

INDIVIDUAL AND CONTEXTUAL DETERMINANTS OF SOCIAL HOMECARE USAGE IN SLOVENIA

DISPOZICIJSKI IN KONTEKSTUALNI DEJAVNIKI UPORABE SOCIALNE OSKRBE NA DOMU

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ABSTRACT

Theory. Social homecare is important for older people, as it enables them to remain in their own homes during worsening health, thus relieving the burden on institutional facilities such as homes for the elderly or nursing homes and hospitals.

Keywords:

Social home care, regression analysis, health, older people

Method. A representative survey of social homecare users was employed to assess determinants of the scope of social homecare in Slovenia. Multiple regression analysis was used to evaluate determinants defined by Andersen's behavioral model that affect the scope of social homecare.

Results. As expected, need (Functional impairment $B = .378$, $P = 0.000$) was the most important explanatory component, followed by availability of informal care network (Lives alone $B = -.136$, $P = 0.000$; Has children $B = -.142$; $P = 0.000$) and other contextual factors such as total costs of the services ($B = -.075$; $P = 0.003$) and temporal availability of services ($B = -.075$, $P = 0.012$). The model explained 18% of variability in the scope of social homecare.

Conclusion. This study showed that data on the individual level, as opposed to data on an aggregated level, show different determinants of social homecare utilization. Moreover, the results showed that social homecare is especially important in two circumstances: when older people have a high level of need and when they do not have access to informal care networks. Contextual factors had a moderate effect on the scope of social homecare, which shows universal access to the latter at the individual level.

IZVLEČEK

Ključne besede:

socialna oskrba na domu, regresijska analiza, zdravje, starejši

Teoretična izhodišča. Socialna oskrba na domu je pomembna storitev za starejše z zdravstvenimi težavami, prebivajoče v domačem okolju. Ob zagotavljanju boljše kakovosti življenja ta storitev pomembno razbremenjuje institucionalne storitve zdravstvenega in socialnovarstvenega sistema.

Metoda. Na podatkih reprezentativne raziskave uporabnikov socialne oskrbe na domu smo raziskali vpliv teh dejavnikov na obseg socialne oskrbe na domu. Z multiplo regresijsko analizo smo ugotovili vpliv dispozicijskih in kontekstualnih dejavnikov ter potreb na število aktivnosti, pri katerih uporabnikom pomagajo socialne oskrbovalke.

Rezultati. Kot predpostavlja teoretski model, potrebe ($B = .378$, $P = 0.000$) pojasnijo največji del variabilnosti obsega socialne oskrbe na domu. Po pojasnjevalni moči sledijo razpoložljivost neformalnih oskrbovalcev (živi sam $B = -0.136$, $P = 0.000$; ima otroke $B = -0.142$; $P = 0.000$) ter drugi kontekstualni dejavniki, kot so skupni stroški ure oskrbe ($B = -0.075$; $P = 0.003$) in časovna razpoložljivost socialne oskrbe na domu ($B = -0.075$, $P = 0.012$). Končni model pojasni 18% obsega socialne oskrbe na domu.

Razprava. Dokazali smo, da na individualni ravni na uporabo socialne oskrbe na domu vplivajo drugi dejavniki kot na agregirani ravni. Socialna oskrba na domu je najpomembnejša ob veliki potrebi po oskrbi in odsotnosti neformalnih oskrbovalcev. Zmeren vpliv kontekstualnih dejavnikov nakazuje sorazmerno enakomeren dostop do socialne oskrbe na domu.

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1 INTRODUCTION

Population ageing results in severe transformations of societies, such as leading to an increasing number of both healthy and ill older people and a decreasing number of middle-aged and young people (1). It is also accompanied by changes in family structures, such as a smaller number of children, an increasing number of people living alone and an increasing number of reorganized families (1). Owing to these transformations, provision of care for older people has been a topic of research and policy focus in most Western societies (1). Care for older people who are unable to care for themselves and perform everyday activities was traditionally primarily performed by close and intimate family members, such as spouse and/or children, and this remains the case nowadays (1-4). Formal care, provided by the health or social system and delivered to the recipient's home, is an important complement to both informal and institutional care for older people (3, 4).

