Ageing & Society **24**, 2004, 921–939. © 2004 Cambridge University Press
DOI: 10.1017/S0144686X04002491 Printed in the United Kingdom

Social networks, ethnicity and public home-care utilisation

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ABSTRACT
This article examines the relationships between support networks, ethnicity and the utilisation of formal care services, taking into account background characteristics and functional health status among 3,403 older people in Israel. Data were drawn from a national survey in 1997 of people aged 60 or more years. The outcome variable was the use of publicly-financed personal care or home-making services. About 15 per cent of the study population made use of such home care. Six informal support network constellations were identified by applying cluster analysis to key criterion variables that reflect the inter-personal milieu. The resultant network types were: community-clan, family-focused, diverse, friend-focused, neighbour-focused, and restricted networks. Binary logistic regression revealed that the use of formal home-care services was significantly associated with a respondent's age, gender, functional level and informal support network type (Nagelkerke $R^2 = 0.39$). No association was found between home-care utilisation and a respondent's ethnicity (Arab, Jew, and new Russian immigrant), income or education. The results show that publicly-financed formal care services were utilised more frequently by older-old persons, women, functionally impaired individuals and people embedded in the neighbour-focused and restricted networks (and to a lesser degree, in the diverse and friend-focused networks). Neighbour-focused and restricted network types were characterised by fewer informal support resources at their disposal than the other types. Thus, formal home care was sought more often in cases in which the informal sources of support had less capacity to provide ongoing informal care.

KEY WORDS – Arabs, ethnicity, Jews, Israel, immigrants, home-care, social network.

Introduction

As populations age and the proportion of people with impaired abilities in the tasks of daily living expands, the provision of care to dependent elderly people at home becomes an increasingly important social-policy issue.

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Despite the rise of welfare-state services in many western societies, 'most care given to frail older people is still provided by their families' (Twigg and Grand 1998: 142). Nonetheless, a growing minority of functionally-disabled elders turns to formal home-care services to meet their day-to-day needs. What accounts for the utilisation of formal home care among older people, and how do formal care recipients differ from their non-recipient counterparts? The present study addresses these questions through the lens of Andersen's behavioural model of health-care utilisation (Andersen 1995). The model posits three classes of variables as predictors of entry into health-related services: predisposing characteristics, enabling characteristics, and perceived need. In addition, the current analysis addresses ethnicity as another potentially important influence on formal home-care utilisation. This is because notions of filial obligation vary across cultures and ethnic groups. Accordingly, the willingness of family members to utilise formal services in the care of dependent elders may vary.

The study examines the primary factors associated with the utilisation of publicly-financed home care among older adults in Israel. The ethnically and socially diverse structure of Israeli society provides a particularly appropriate setting in which to explore this topic. The inquiry is based upon a secondary analysis of data from a national survey of people aged 60 or more years. It compares the outcome of interest among the three major older population groups in Israel: Arab-Israelis, veteran Jewish Israelis and new immigrants from the former Soviet Union.

Literature review

Andersen's (1995) behavioural model of health-care utilisation posits three classes of variables as predictors of entry into health-related services: (a) predisposing characteristics, *i.e.* socio-demographic and other background characteristics; (b) enabling characteristics, or the logistical aspects of obtaining care; and (c) perceived need, the degree to which a situation is viewed as intolerable and yet amenable to assistance. The following literature focuses on the studies that have examined the influence of these variables and of ethnicity on home-care utilisation.

Predisposing characteristics

Studies in several countries have underscored the positive correlation between a care-recipient's age and his or her use of home-care services. The frequency of utilisation of formal home-care has been generally found to rise with age (Branch *et al.* 1981; Chappel 1992; Frederiks *et al.* 1992; Stoddart

et al. 2002; White-Means 1997). Research findings also point to the greater utilisation by women than men (Frederiks *et al.* 1992; Hanley and Weiner 1991; Kempen and Suurmeijer 1991). Drawing upon American panel data, Mutchler and Bullers (1994) considered the association of gender and marital state on formal care utilisation and found that married older women were more likely than married older men to receive formal home care. However, a similar gender difference was not evident among the unmarried.

