

DETERMINANTS OF UNMET NEEDS AMONG SLOVENIAN OLD POPULATION

DETERMINANTE NEZADOVOLJENIH POTREB PO OSKRBI MED STAREJŠO SLOVENSKO POPULACIJO

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ABSTRACT

Keywords:

unmet needs, formal and informal care, multinomial regression analysis, surveys, SHARE, older people, Andersen's behavioural model

Background. Population ageing has significant effects on societies. The organization of care for dependent old people is one of the key issues for ageing societies. The majority of care for homebound dependent old people in Slovenia is still performed by informal carers, even though the use of formal services has been increasing over the last 20 years. The proportion and characteristics of people with unmet needs are important for the development of long term care social policy.

Method. The SHARE (Survey of Health, Ageing and Retirement in Europe) survey was used to assess the determinants of care arrangements and of unmet needs of the aging population in Slovenia. Multinomial regression analysis was used to evaluate individual and contextual determinants of care arrangements and unmet needs.

Results. The proportion of older people with unmet needs is 4%. As expected, "needs" (Functional impairment OR=4.89, P=0.000, Depression OR=2.59, P=0.001) were the most important determinant, followed by the predisposing factor "age" (age OR 1.15, P=0.000) and two enabling factors, namely: "community setting and "availability of informal care within household" (Urban areas OR=.47, P=0.021; Household size 3+ OR=2.11, P=0.030).

Conclusion. This study showed that there are a proportion of older people in Slovenia with severe needs for care, which are being unmet. As shown by the importance of enabling factors, social policy should encourage the development of formal services in rural areas and elaborate policy measures for informal carers.

IZVLEČEK

Ključne besede:

nezadovoljene potrebe po oskrbi, formalna in neformalna oskrba, multinominalna regresijska analiza, ankete, starejši, Andersenov behavioralni model

Izhodišče. Staranje prebivalstva je še posebej pomembno v razvitih družbah. Organizacija oskrbe za stare in odvisne ljudi je ena od ključnih tem, s katerimi se te družbe ukvarjajo. Večino oskrbe starih ljudi v domačem okolju opravijo neformalni oskrbovalci, čeprav so se v zadnjih dvajsetih letih v Sloveniji razvile tudi formalne storitve. Delež in značilnosti ljudi z nezadovoljenimi potrebami po oskrbi sta pomembni informaciji za načrtovalce dolgotrajne oskrbe.

Metoda. Za oceno deleža starih ljudi z nezadovoljenimi potrebami po oskrbi smo uporabili podatke raziskave SHARE (Survey of Health, Ageing and Retirement in Europe). Za oceno vpliva individualnih in posredujočih dejavnikov na nezadovoljene potrebe po oskrbi smo uporabili multinominalno regresijsko analizo.

Rezultati. V Sloveniji 4% starih ljudi nima zadovoljenih potreb po oskrbi. Kot pričakovano, je najpomembnejša determinanta potreba po oskrbi (funkcionalne omejitve OR=4,89, P=0,000, depresije OR=2,59, P=0,001). Med individualnimi determinantami ima značilen vpliv starost (starost OR 1,15, P=0,000), med posredujočimi pa tip bivalnega okolja in razpoložljivost neformalnih oskrbovalcev (urbano okolje OR=.47, P=0,021; velikost gospodinjstva 3+ OR=2,11, P=0,030).

Zaključek. V Sloveniji obstajajo stari ljudje z nezadovoljenimi potrebami po oskrbi. Kot kaže multinominalna regresija, bi načrtovalci dolgotrajne oskrbe morali več pozornosti nameniti razvoju storitev v ruralnem okolju in bolj podpirati neformalne oskrbovalce.

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1 INTRODUCTION

Slovenia is facing population ageing, similarly as other European countries. OECD data show that we can expect the rise of the share of the population aged 65 and over, from 17% in 2010 to 31% in 2050, and the rise of the population aged 80 and over, from 4% to 11%, respectively (1). According to EUROSTAT (EU-SILC survey), in 2011, 26.6% of the population aged 65-74 years and 35.4% of the population aged 75 years and over reported strong limitations in activities of daily living (1). About 6.7% of the population aged 65 and over are reported to receive long term care (1). Owing to the fragmentation of long term system in Slovenia and separate and incomparable statistics about its usage, this figure is probably strongly underestimated and may be even around 11.9%, including institutional care, community care in and cash benefits (2). Long term community care in recipients' homes was received by 4.7% of the population aged 65 and over in 2011, including community nursing (representing 55.6%), social home care (31.6%) and other services (such as personal assistance, family attendance) (2). All things being equal, we can expect a greater demand for health and social care services in long term social protection systems, owing to the increased share of old population (1).