Social homecare in Slovenia is a social assistance service that was implemented at the state level with the adoption of the Social Security Act (5). The main objective of the service is to improve the quality of life of those people living at home who are unable to care for themselves, due to old age or illness, and whose family cannot provide them with sufficient care (5). On the basis of the characteristics of its users, the program focuses primarily on maintaining the health of older people, thus relieving the burden on nursing homes and healthcare institutions for elderly people (5). An individual is eligible for up to 4 hours of care per day, or a maximum of 20 hours per week (5). The financial burden of the service is shared between the municipality, which is obliged by law to cover at least 50% of the cost of the service, and by the users (5). The implementation of the service has been evaluated several times on an aggregate level, primarily by estimating the number of users across municipalities and the organizational characteristics of service implementation (5). The number of users steadily increased from 3,909 in 1998 to 6,624 at the end of 2011 (5). There were, and still are, large differences across municipalities as regards the price paid by users per hour of service (6, 7), and the approximately 13% of variability in the relative number of users can be explained by contextual factors on the aggregated level of the municipality (8). Very little is known of the determinants that affect the usage of social homecare services in Slovenia on the individual level.

The Andersen behavioral model (9-12) was originally proposed to conceptualize and understand the ways in which people use medical care services. The model proposes that usage of such services occurs in context and that it depends on the characteristics of individuals, families, communities and societies (9-12). Moreover, it includes facts, such as diagnosed illness or disability, and subjective evaluations of health as well as attitudes toward usage of medical services (9-12). On the individual level, use of services is mediated by predisposing and enabling factors and need (9-12). Predisposing characteristics include demographic characteristics (age, gender, marital status and past illnesses), social structure (education, race, occupation, fa-

family size, ethnicity, religion and geographical mobility) and beliefs (attitudes and beliefs about health and illness and about usage of the health system and knowledge of illness) (9-12). Demographic characteristics represent biological factors influencing the likelihood that people will need health services (9-12). They exist prior to actual conditions and need (9-12). Social structure measures the status of the person in the community and that individual's capacity to cope with illness and activate the appropriate services (9-12). It also indicates how healthy or unhealthy specific environments may be, i.e. those which may lead, for example, to occupational illnesses (9-12). Age, gender and education level are among the most often used predisposing variables in studies of formal and informal care models (13-17). Reception of social homecare is empirically mostly linked to unavailability of spouse or child (11). Most often, formal services are used by people living alone (13, 19-21), and middle class older people are most likely to obtain a disproportionate share of services (22).

Enabling resources brings in the family (family income, type of health insurance, regular source of care and its availability) and the community context (availability of health personnel and facilities, financial and geographical accessibility of services, waiting times and degree of urbanization) and may hinder or encourage the use of services (7, 8, 23). First, the services must be available in the area where people live and work, and second, people must know how to use them. In a broader sense, the contexts are also the characteristics of the healthcare delivery system, policies, resources, organization and financial arrangements that influence the availability, accessibility, affordability and acceptability of services as well as provider characteristics, such as gender of physician (7, 8, 23). External environment or societal level draws in the economic situation, the relative wealth of the population and the prevailing norms in society (7, 8, 23). Family income and type of health or long-term insurance can make a big impact on the number of care services used, especially those services that require extra fees from the user (7, 8, 23). Some services may be readily available in urban areas but are less accessible and maybe less socially appropriate in rural areas (7, 8, 23). Availability of informal carer in close geographical proximity is extremely important for informal care and also affects the usage of formal care. Children may act differently in a care-giving role, requiring more formal assistance than a spouse. Finally, Bass and Noelker (13) introduced caregiver need as an enabling variable in the studies of social homecare, indicating that an informal carer may also have their own medical conditions that hinder informal care and encourage the use of more formal services. Among the enabling factors for social homecare usage shown in a number of studies are availability of informal carer (child or partner), degree of urbanization, income and caregiver need (13-17). Among the enabling factors for social homecare in assessing community and society level are price of the service, temporal and geographical accessibility of services and relative number of formal carers per users (7, 8).