On the other hand, the relationship between income and formal home-care utilisation is not as clear cut. Several investigators have demonstrated that low-income older people are the most likely to use formal home care (Evashwik *et al.* 1984; Grabbe *et al.* 1995; Pawlson 1989), although Branch and associates (1981) reported the reverse, that is, a significant positive association between income and formal home-care use, and Soldo (1985) found no relationship whatsoever with income. The inconsistent findings may stem from the confounding influences of other variables, such as service availability, accessibility and eligibility. Income-based eligibility for formal home care might encourage greater use among older persons with low incomes. At the same time, a limited availability of formal care services might result in low utilisation among the very people who lack the financial resources necessary to overcome the barriers to accessibility.

Educational level, by contrast, shows a more consistent influence. Using data from the United States *National Long Term Health Care Survey* on home health-service use, White-Means (1997) found that increased education increased the use of formal home-help. In a study of 2,000 community-dwelling older people in a British city, the age on leaving full-time education positively associated with the use of private home-care services, but not that of public-sector (statutory) care (Stoddart *et al.* 2002).

Enabling characteristics

Studies of the logistical aspects of obtaining care generally focus upon factors in the social environment of the care recipients. As Grand and colleagues (1995: 56) maintained, 'The entourage is … vital for understanding what happens when disability occurs'. The major social construct addressed in this regard is the informal social support network in which elderly care recipients are embedded. The literature shows that the social support network can influence the practice of seeking formal help in several different ways. Gourash (1978) pointed out that networks may encourage or discourage seeking formal help, through the attitudes and the values they transmit to their members. They may also encourage the utilisation of

formal assistance by advocating on behalf of their members and by actively seeking care services for them. On the other hand, support networks may prevent their members from utilising formal assistance by providing services themselves. Finally, networks may obviate the need for services, by buffering the kinds of stress that create the sense of need in the first place.

In a study of home-care clients in Holland, Kempen and Suurmeijer (1991) considered the effect on home-care utilisation of such network factors as size, composition, travel time and the number of informal carers. They found no significant differences between elderly home-care clients and a matched sample of non-users on the first three of the network variables. Non-users of formal home-care services, however, were found to receive more assistance from informal carers than the users. Frederiks and colleagues (1992) also found that recipients of professional home-care were characterised by the receipt of less informal care. Soldo's (1985) study of dependent older people in the United States revealed that the absence of informal support was, indeed, a strong predictor of the receipt of in-home services. In a study of elderly patients discharged from acute hospital care, Solomon and others (1993) identified less accessible social support as one of four independent predictors of home health-care use. Other studies have found, however, no relationship between informal support and the extent of formal home-care utilisation (McAuley and Arling 1984; Stoddart *et al.* 2002; Wan and Odell 1981).

Hanley and Weiner (1991) counselled against the use of measures of informal care – such as the number of informal helpers – as explanatory variables for predicting formal care. In their opinion, network factors not endogenously determined within a specific helping context, such as marital status and the number of children, are better measures of a social network's influence on a person's utilisation of formal home-care. Accordingly, they found that unmarried respondents, and those with fewer sons and daughters, were more likely to receive home-care services (Hanley and Weiner 1991). This, however, is not meant to imply that having formal home-care is a substitute for informal care provided by the family (Hanley, Wiener and Harris 1991).

Wilcox and Taber (1991) found that most respondents among a sample of 100 clients in a public home-care programme in Illinois also had some informal help, but only 18 per cent were married, and only about one-half had more than one informal helper. Moreover, only a few of the clients had a co-residing informal helper, and for several clients informal help was received exclusively from non-kin helpers. Thus, the recipients of formal home-care in that particular study seemed to have fragile social networks.

Perceived need

The third category in Andersen's model, perceived need, is usually a strong predictor of service utilisation (Ozawa and Morrow-Howell 1992; Yeatts, Crow and Folts 1992). A major need indicator that is frequently employed in the study of service utilisation is the care recipient's physical impairment or functional disability. Most relevant findings confirm that people with greater disability make greater use of home-care services (Chappell 1992; Hanley and Weiner 1991; Solomon *et al.* 1993; White-Means 1997). Using data from the 1986 United States *National Mortality Followback Survey*, Grabbe and colleagues (1995) examined the relationship between functional status and receipt of formal home-care during the last year of life, and demonstrated that people with moderate and severe physical impairment were indeed the most likely to use formal home-care.