A comparison of the shares of people reporting limitations in activities of daily living with the share of people receiving formal services or cash benefits indicates that not everyone that has limitations actually receives formal long term care (LTC). Recent data from SHARE (Survey of Health, Ageing and Retirement) indicate that about 15% of the population aged 65 and over receives informal care from informal carers (inside or outside the household of the care recipient) (3). Little, if anything, is known about people in Slovenia having strong limitations and not receiving any care. The purpose of this study is to estimate the share of people aged 65 and over that have unmet needs, these being the people that report having strong limitations and not receiving any care, and to evaluate the determinants of such conditions. Both the estimation of people with unmet needs and indication of factors that influence the probability of having unmet needs is important for LTC system now and for the future planning of social policy and development of LTC services. Conceptualizing and defining needs (and unmet needs) is far from simple (4). On one hand, there is a notion of objective and universal human needs, and on the other hand, there is a relative dimension of needs depending on history, life course and culture (4). Bradshaw (5) conceptualizes different needs on the basis of who defines them. Normative need is defined by experts, professionals, doctors using professional standards; felt need is a want or subjective view of need which may not become an expressed need, which is a demand or felt need

turned into action (5). Comparative need is defined with regards to the level of resources and benefits available to similar others and differences in people's access to resources (5). Technical need occurs when new services are designed or existing ones are made more efficient (6). Health needs can also be categorized by function, such as basic, maintenance, supportive, rehabilitative, treatment, promotive and preventive (7). Review studies show that there is considerable variation not only in conceptual definitions (8, 9) but also in survey measures of unmet needs when needs are evaluated by individuals or proxy respondents (10). As a consequence, there are substantial differences in estimations of shares of people with unmet needs across studies (6, 10-15).

The Andersen behavioural model states that usage of services depends on the characteristics of individuals, families, communities, and societies (16, 18). On the individual level, use of services is mediated by predisposing demographic characteristics (age, gender, marital status, and past illnesses), social structure (education, race, occupation, family size, ethnicity, religion, and geographical mobility) and beliefs (attitudes and beliefs about health, illness and health system (16-19). Enabling resources are family (income, type of health insurance, regular source of care and its availability) and community (availability of health personnel and facilities, financial and geographical accessibility of services, waiting times and degree of urbanization) context, and they may either hinder or encourage the use of services (16-18). Services must be available in the area where people live and work, and people must know how to use them; for example, some services may be less accessible and less socially appropriate in rural areas (22-26). Needs are assessed with subjective evaluations (perceptions of health, reports of difficulties in managing everyday tasks) and diagnoses (16-19). These are the most important predictors of usage of health and social services (11-21, 25-26).

Among predisposing determinants, age, gender, and education level are among the most often used variables in explaining the differences in usage of formal and informal care (20-21, 26). Most often, formal services are used by people living alone (availability of informal care network), and middle class older people are most likely to obtain a disproportionate share of services (14, 20, 21, 26). The strongest enabling factors for social homecare in assessing community and society level are prices of services, temporal and geographical accessibility of services, and relative number of formal carers per users (22), and on individual level, total costs and temporal availability of services (26).

The Andersen model has already been used to assess the probability of having unmet needs in comparative context (14). A number of studies show that unmet needs are most often associated with:

- increasing age (12, 15),
- reduced availability of informal care network (having a spouse and a child living nearby would reduce the probability of having unmet needs 14, 15), living alone (13, 15),
- having difficulty making ends meet (11), or being in poor socioeconomic conditions (12),
- homebound status (12),
- smoking (12),
- having hearing limitations (14),
- depression (12),
- having an increasing number of functional limitations (12, 14, 15),
- low medical density (12).

Our main research question is what is the share of older people (aged 65 and over) in Slovenia that have unmet needs as subjectively perceived by them? Secondly, we want to examine which of the predisposing and enabling factors and needs, according to the Andersen's behavioural model, have a significant effect on the probability of having unmet needs. This information is not yet available in the Slovenian context, and SHARE data enables us to obtain nationally comparable subjective data on unmet needs.