Need is assessed with subjective evaluations (perceptions of health, reports of difficulties in managing everyday ta-

sks) and diagnosis (13-17, 21). This is probably the most important predictor of usage of health and social services. There are several indicators of older people's needs, such as the existence and number of chronic physical diseases, functional limitations (ability of the individual to perform various activities of daily living (ADLs), such as advanced, basic, and instrumental), depression, cognitive impairments, incontinence, paralysis and self-rated health (13-17, 21).

In studies in which social homecare was the focus of attention, the dependent variable assessing its usage has been operationalized in different ways: the presence or receipt of social homecare (yes/no), the number and amount of services in various time spans or the hours and frequency of received care (24, 25). When ADLs were included, the scope of social homecare was measured using the total number of such activities for which the respondent reported receiving formal assistance and the intensity of care provided was assessed using the total number of minutes or hours of assistance per month provided across all ADLs (21).

The research question that we want to examine is to estimate how much variability in the scope of social homecare can be explained by predisposing and enabling (family, community and organizational context) factors and need, according to the Andersen behavioral model.

2 METHODS

1.1 Subjects and procedure

Data for this study were drawn from the first Slovenian national survey of social homecare users in 2013, and there were 6,624 users of social homecare in 201 municipalities at the beginning of the field work. We used stratified random sampling to obtain a representative sample of these users and the municipalities and organizations that provide this type of care (26). A total of 4,917 users from 154 municipalities were invited to participate via providers of social homecare. Social carers distributed the paper and pencil questionnaire to users. The average response rate across municipalities was 37% (8%-92%). Variability in response rate was due to the level of willingness on behalf of social homecare providers to engage in the survey. The realized sample size was 1,768 (a number of questionnaires were not completed properly).

2.2 Instruments

In the present study, we investigated the role of predisposing and enabling factors and need in the scope of care received by social homecare users in Slovenia. We included not only individual factors but also community factors, and, even more importantly, we also addressed the organizational factors. As stated previously, no representative information regarding the users of social home care in Slovenia and the factors that determine the use of formal care is currently available. Organizational factors are not

very often included in research designs, whereby data are collected and analyzed on an individual level. In Slovenia, where this service is a relative novelty, it is very important to uncover underlying structures that affect the scope of social homecare.

With regard to predisposing factors, we included age, gender and level of education. Prior to conducting the study, we had expected that only education would have a positive effect on scope of social homecare after controlling for need. It is difficult to predict the direction of effect of age on scope of social homecare, as the service is used also by younger people with severe disabilities; it may be that the scope is actually higher for younger users (Hypotheses 1a, b, c). Marital status and family size were used in a proxy variable for availability of informal care as an enabling factor. Among enabling factors, we included a subjective evaluation of sufficiency of household income - one can expect that those people who evaluate their income as not being sufficient for all costs are also those who have a higher scope of formal care and that this also contributes to the household costs (Hypothesis 2a). We had expected that people who have an available informal care network would have a lower scope of formal care (does not live alone - Hypothesis 2b; has children - Hypothesis 2c). The scope of social homecare was also associated with community enabling factors (price of service for user, which is set by the municipality - the higher the price, the lower the scope of social home care - Hypothesis 2d, total costs of service - lower scope in communities where there are larger distances between users and provider of social homecare and therefore higher total costs of service - Hypothesis 2e - owing to multicollinearity with degree of urbanization, only distance was used in the model) and organizational factors (the number of users - the higher the number, the lower the scope of social homecare - Hypothesis 2f, the scope of the social homecare may be higher for service provision in the mornings than for service provision in the afternoons, on holidays and during weekends, perhaps owing to the fact that informal carers would be more likely to be available during these times - Hypothesis 2g).

Need was assessed using several indicators. Functional impairment was assessed on the basis of respondents' reports concerning the level of difficulty they experienced with various ADLs (the higher the level of functional impairment, the higher the scope of social homecare - Hypothesis 3a). Respondents were also asked to report the existence of any long-term physical or psychological impairment, illness or disability that limits them in ADLs (the higher the need, the higher the scope of social homecare - Hypothesis 3b). In evaluating advanced ADLs regarding travel arrangements, it could be that severe memory problems prevent travel and therefore reduce the scope of social homecare (Hypothesis 3c).