Ethnicity

As noted above, the current analysis has considered the role of ethnicity in predicting home-care utilisation. Few previous studies have examined variation by ethnicity, and their findings have been inconsistent. McCormick and colleagues (2002) found, for example, that if disabled by dementia, Caucasian-Americans would use paid home health care at higher rates than Japanese-Americans. In a study based on data from the 1987 United States *National Medical Expenditure Survey*, Wallace and colleagues (1998) found that older African-Americans were less likely to use nursing homes than whites in similar circumstances. Moreover, the lower rate of institutionalisation among the African-Americans in their analysis was compensated by greater use of paid home-care, informal care only, and no care. A study of elderly Jews in Jerusalem found that older Ultra-Orthodox Jews made greater use of home-care than both their secular and their traditionally-observant Jewish counterparts (Auslander and Litwin 1988). These and other findings suggest that enduring effects of ethnicity could be the result of culture, class, and/or discrimination that limits equitable access to services (Wallace *et al.* 1998).

On the other hand, Peng, Navaie-Waliser and Feldman (2003) found similar levels of skilled-service utilisation across four racial and ethnic groups in the United States, despite their different needs for mental health and supportive services at discharge. Their study was drawn from the *Outcomes Assessment Information Set* for over 7,000 home-care recipients aged 75 or more years. Other inquiries have pointed to a levelling effect, by which ethnic differences in levels of informal care-giving to people with low care needs give way to more uniform levels of care provision

as disability increases (Rosenthal 1986). This dynamic may underlie the observations of no ethnic differences in the receipt of formal home-care, which is usually provided for people with high levels of disability.

Home-care in Israel

Since 1988, according to the guidelines of the *Long Term Care Insurance Law*, Israeli citizens insured through the *National Insurance Institute* have been eligible for up to 18 hours a week of home-care assistance. Targeted at meeting the needs of severely impaired people, most of them elderly, this particular public insurance benefit is granted to those with a relatively high ADL disability score and less than two-and-a-half times the median income (Morganstin, Baich-Moray and Zipkin 1992). People in need have also been able to apply for other discretionary home-care benefits that are provided through various public welfare bureaus, sick funds and other agencies. Thus, there are several options for the receipt of publicly-financed home-care assistance.

A brief look at the study population reveals that almost three-quarters of the older veteran Jewish population in Israel immigrated before the State was established or shortly thereafter. About 70 per cent came from Europe, America or Oceania, and 30 per cent were born in Asia or Africa. Some 11 per cent of Israeli Jews aged 65 and more years today were born in the area that constitutes the State of Israel (Brodsky, Shnoor and Be'er 2003). Arab-Israelis account for some six per cent of people aged 65 or more years: about two-thirds are Muslim, a quarter is Christian and one-tenth belong to the Druze sect. Moreover, Arab-Israelis tend to reside in ethnically-distinct towns and villages and generally uphold strong norms of filial obligation, although modernisation processes have weakened this traditional norm (Litwin and Zoabi 2003). Older immigrants from the former Soviet Union who have arrived since the mass exit of Jews began in 1990 currently account for about 20 per cent of Israel's older population. They arrived in Israel having a more Soviet-oriented outlook than those who migrated in earlier decades. Moreover, many emigrated in order not to be left behind in the Soviet Union, after the younger members of their family had left for Israel (Litwin 1995).

In summary, the association of background characteristics, social network factors, disability measures and ethnicity with the utilisation of formal home-care services by older people has been variously reported in previous studies. The following analysis addressed this area of inquiry among the culturally diverse population of older people in the State of Israel, and has particularly examined whether there are independent ethnic and social network influences on the use of home-care services,

above and beyond the effects of socio-demographic attributes and functional health characteristics.

Methodology

Data source and sample

The analysis has drawn on data from a national survey of Israelis aged 60 or more years carried out by the *Central Bureau of Statistics* in 1997. The sample for analysis comprised the three principal elements of the older Israeli population: (1) Arab citizens of the State of Israel, (2) post-1990 immigrants from the former Soviet Union, and (3) the majority veteran Jewish population that was born in the area or immigrated before 1990. The national survey sampled community-dwelling household units in all towns and cities with at least 2,000 inhabitants, and interviewed all persons aged 60 or more years in each sampled household. To guarantee independent observations among the subjects in the present analysis, one respondent was randomly selected from each household. The resulting sample included 609 Arabs (Muslims, Christians and Druze), 751 new Russian immigrants (almost all of them Jews), and 2,043 veteran Jews. The total study population thus numbered 3,403 respondents.