2 METHODS

2.1 Subjects and Procedure

Data for this study were drawn from the fifth wave of SHARE - Survey of Health, Ageing and Retirement in Europe, which is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of more than 85,000 individuals (approximately 150,000 interviews) from 20 European countries and Israel aged 50 or over. The fifth wave of the survey was mainly done in 2013 on the final sample of 65,281 people aged 50 years or older from 14 European countries and Israel. In our analysis, we use only Slovenian respondents, which limit our initial sample to 2,948 respondents. The sampling design used is probability sampling. In our analysis, we also limit ourselves to respondents aged 65 or older, which limits our final sample to 1,458 respondents.

2.2 Instruments

In the present study, we investigated the role of individual predisposing and enabling factors as well as needs in the scope of unmet needs for long term care of older people in Slovenia. The model is somewhat limited due to small number of degrees of freedom in multinomial model. Nevertheless, the model that we use is novel and takes into account the heterogeneity of unmet needs for long term care of older people, which was not addressed sufficiently in previous studies.

2.2.1 Hypotheses

With regard to predisposing factors, we included age, gender, and level of education. Based on previous studies (12, 15), we hypothesize that only age would have a positive effect on the probability of having unmet needs (H1). Living with a spouse and living in a household with three or more members were used as the proxy variable for the availability of informal care as an enabling factor. As suggested in previous research (13-15), we hypothesize that the availability of informal care network would reduce the probability of having unmet needs (H2, H3). Among enabling factors, we also included household income. Similarly as in other studies (11-12), we hypothesize that lower income would increase the probability of having unmet needs (H4). Based on studies about the utilization of formal services in Slovenia (22-26) and the study on unmet needs and availability of medical services (12), we hypothesize that the respondents living in rural areas would have a higher probability of having unmet needs (H5). We also expect that having a larger number of functional limitations (H6) and being depressed (H7) would increase the probability of having unmet needs.

2.2.2 Dependent and Independent Variables

The dependent variable was categorical and encompassed different possibilities of satisfied or unsatisfied (met or unmet) needs for LTC. In the first stage we decided whether respondents have needs for LTC or not on the basis of selection criteria: they needed to score 2 or more regarding the limitations to either personal activities of daily living (PADL: Dressing, including putting on shoes and socks; Walking across a room; Bathing or showering; Eating, such as cutting up your food; Getting in or out of bed; Using the toilet, including getting up or down) or instrumental activities of daily living (IADL: Preparing a hot meal; Shopping for groceries; Making telephone calls; Taking medications; Doing work around the house or garden; Managing money, such as paying bills and keeping track of expenses). Scoring 2 or more means they are limited in either of the categories by 2 or more activities. In the second stage we categorized different respondents with needs for care into five different categories in terms of which type of care (formal; informal within household; informal outside household) they receive.

In order to evaluate functional limitations we used the Global Activity Limitation Indicator (GALI), which is defined by (27) survey questions: "For at least the last 6 months, have you been limited because of a health problem in activities people usually do?" 1) Yes, strongly limited; 2) Yes, limited; 3) No, not limited. The measurement of mental conditions on EURO-Depression (EURO-D) scale is realized by covering questions that indicate 12 items: the presence of, respectively, depression, pessimism, suicidality, guilt, sleep, interest, irritability, appetite,

fatigue, concentration, enjoyment and tearfulness (28). The scale runs from 0-12, with the number of depressive symptoms denoting the score.

Our categories for the dependent variable are therefore the following:

- Category 0 (reference category - no needs) - respondents with no needs for LTC;
- Category 1 (formal care) - respondents with needs for LTC and receiving formal care (regardless of whether they also receive any form of informal care);
- Category 2 (informal care within household) - respondents with needs for LTC, not receiving formal care, but receiving informal care within household (regardless of whether they also receive informal care outside household);
- Category 3 (informal care outside household) - respondents with needs for LTC, receiving neither formal care nor informal care within household, but receiving informal care outside household;
- Category 4 (the unmet needs category) - respondents with needs for LTC, but receiving neither type of formal or informal care.