Respondents were presented with a series of 22 questions concerning their ability to engage in various ADLs. Advanced activities of daily living (AADL)1- managing travel, including carrying out social activities, meetings and hobbies; visiting friends and family, carrying out errands (e.g., going to the bank or library), organizing travel (such as

visiting a doctor) and transportation in general; AADL2 - finding out information about things, managing money (such as paying bills), offering financial aid, engaging in yard work or house repairs, taking medications and shopping for medications and medical aids, maintaining orthopedic aids; instrumental activities of daily living (IADL) - household management tasks, including shopping for groceries and other shopping, preparing a hot meal (or meals on wheels), washing the dishes, light housework (cleaning and managing the garbage), making the bed and cleaning the bedroom, doing the laundry; personal activities of daily living (PADL) - personal care activities or basic activities, including getting in and out of bed, dressing, bathing, using the toilet, feeding oneself. For each task, the respondents were also asked who, if anyone, assisted them with it. There were multiple possible answers for this question: does not need help, family member, neighbor, social home-carer, community nurse or someone else. Contextual variables on the level of municipality were drawn from the annual report of social homecare usage (27).

The dependent variable was the scope of social homecare assessed across 22 ADLs. To measure the scope, the number of tasks in which the social home carer assisted was calculated.

Model 1 - individual and social predisposing variables

Individual predisposing variables

- X1 - age
- X2 - gender (0 - female, 1 male)

Social predisposing variable

- X3 - education (0 - elementary school or less, 1 high school or more)

Model 2 - enabling resources; family, community and organizational context

Family context - family income and availability of informal care

- X4 - evaluation of family income (0 - we can manage with our family income, 1 - it is (very) difficult to manage with our family income)
- X5 - household composition (0 - lives alone, 1 - does not live alone)
- X6 - has children (0 - does not have children, 1 - has children)

Community context

- X7 - price of service for users
- X8 - total costs of the service

Organizational context

- X9 - the number of users
- X10 - temporal availability of the service (0 - service is available only in the morning, 1 - service is also available at other times, in the afternoons, at weekends and on holidays)

Model 3 - Care need was evaluated using three variables: the functional impairment, the existence of a long-term physical or psychological impairment, illness or disability that limits the respondents in daily life activities and problems with memory (not at all, some, considerable).

Functional impairment was assessed on the basis of respondents' reports concerning the level of difficulty they experienced with various ADLs (need help, ranging from 0 to 22).

X11 - functional impairment

X12 - existence of a long-term physical or psychological impairment, illness or disability that limits the respondents in daily life activities (0 - none or one, 1 - more)

X13 - problems with memory (0 - none, some, 1 - considerable)

2.3 Data analysis

Multiple linear regression analysis was used. Independent variables were entered in three stages according to the parameters of the Andersen behavioral model.

Models:

Model 1: predisposing variables

$$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + e$$

Model 2: Predisposing and enabling variables

$$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + b_4X_{4i} + \dots + b_{10}X_{10i} + e$$

Model 3: Predisposing, enabling variables and need

$$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + b_4X_{4i} + \dots + b_{10}X_{10i} + b_{11}X_{11i} + b_{12}X_{12i} + b_{13}X_{13i} + e$$

Y_i = scope of social homecare

b_0 = intercept

b_i = regression coefficients

X_i = independent variables

e = error

3 RESULTS

First, we estimated the three theoretically based models on absolute values of dependent variable - scope of social homecare. We examined quality parameters for multiple linear regression analysis. Standardized residuals were not entirely normally distributed. Furthermore, one of the independent variables showed heteroscedasticity. Second, the dependent variable was transformed ($\ln(Y+1)$) and the models were again estimated. Quality diagnostics showed considerable improvement, although the quality parameters were not perfect. We further inspected the values of the regression parameters, their signs and statistical significance. With regard to the regression parameters, both trials showed similar estimates (values of standardized regression coefficients, signs and significance). For the purpose of simplicity of interpretation of the models, we chose the first trial with the original values of scope of social homecare.