The three subgroups were largely indistinguishable in terms of age and gender. The median age category in each group was 70–74 years, and as for gender, the Arab and the veteran Jewish sub-samples included a slightly greater proportion of men (53.4% and 51.8% respectively) than the Russian immigrant group (48.9%). These small differences were not statistically significant. Meaningful differences, on the other hand, were evident in the respondents' incomes and educational levels. The median income levels of elderly Arabs and Russian immigrants were similarly low, while that for the veteran Jews fell between low and moderate. Moreover, educational level differed significantly across all three groups. The median category among elderly Arabs was 'no schooling at all'; among veteran Jews it was '9–12 years'; and among Russian immigrants it was '13–15 years' of school.

Study variables

The outcome variable of interest in the present inquiry was a measure of formal home-care utilisation. It was operationalised as the receipt of publicly-funded home-care, and was derived from a series of questions in the survey instrument. Respondents were first asked whether they had a personal-care aide who assisted them with bathing, dressing, eating, and

ambulating outside the house. They were subsequently asked whether the personal-care aide was funded to any extent by a public authority. Later questions queried whether the respondent was in receipt of assistance for household tasks and whether the housekeeper was funded in whole or part by a public authority. The outcome measure applied in the present analysis was a simple dichotomous indicator of whether or not formal social care was received. Respondents who answered positively to either of the two probes, that is, received publicly-financed personal care and/or housekeeping assistance, were scored '1'. Those who did not receive either of these public assistance services were scored '0'.

The background characteristics included gender, age, income and educational level. Gender was indicated as a simple nominal variable, and three age groups were used (60–69, 70–79, and 80 and more years). Income level, originally collected by nine categories, was recoded into 'lowest' (up to about US $4,000 per year in Israeli Shekels), and 'low to high' (over US $4,000 per year). Educational level was coded to reflect three schooling levels: (1) primary education or less, (2) secondary education, and (3) more than secondary education.

The enabling characteristics were examined in terms of the respondents' social network types. These were derived through application of *K*-means cluster analysis to selected criterion variables, a procedure that has been explicated elsewhere (Litwin 2001). Cluster centres were initially assigned for each criterion variable and then iteratively updated until optimal groups were achieved. The seven criterion variables employed in the clustering procedure reflect the principal attributes of the social networks of older people (Berkman and Syme 1979; Lubben 1988; Wenger 1991). They included: (1) marital status, (2) the number of adult-children residing in close proximity, (3) frequency of contact with children, (4) frequency of contact with friends, (5) frequency of contact with neighbours, (6) frequency of attending a place of worship – synagogue, mosque or church, and (7) frequency of attending a social club.

Previous analyses of network types among the majority Jewish elderly cohort in Israel uncovered five distinct network structures which were labelled: (1) diverse, (2) friend-focused, (3) neighbour-focused, (4) family-focused and (5) restricted (Litwin 2001; 2003). The current analysis widened the field of inquiry to include the Israeli-Arabs and the new Russian immigrants. Despite the addition of these two culturally-distinct populations, the new analysis confirmed the presence of the previously identified five network types and identified a sixth, termed here the 'community-clan' network type. Selected characteristics of the six types are presented in Table 1. The 'community-clan' network had the most contacts and the widest range of potential support. The vast majority of

TABLE 1. *Characteristics of the network types by the criterion variables*

Network type	Married %	Proximate children[1] Mean	Contact with children[2] Mean	Contact with friends[1] Mean	Contact with neighbour[2] Mean	Attendance at place of worship[1] Mean	Attendance at senior club[1] Mean
Community-clan	74.8	7.14	3.68	4.27	4.19	2.14	0.36
Family-focused	53.6	5.79	3.36	0.59	1.66	1.64	0.26
Diverse	51.4	1.10	2.27	4.13	4.48	1.47	0.58
Restricted	48.0	1.17	2.16	0.34	0.13	1.19	0.23
Friend-focused	54.2	1.02	2.21	3.89	0.17	1.45	0.60
Neighbour-focused	44.9	1.18	2.22	0.56	4.37	1.32	0.32
Total	52.4	1.99	2.43	2.52	2.60	1.46	0.43

Notes: 1. Variables measured on a scale of 0–4. 2. Variables measured on a scale of 0–5.

older people in this constellation were Arabs, but 15 per cent were maintained by Jews. This network type reflects a traditional and cohesive micro-societal structure. In the second type of network, the older member maintains ties principally with other nuclear family members, and is termed 'family-focused'. These traditional family-centred social groups were almost equally maintained by Jews and by Arabs.