Model - multinomial logistic; predisposing, enabling and needs variables:

Predisposing variables

X1 - age

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

X3 - education (0-primary, 1-secondary or tertiary)

Enabling variables

X4 - household size (0-1 or 2, 1-3 or more)

X5 - spouse (0-doesn't live with spouse, 1-lives with spouse)

X6 - logarithm of household income

X7 - settlement (0-rural, 1-urban)

Need

X8 - GALI limitations (0-not very limited, 1-very limited)

X9 - depression (0-scoring less than 4 on Euro-Depression scale; 1-scoring 4 or more)

2.2.3 Data Analysis

Multinomial logistic model was used in a model with five categories where the reference category was Category 0 (respondents with no need for LTC).

The model:

$$\log \frac{\Pr(Y_i = j)}{\Pr(Y_i = 0)} = a_j + b_{1,j}X_1 + b_{2,j}X_2 + b_{3,j}X_3 + b_{4,j}X_4 + b_{5,j}X_5 + b_{6,j}X_6 + b_{7,j}X_7 + b_{8,j}X_8 + b_{9,j}X_9 + e_{i,j}$$

$$j = 1, 2, 3, 4$$

Y_i - category of the dependent variable (unmet needs)

a - constant

b_i - regression coefficient

X_i - independent variables

e - error

3 RESULTS

Respondents were aged 74.5 years on average, average household income was 1078 EUR, there is of course a large standard deviation (954 EUR), indicating a very skewed distribution of household income with very high incomes inflating the mean value. More than half (58%) were women and the same share of respondents had secondary or tertiary education. About a half indicate their settlement as rural (52%). The vast majority of people aged 65 years or more are living in small households - 83% in households with 1 or two members; the majority are also living with a spouse - 66%. About one fifth (19%) are having severe functional limitations and about a third (33%) are having four or more points on Euro-depression scale.

Table 1. Distribution of dependent variable needs.

Needs	N	%	95% CI
No needs	1262	86.62	84.77-88.27%
Formal care	40	2.75	2.02-3.72%
Informal care within household	51	3.50	2.67-4.58%
Informal care outside household	41	2.81	2.08-3.80%
Unmet needs	63	4.32	3.39-5.50%

The majority - 87% of respondents do not report needs for LTC as defined in our study (Table 1). 14% of respondents report 2 or more limitations in terms of either personal activities of daily living or instrumental activities of daily living, or both. These respondents are defined as respondents with LTC needs and are further divided into four categories. Respondents that are receiving any kind of formal services (with or without informal care) represent about 2.8% of population with needs for LTC. These respondents are detected is supported by formal social

protection system, either health or social care systems. 3.5% of respondents with LTC are receiving informal care within the household (but they may also receive care from outside the household), and 2.8% receive informal care only from outside the household (and not receiving any other type of care either formal or informal). About 4% of respondents aged 65 and over are reporting LTC and do not receive any kind of care (95% CI: 3.4%-5.5%). This group of respondents does not receive any care from informal care networks and is not included in public formal care.

Table 2. Results of Multinomial logistic model.

Variables	Type of need (ref.cat: Category 0 - no needs)							
	Formal care		Informal care within household		Informal care outside household		Unmet needs	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age								
	1.14***	1.08-1.21	1.10***	1.04-1.16	1.12***	1.07-1.18	1.15***	1.10-1.20
Gender (ref.cat.: men)								
Women	0.86	0.35-2.10	0.40**	0.19-0.87	1.01	0.41-2.47	1.05	0.55-2.04
Education (ref.cat: primary or lower)								
Secondary or tertiary	0.90	0.40-2.04	0.52*	0.24-1.10	0.47*	0.20-1.12	0.67	0.35-1.30
Household size (ref.cat.: less than 3)								
3 or more	1.25	0.44-3.52	2.06*	0.94-4.51	0.66	0.22-1.98	2.11**	1.10-4.05
Spouse (ref.cat.: doesn't live with a spouse)								
Lives with a spouse	0.57	0.24-1.34	2.15*	0.88-5.21	0.25***	0.10-0.62	1.27	0.66-2.46
Income (winsorized, logarithm)								
	0.88	0.50-1.55	0.91	0.52-1.59	0.83	0.49-1.41	0.85	0.54-1.35
Settlement (ref.cat.: rural)								
Urban	2.19*	0.98-4.92	0.83	0.40-1.74	0.54	0.24-1.18	0.47**	0.24-0.91
GALI limitations (ref.cat.: less than very limited)								
Very limited	11.56***	5.44-24.58	14.46***	6.89-30.35	5.85***	2.90-11.82	4.89***	2.73-8.73
Depression (ref.cat.: less than 4)								
4 or more	2.74***	1.28-5.88	2.84***	1.38-5.82	1.37	0.68-2.76	2.59***	1.44-4.65
Observations	1372							
Log Likelihood	-577.88							
Pseudo R square (McFadden)	0.2458							