In Model 1, the scope of social homecare was regressed on three predisposing variables. The results in Table 2 show that age was the only significant predictor in Model 1. Its coefficient indicates that younger users had a higher scope of social homecare, as predicted, thus partially confirming Hypotheses 1. The three predisposing variables have little explanatory power; approximately 1%. When the enabling variables were included in the equation in Model 2, the

Table 1. Descriptive statistics.

	N	Mean	St. Dev.	Min	Max
Scope of social homecare (SHC)	1679	3.92	3.513	0	20
Age	1737	78.02	12.264	32	103
Price of SHC for user/per hour	1790	4.78	1.309	0	9.07
Total costs of SHC /per hour	1790	17.82	1.973	13.35	24.04
Number of Users	1790	123.56	163.312	1	644
Functional impairment index	1679	13.27	5.691	0	22

Table 2. Descriptive statistics II.

		N	%
Gender	0 - Female	1783	68
	1 - Male		32
Education	0 - Elementary school or less	1696	51
	1 - High school or more		49
Income	0 - We can manage with our family income	1624	67
	1 - It is (very) difficult to manage with our family income		33
Lives alone	0 - Lives alone	1888	51
	1 - Does not live alone		49
Has children	0 - Does not have children	1731	21
	1 Has children		79
Temporal availability of SHC	0 - Service is available only in the morning	1888	19
	1 - Service is also available at other times, in the afternoons, at weekends and in holidays		81
Long term disability	0 - None or one	1671	41
	1 - More		59
Difficulties with memory	0 - None, some	1690	73
	1 - Considerable		27

Table 3. Results of multiple linear regression analysis.

Predictor variables	Predisposing/ (Model 1)		Enabling/(Model 2)		Need/(Model 3)	
	b	B	b	B	b	B
Predisposing						
Age	-.033	-.113 ^c	-.024	-.081 ^b	-.030	-.104 ^c
Gender	-.242	-.032	-.321	-.043	-.220	-.029
Education	-.183	-.026	-.007	-.001	.246	.035
Enabling						
Income			.202	.027	.228	.030
Lives alone			-.053	-.008	-.955	-.136 ^c
Has children			-.970	-.111 ^c	-1.239	-.142 ^c
Price of service for users			.120	.045	.082	.031
Total cost of service			-.181	-.104 ^c	-.130	-.075 ^b
Number of users			-.001	-.038	-.001	-.045
Temporal availability of service			-.733	-.086 ^b	-.565	-.066 ^a
Need						
Functional impairment					.235	.378 ^c
Long-term disabilities					.429	.060 ^a
Problems with memory					-.356	-.045
R ²	.013 ^c		.051 ^c		.179 ^c	
R ² change			.038 ^c		.128 ^c	

* a ≤ 0.05; ** b ≤ 0.01; *** c ≤ 0.001;

effect of age remained significant. In Model 2, the scope of social homecare was regressed on the predisposing and enabling variables. We included three types of enabling factors; family, community and organizational context. The absolute values of predictor variables shifted somewhat, but the signs and statistical significance remained unchanged. While income and living arrangements did not have a significant effect on the scope of social homecare (Hypotheses 2a and 2b not confirmed), availability of informal care from children has predicted and significantly affected the scope of social homecare (Hypothesis 2c confirmed). The fact that a user has children reduced the scope of social homecare by around one task. The price of social homecare for users did not have a significant effect; moreover, its direction was opposite to that predicted (users tended to have a higher scope of social homecare in municipalities where the price was higher - Hypothesis 2d not confirmed). Total costs of service decreased the scope of social homecare, as predicted (Hypothesis 2e confirmed). Users in municipalities that have higher total costs of service received a lower scope of social homecare. The number of users was not significant (Hypothesis 2f not confirmed). The temporal availability of the service had the predicted effect, indicating that the scope of social homecare was higher by one task in the mornings (Hypothesis 2g confirmed). The enabling variables had greater explanatory power than the predisposing variables. The difference in explanatory power between the two models was statistically significant. Finally, we included the need variables in Model 3. The estimations of the parameters of Model 1 shifted again; they were similar to the values in Model 1, except for education, where the regression coefficient changed sign (but remained insignificant). Owing to the association of need with enabling family variables, the impact of availability of informal care now had a greater impact on the scope of social homecare. Respondents that lived alone had a higher scope of social homecare by one task (Hypothesis 2b now confirmed). Similarly, respondents who did not have children had a higher scope of social homecare by approximately one task. Among enabling variables, the total cost of services and temporal availability of social homecare also had a significant effect on the scope of social homecare, but the values of regression coefficients were somewhat lower. The greatest impact of the scope of social homecare was, as assumed, functional impairment. The higher the functional impairment, the higher the scope (Hypothesis 3a confirmed). The effect of this variable on scope was by far the greatest. In addition, the presence of more than two long-term physical or psychological impairments, illnesses or disabilities that limit respondents in daily life activities increased the scope of social homecare (Hypothesis 3b confirmed), while the latter was decreased by severe problems with memory, as assumed prior to conducting the study (Hypothesis 3c confirmed). Need explains by far the largest proportion of the variability in the scope of social homecare.