The third, 'diverse', network was a more modern network group endowed with diverse sources of support. About 60 per cent were maintained by veteran Jews, but a quarter were found among Russian immigrants, and another 15 per cent among elderly Arabs. The members of 'restricted' networks reported the most limited social contacts and potential support. Close to three-quarters of the 'restricted' networks were maintained by veteran Jews, and almost one-quarter by Russian immigrants. The 'restricted' network grouping was rare among Israeli-Arabs, who made up only four per cent of the older people in this type.

The 'friend-focused' network was relatively well-endowed with social contacts and support potential. The major differentiator of these networks was that they had no contacts with neighbours. As for ethnic composition, more than 70 per cent of these networks were maintained by veteran Jews, and one-quarter by Russian immigrants. Only three per cent of the people in this network constellation were Arabic. Finally, the elder members of the 'neighbour-focused' network were less endowed with social contacts than in any other network type. Their primary sources of support were those who lived nearby. Russian immigrants comprised about one-third of this grouping. Another 60 per cent was accounted for by the majority veteran Jewish population, and only some seven per cent by Israeli-Arabs.

The distribution of the network types reveals that the 'diverse' network was the most prevalent and accounted for about 30 per cent of the groups. The 'friend-focused' network and the 'restricted' network were also relatively prevalent, each accounting for about one-fifth of the networks. The 'neighbour-focused' network type was less prevalent (17%), while the 'community-clan' and 'family-focused' networks were the least common types, accounting respectively for nine and seven per cent of the networks.

The need variables in the current analysis were two functional health measures. Difficulties with performing the instrumental activities of daily living (IADL) were indicated on a five-item scale that reflected performance at three levels: able to perform the task with no difficulty whatsoever (0), able to perform the task but with difficulty (1), and unable to perform the task (2). Five activities were addressed: cooking, mopping the floor, doing laundry, shopping for food, and banking or posting a letter. The total score ranged from '0' to '10'; and the higher the score, the greater the difficulty ($\alpha = 0.89$). For the purposes of the present analysis, the scores for the instrumental activities of daily living (IADL) were divided into three equal groups: low, medium and high.

The respondents' level of performance of the basic ADL were also tapped on a scale from '0' to '10'; and the higher the score, the greater the difficulty. The five activities considered were: feeding oneself, bathing oneself, getting dressed, sitting in a chair and rising from it, and getting into and out of bed ($\alpha = 0.94$). For the purposes of the present analysis, the ADL score was divided into three groups: no difficulty whatsoever, little difficulty, and medium to high difficulty. Finally, ethnicity was represented by a nominal variable with three types: Israeli-Arabs, Russian immigrants and veteran Jews.

Analysis

The analysis began with an examination of the bivariate associations among the measures. The significance of these associations was considered by means of cross-tabulations, as befitted the level of measurement. Then a multivariate analysis was performed using binary logistic regression. Given the dichotomous nature of the outcome variable and its unequal distribution, this was the preferred statistical procedure. The reference value designated for each nominal variable entered into the regression procedure is indicated in parentheses in Table 3. The relevant statistics presented in the table include the *B* scores, that is, the unstandardised regression coefficients, and the odds ratio (OR), the relative probability of each variable category being associated with receipt of publicly-financed

home-care, as opposed to no receipt of such assistance. As ethnicity did not have a significant bivariate association with formal home-care utilisation, it was not entered in the regression.

Results

The frequency distribution of the outcome variable revealed that a minority (15.2 %) of the older Israeli population made use of publicly-financed home care, whether personal care assistance or housekeeping aid. The percentage is less than the proportion of older Israeli adults reported to be impaired or disabled (*c.* 18 %). Interestingly, the bivariate associations showed that the utilisation rate differed little by ethnic group. As may be seen in Table 2, Israeli-Arab elders apparently made slightly greater use than the Russian immigrants and the veteran Jewish elders, but the difference was not statistically significant. Thus, it seems that older people from each of the main population groups in Israel made similar use of publicly-financed home-care.

