm$ 0.75	0.46 $\pm$ 0.74	$t = 0.26$	
Health												
Subjective health	1.99 $\pm$ 0.85	2.24 $\pm$ 0.70	$t = 5.81^c$		1.68 $\pm$ 0.81	2.06 $\pm$ 0.84	$t = 6.27^c$		1.75 $\pm$ 0.61	2.34 $\pm$ 0.67	$t = 6.65^c$	
Medications	2.98 $\pm$ 2.26	4.16 $\pm$ 2.68	$t = 8.03^c$		3.60 $\pm$ 2.37	2.83 $\pm$ 2.21	$t = 4.74^c$		5.32 $\pm$ 2.64	3.90 $\pm$ 2.63	$t = 4.21^c$	
Comorbidity	2.63 $\pm$ 2.09	3.44 $\pm$ 2.49	$t = 5.93^c$		3.40 $\pm$ 2.41	2.45 $\pm$ 1.96	$t = 5.45^c$		4.67 $\pm$ 2.99	3.17 $\pm$ 2.29	$t = 4.78^c$	
BMI (1–4)			$\chi^2 = 2.98$				$\chi^2 = 29.913^c$				$\chi^2 = 13.438^b$	
To 22	188(18.4)	62(17.1)			26.2	17			29.1	14.9		

Parameters	CALAS	IMAS	Comparison		CALAS	Comparison		IMAS	Comparison	
			t or χ^2			HB	NHB		HB	NHB
22–25	291(28.4)	114(31.4)			18.9	30.2	30.5		36.4	30.5
25–30	402(39.3)	147(40.5)			31.1	40.9	44.2		20	44.2
30+	143(14.3)	40(11.0)			23.8	11.9	10.4		14.5	10.4
Function										
Cognitive function ^d	8.69 ± 7.70	8.63 ± 7.43	$t = 0.14$		11.57 ± 7.87	7.98 ± 7.58		11.48 ± 7.68	8.02 ± 7.24	$t = 3.61^c$
ADL ^d	1.32 ± 3.11	2.15 ± 4.14	$t = 3.75^c$		3.98 ± 4.76	0.67 ± 2.09		5.96 ± 5.58	1.33 ± 3.23	$t = 6.89^c$
IADL ^d	4.42 ± 5.73	6.55 ± 7.50	$t = 5.28^c$		10.13 ± 6.33	3.15 ± 4.73		14.96 ± 6.77	4.74 ± 6.34	$t = 12.43^c$
Hearing ^d	1.68 ± 0.79	1.72 ± 0.74	$t = 0.91$		1.76 ± 0.80	1.65 ± 0.79		1.90 ± 0.73	1.68 ± 0.73	$t = 2.38^a$
Vision ^d	1.65 ± 0.72	1.70 ± 0.76	$t = 1.13$		1.98 ± 0.74	1.57 ± 0.69		2.11 ± 0.81	1.61 ± 0.72	$t = 5.27^c$
Mobility										
Bedbound	168(14.1)	68(16.3)	$\chi^2 = 1.96$		33	9.5	10		47	$\chi^2 = 63.6^c$
Wheelchair	23(1.9)	17(4.1)	$\chi^2 = 6.21^b$		5	1	2		15	$\chi^2 = 63^c$
Walker	61(5.1)	41(9.8)	$\chi^2 = 11.54^c$		17	2	5		32	$\chi^2 = 73^c$
Cane	276(23.2)	98(23.5)	$\chi^2 = 0.016$		36	20	20		39	$\chi^2 = 54.5^c$
No difficulty with stairs	449(37.7)	165(39.5)	$\chi^2 = 0.425$		9	45.2	46.5		9.5	$\chi^2 = 34.7^c$
Difficulty in mobility	13.32 ± 5.64	14.36 ± 6.20	$t = 3.02^b$		18.94 ± 5.35	11.94 ± 4.80		20.59 ± 5.09	1301 ± 5.57	$t = 11.42^c$
Mental health										
Depressed affect	0.75 ± 0.44	0.73 ± 0.46	$t = 0.746$		0.98 ± 0.51	0.70 ± 0.40		1.01 ± 0.53	0.67 ± 0.42	$t = 5.00^c$
Loneliness	0.66 ± 0.96	0.76 ± 1.05	$t = 1.57$		0.98 ± 1.11	0.58 ± 0.91		0.91 ± 1.08	0.72 ± 1.05	$t = 1.37$
Environment										
Stairs (and no elevator)	71.1	59.4	$\chi^2 = 20.86^c$		80.5	68.8	57		70.3	$\chi^2 = 4.65^a$
Elevator										
(with or without stairs)	10.5	24.9	$\chi^2 = 52.45^c$		5.7	11.6	20.9		10.8	$\chi^2 = 4.79^a$

Notes: HB = homebound; NHB = non-homebound.

^a $p < 0.05$.

^b $p < 0.01$.

^c $p < 0.001$.
^d Difficulties.

Table 2

Logistic regression results predicting homebound status cross-sectionally in the two cohorts (CALAS and IMAS) and longitudinally at wave 2 of the CALAS.

Number	Cross-sectional				Longitudinal			
	CALAS				CALAS Wave II			
	B	SE	B	Exp(b)	B	SE	B	Exp(b)
Independent variables								
Homebound status at wave 1					1.232	0.356		3.429 ^b
Demography								
Age	0.081	0.024	1.085 ^b		0.075	0.051	1.078	1.058 ^a
Gender (male vs. female)	-1.319	0.299	0.267 ^c		-0.921	0.545	0.398	0.342 ^b
Marital status								
Married vs. single	-0.110	0.289	0.896		0.690	0.565	1.994	0.557 0.323 1.746
Education	-0.003	0.025	0.997		-0.042	0.052	0.959	-0.051 0.029 0.950
Financial status	0.128	0.253	1.137		-0.665	0.513	0.514	-0.071 0.282 0.931
Having children (vs. no)	0.910	0.503	2.485		2.078	1.403	7.990	0.286 0.553 1.331
Health								
Comorbidity	-0.29	0.058	0.971		0.026	0.098	1.026	-0.168 0.074 0.846 ^a
Underweight	0.692	0.286	1.997 ^a		0.129	0.575	1.138	0.848 0.338 2.334 ^a
(1=BMI<22, 0=else)								
Obese	0.653	0.327	1.992 ^a		0.379	0.737	1.460	0.616 0.356 1.852 ^e
(1=BMI>30, 0=else)								
Function								
ADL ^d	0.121	0.060	1.129 ^a		0.107	0.067	1.113	0.097 0.105 1.102
IADL ^d	0.153	0.026	1.166 ^c		0.180	0.043	1.197 ^c	0.088 0.036 1.091 ^a
Cognitive function ^d	-0.039	0.020	0.964 ^e		-0.052	0.042	0.949	-0.025 0.024 0.975
Traumatic events								
Number of events	-0.192	0.147	0.825		0.153	0.290	1.166	0.010 0.169 1.010
Mental health								

Notes: Predictors of homebound status at wave 2 were assessed at wave 1.

 $e_{0.1>p>0.05}.$