4 DISCUSSION

In this study, we evaluated the role of predisposing and enabling factors and need on the scope of social home-

care in Slovenia. We estimated three models in which we included individual factors, community factors and organizational factors. The key findings are that the final model explained 18% of variance in the scope of social homecare (Table 3), which is comparable to the results of other studies with the same respondent group (13, 14) and of similar design. The most important component of the Andersen model was that of need. This explained the largest proportion of the scope of social homecare, which is in agreement with the model (9-12) and its applications to social homecare (13). Some studies have shown that the enabling variables made a greater impact than the need variables, but the dependent variable was hours of care (13). The most important predictor in these studies was income, and the authors suggested that the ability to purchase services would be more important than need in such instances. However, in Slovenia, the price of social homecare for users is subsidized by the municipalities, and therefore the need is more important.

Predisposing variables explained the least amount of variability in the scope of social homecare (Table 3). The only significant predictor was age, as previously assumed. This is a rather unusual result, but respondents in other studies were mostly older people (13, 14, 24), while in our study the youngest respondent was 30 years old. Among enabling variables, the most important factor is availability of informal care, regardless of the study (13-16, 18, 24). Evaluations using a longitudinal design usually show that as the need increases, the number of all types of services increases. In cross sectional studies such as ours, the amount of formal care is lower for respondents who have an immediate and responsive informal care network (13, 19-21).

The novelty of our study, apart from the Slovenian setting, is consideration of community and organizational context. Although the price of social homecare for users is not as important for the scope of social homecare on an individual level (Table 3) as it is on an aggregated level (8), its higher total cost for a municipality would reduce its scope. It may be that organizations that provide social homecare in areas where the geographical accessibility of users is poorer would reduce the scope of services to optimize their total costs. The number of users did not have a significant effect on the scope of social homecare, indicating that users are treated the same way regardless of the scope given by the provider of the service, controlled for all other components of the model. The temporal availability of social homecare had a significant effect on the scope of social homecare on the individual level as opposed to the aggregated level. It appears that availability of informal care in the afternoons, at the weekends and during holidays would decrease the scope of care.

Need explains the largest proportion of scope of social homecare, which is in accordance with the results of other studies of social homecare and formal care in general (9-14, 20, 21). A more comprehensive design could also include characteristics of informal carers, such as in Bass and Noelker (13), which would increase the proportion of explained variance and give more complete information

about determinants of usage of social home care. Another possibility would be to also include other measures of usage, such as number of hours of care. There remains a need to evaluate the usage of social home care in the general population and to examine determinants that predict contact with social home care.

5 CONCLUSION

The main conclusion of our study is that the scope of social home care is determined by similar factors as in other countries, regardless of the novelty of the social service in Slovenia. Nevertheless, as community factors also show a significant effect on scope of social home care, it is advisable that we take a closer look at the procedure of determining the eligibility for social home care and its scope at the organizational level.

CONFLICT OF INTEREST

The authors declare that no conflict of interest exist.

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ETHICAL APPROVAL

Not required.

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