Differences in utilisation rates were evident, on the other hand, by the background variables. Table 2 reveals that women made significantly greater use of publicly-financed home-care than men. The lowest income group also had high utilisation, as did those with only primary education or less. Age differences were also evident, with the youngest group (60–69 years) making the least use, and the old-old group (80+ years) having the greatest utilisation. The bivariate associations between the network types and the utilisation of publicly-financed home-care are also shown in Table 2. The results confirm that the network type was significantly related to the outcome measure. People in the 'restricted', 'family-focused' and 'neighbour-focused' networks made greater than average use of publicly-financed home-care, while those in the 'community-clan', 'diverse' and 'friend-focused' networks made less than average use. Thus, at the bivariate level, the type of informal social network in which the respondents were embedded was a meaningful predictor of whether or not they made use of formal public aid.

Functional health levels also emerged as quite different as between users and non-users of publicly-financed home-care (Table 2). As would be expected, respondents with the highest levels of IADL disability made the greatest use, while those with low IADL scores made almost no use at all. Similarly, people with medium to high difficulty in performing the basic tasks of daily living (ADL) received much greater publicly-financed home-care than those with few ADL difficulties. They, in turn, made more use of public care than did respondents with no ADL disability at all.

TABLE 2. *Utilisation of publicly-financed home-care by ethnicity, personal characteristics, network type and functional health status*

Variable	Home care utilised			Variable	Home care utilised		
	N	%	χ^2		N	%	χ^2
Ethnic group				Network type			
Arabs	106	17.4		Community clan	33	11.2	
Ex-Russian[1]	105	14.0		Family-focused	56	22.4	
Jews	305	14.9	3.3	Diverse	115	11.5	
Gender				Restricted	146	22.8	
Men	192	11.0		Friend-focused	55	8.8	
Women	324	19.6	49.4**	Neighbour-focused	109	19.3	80.5**
Income				IADL			
Lowest	357	20.9		Low	25	2.0	
Low-high	149	9.4	82.7**	Medium	101	10.3	
Age group (years)				High	389	34.2	514.2**
60–69	57	4.3		ADL			
70–79	214	15.4		None	141	5.8	
80+	245	35.7	345.6**	Low	108	27.0	
Education				Medium-high	266	48.9	693.3**
Primary or less	347	19.8					
Secondary	88	10.1					
Above secondary	78	10.1	62.1**				

Notes: 1. Immigrants from the former Soviet Union countries since 1990. For definitions of variables and categories, see text. The chi-squared statistics refer to crosstabulations with numbers using and not using home-care. (I)ADL (Instrumental) activities of daily living.
Significance level: ** $p<0.001$.

To clarify the independent contribution of the study variables in relation to the outcome variable, multivariate analysis was required. Table 3 displays the results of the binary logistic regressions. It is shown that, when compared with a model with no independent variables, the reduction in log-likelihood in the model with covariates was statistically significant. Moreover, the Nagelkerke pseudo R^2 statistic indicates that the model accounted for about 39 per cent of the variance in the receipt of publicly-financed home care. The specific associations underscored in the regression analysis were as follows (Table 3).

Looking first at the background variables, it can be seen that only age and gender maintained an association with the receipt of publicly-financed home-care. Respondents in the 80-and-more-years age group were four times more likely to use public home-care assistance than the youngest age group, and those aged 70–79 years, were two-and-a-half times more likely (please note that the youngest age group is the reference category for each age comparison). Moreover, women had a greater likelihood of receiving publicly-financed care than men. In contrast, the income and educational variables did not differentiate users from non-users.

TABLE 3. *Variables associated with utilisation of publicly-financed home-care*

Variable	B	Odds ratio	Variable	B	Odds ratio
Age groups (years)			Network Type		
(60–69)			(Community clan)		
70–75	0.91**	2.48	Family-focused	0.48	1.62
80+	1.36**	4.03	Diverse	0.83*	2.29
Gender			Restricted	0.84*	2.32
(Men)			Friend-focused	0.59*	1.80
Women	0.49**	1.64	Neighbour-focused	0.93**	2.54
Income			IADL		
(Low-high)			(Low)		
Lowest	−0.05	0.96	Medium	1.41**	4.11
Education			High	2.13**	8.44
(More than secondary)			ADL		
Primary	0.09	1.10	(None)		
Secondary	−0.03	0.97	Low	0.86**	2.37
			Medium-high	1.59**	4.91
Nagelkerke pseudo R^2	0.39				
Model χ^2 (df 15)	828.07**		−2 log. likelihood ratio	1961.45	

Notes: B – B coefficients in binary logistic regression. Parentheses identify reference groups.
Significance levels: * $p<0.01$, ** $p<0.001$.

The findings concerning the network types revealed that almost all of them had a significantly greater likelihood of being in receipt of public assistance than the 'community-clan' network, the reference category in this analysis. As can be seen, respondents in the 'neighbour-focused' networks were $2\frac{1}{2}$ times as likely to be in receipt of public home-care, and those in the 'restricted' network more than twice as likely, reversing the relative strength of the bivariate associations. People in the 'diverse' network type were also about twice as likely, and those in the 'friend-focused' network $1\frac{3}{4}$ times as likely to receive publicly-financed care. Only the 'family-focused' network type proved to be statistically indistinguishable from the 'community-clan' network in terms of public assistance, despite its seemingly somewhat greater likelihood as evinced by the odds ratio.

As for the functional health control variables, both the IADL and the ADL scores maintained their association with the outcome variable in the multivariate analysis. People with high IADL disability were more than eight times as likely to utilise publicly-financed home care, and those with medium disability about four times as likely as individuals who reported low IADL disability. Respondents with medium to high ADL difficulty were almost five times as likely to use public care, and those with low ADL difficulty were about twice as likely (in comparison to persons with no ADL difficulty whatsoever).

Discussion

The analysis reported in this paper sought to clarify the relationship among older adults in Israel between informal and formal support, in the form of the utilisation of publicly-financed home-care, by examining the influence of background characteristics, enabling characteristics and perceived need. Special attention has been given to the enabling indicator of social network type. The study also considered the influence of ethnicity as a mediating influence, and has compared the three major groups in the older population of Israel: Arab-Israelis, veteran Jewish Israelis and new immigrants from the former Soviet Union. The findings reveal that about 15 per cent of older people in Israel made use of publicly-funded home-care. Interestingly, no meaningful differences emerged in the utilisation rates by ethnic group. Israeli-Arabs did make slightly greater use of publicly-funded home-care than the veteran Jewish group, and the immigrants from the Former Soviet Union made slightly lesser use, but these minor variations were not statistically significant. Thus, at first glance, it seems that there were no noticeable ethnic influences on the use of formal home-care among older Israelis.

On the other hand, the findings concerning social network type revealed several significant differences. The 'neighbour-focused', 'restricted' and 'diverse' network types (and to a lesser degree the 'friend-focused' type) all made greater use of formal home-care than 'community-clan' networks. These differences were observed after controlling for the respondents' socio-demographic characteristics and their functional health status. Ethnic differences were evident, however, in network type composition. Arab-Israelis made up the vast majority of the 'community-clan' networks. In contrast, veteran Jews comprised 60 per cent or more of four network types – the 'diverse', 'friend-focused', 'neighbour-focused' and 'restricted' networks – the very network constellations that revealed significantly greater use of home-care than the 'community-clan' network. These findings raise questions about the definition of ethnicity and its essence. They suggest, moreover, that it is not ethnic origin alone that predicts service-utilisation rates, but rather the existence of specific cultural behaviours, such as the mutual exchange relationships that take place within certain social network types, that predict the extent of formal home-care assistance. As the findings from this analysis emphasise, people in the more traditional and cohesive (and predominantly Arab) 'community-clan' networks made less use of formal care services than did those in the predominantly Jewish network types, regardless of functional health status.

Comparing home-care utilisation rates among the predominantly Jewish network types, it has been shown that older respondents in

'neighbour-focused' networks were most likely to use publicly-funded formal home-care. It seems that people who count on their neighbours as the primary additional source of aid (beyond the assistance provided by one adult child) are rooted in a relatively weak network structure. The literature contends, in this regard, that among the three main categories of social network ties – family, friends and neighbours – one's relationship with a neighbour is the most tenuous social tie and a time-limited source of long-term assistance (Litwak 1985).

Respondents in the 'restricted' networks were also found to use public home-care more frequently than those in the other types, but to a lesser degree than those in 'neighbour-focused' networks. As mentioned earlier, older people who belong to 'restricted' social networks are able to count mainly on the (possible) help of one adult child. The greater rate of formal home-care utilisation by elders embedded in the 'restricted' network type is, therefore, consonant with Hanley and Wiener's (1991) findings. As recalled, they discovered that older people in the United States with fewer sons and daughters made relatively greater use of formal paid home-care.

The comparatively limited sources of potential support present in both the 'neighbours' and the 'restricted' network types underscore the fact that these are fragile network types. As such, the findings in the present analysis also support the contention that older people embedded in weak network structures tend to make greater use of formal public support (Wilcox and Taber 1991). The findings further revealed that older people in 'diverse' networks (and to a lesser degree in 'friend-focused' networks) utilised formal home-care less frequently than their counterparts in the 'neighbour-focused' and 'restricted' network types. Arising from the wider availability of potential support from family and friends in these two particular network types, there seems to be less inclination to turn to formal sources of care. Family and friends are particularly able to provide a variety of emotional supports that, in turn, may obviate the need for other kinds of assistance.

Given the more abundant helping resources available in the 'diverse' and the 'friend-focused' networks, it may be asked why their older members use formal home-care services as well. Gourash (1978) pointed out that social networks may encourage utilisation of formal assistance by advocating on behalf of their members and by actively seeking care services for them. It could well be, therefore, that the utilisation of publicly-funded home-care services by respondents from these two network types was indeed encouraged by their fellow network members.

Looking at the background and need variables, it is evident that the most functionally disabled group and the oldest age group were the most likely to utilise public home-care. This is consonant with the disability

criterion for eligibility to Israel's largest public home-care assistance programme. The effect of age above and beyond that of disability, on the other hand, requires additional consideration. Persons older than 80 years tend to have multiple social care needs. Hence, there may well be an independent effect of age on the use of formal home-care services. These same tendencies appear, but to a lesser degree, among the moderately impaired group and the middle age group (70–79 years).

A small but significant gender effect was found, as by several earlier studies: older women in Israel make greater use of formal home-care than men. The reported effect was less pronounced, however, than in other countries. One might speculate as to whether this limited gender effect is related to the minimal longevity gap between men and women in Israel. As for income, the present findings corroborate the studies that have shown no direct relationship between personal wealth and the use of paid home-care (Soldo 1985). The lack of clarity on this question may be due to intervening factors, such as eligibility criteria and insurance coverage. In Israel, most publicly-funded home-care assistance is provided in the framework of a social insurance benefit. As a consequence, there is little chance of finding an income effect in relation to use of publicly-funded home-care.

The lack of educational differences in home-care utilisation prompts different interpretations. The survey revealed profound differences in the respondents' educational levels, with the Arab-Israelis having least schooling and the new immigrants from the former Soviet Union the highest education. The lack of association between education and use of publicly-funded home-care services suggests that ethnic discrimination does not underlie the allocation of this particular benefit. In this particular case, ethnicity in Israel is not reinforced by discrimination.

In closing, it should be noted that the current study had a minor methodological limitation. The analysis did not take into account the extent of informal aid provided by the support networks. This was beyond the scope of the inquiry, but the limitation in another light may have been an asset. Some writers counsel against the use of variables endogenous to the helping situation as explanatory variables for predicting formal care (Hanley and Wiener 1991). The current analysis adopted the exogenous construct of social network type as the measure of informal support. As such, it utilised an independent network measure in its attempt to predict the utilisation of formal home care. In sum, the results of the present study support previous evidence that there is a relationship between informal support and formal service utilisation (Bass and Noelker 1987; Logan and Spitze 1994; White-Means 1997; Williams and Dillworth-Anderson 2002). It also expands upon previous work that ties the utilisation of formal

services to the recipient's social network type (Litwin 1997). The findings in the current analysis underscore, moreover, that social networks tend to work in different ways. The influence of social networks on the utilisation of formal home-care services by their dependent older members may vary according to their structures. The findings also suggest that ethnicity *per se* was not an independent factor in predicting the extent of home-care utilisation. It has been clarified, however, that culturally relevant factors, such as the nature of social network relationships, make a difference as to whether respondents utilise formal care services. As such, it seems that the ethnic factor worked, in this case, through the realm of the inter-personal relations that older people maintain, that is, their social networks.

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Accepted 16 April 2004

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