* ≤ 0.10; ** ≤ 0.05; *** ≤ 0.01;

We estimated a theoretically based multinomial logistic model. The quality and validity parameters for multinomial models are positive: Likelihood Ratio test and Wald test for independent variables are strongly significant; Hausman and Small-Hsiao test of IIA (independence of irrelevant alternatives) assumption are in almost all combinations of alternatives (categories of the dependent variable) strongly opting for their independence; Wald and Likelihood Ratio tests for combining alternatives show no apparent sign that any of the chosen alternatives can be combined or collapsed. Furthermore, the Likelihood Ratio Chi-Squared Statistics is strongly significant, indicating a reasonable fit of the model, which is confirmed by the Pseudo-R squared statistics, which equals 0.2458.

We were interested in the respondents that have long term care needs and do not receive any kind of care - i.e. they have unmet needs for LTC. Results of multinomial logistic model are presented in Table 2. Among predisposing determinants, age is a significant predictor of having unmet needs. With increasing age, the probability of having unmet needs would significantly increase. Among enabling determinants, income is not significant, yet living settlement is significant, and indicating that respondents living in rural settlements would have an increased probability of having unmet needs. The availability of informal care network has unexpected effects. While living with a spouse, which is the most prominent informal carer (if the caring spouse is being female and in good health), does not reduce the probability of having unmet needs, it does significantly affect the probability of receiving care from within the household and outside the household. Living in a household with three or more members unexpectedly increases the probability of having unmet needs and, at the same time, also significantly increases the probability of receiving informal care from within the household. As hypothesized, increased needs (more limitations and more points on Euro-depression scale) significantly increase the probability of unmet needs.

4 DISCUSSION

In this study we explored two main research questions. First, we wanted to establish what is the share of older people (aged 65 and over) in Slovenia that have unmet needs as subjectively perceived by them. Secondly, we wanted to examine which predisposing and enabling factors and needs, according to the Andersen behavioural model, have a significant effect on the probability of having unmet needs. In other words, we wanted to find out which of the enabling factors that are mostly amenable to the policy makers' influences are important in determining the probability of having unmet needs among older Slovenians.

The main finding is that among Slovenian older population aged 65 and over, living in a community, there is about 4% that have severe limitations (defined as 2 or more limitations in terms of either personal activities of daily living or instrumental activities of daily living, or both) and do not receive any care. This represents about 15,568 individuals aged 65 and over who live in their homes. This percentage is amongst the smallest shares of people with unmet needs as compared with the estimates obtained for other countries, which set their threshold differently and more mildly, or focus on specific needs (6, 10-12, 14, 15).

A predisposing factor that has a significant effect on the probability of having unmet needs is increasing age, similarly as in other studies (12, 15). As institutional care is very well developed in Slovenia, and a discrete model of care is still the predominant model of care, as opposed to the continuation model of care, it may be the case that there are people with advanced age with their needs not fully met by informal or/and formal care. It may be the case that older people would postpone the entry into institutional care as long as possible, even at the costs of having unmet needs in order to stay in their own homes. This is corroborated with the study of the quality of social home care in Slovenia, which showed that the most intensive users (the ones that reported a larger number of activities of daily living performed by a social home carer) of social home care are the least satisfied with the service (29).

Among enabling factors, the availability of informal care does not have a significant effect on having unmet needs. It is surprising that living in the household of size 3 and more increases the probability of having unmet needs. Other studies have concluded that living alone would increase the probability of having unmet needs (13, 15) and that the availability of a spouse or child living nearby would decrease the probability of having unmet needs (14, 15). Our study shows that, even though the availability of informal care network does not decrease the probability of having unmet needs, it significantly increases the probability of receiving informal care. There must be some underlying factors that would explain these findings, which were not included in our study, such as the gender of available informal carer.

For example, Diwan and Moriarty (7) suggest that there exist different barriers which prevent people to access the existing services. There may be different barriers, such as recognition or awareness of needs, knowledge about services, availability, accessibility, affordability and acceptability of services. Some studies suggest (30-32) that the identification of needs and seeking help are two interrelated but separate things. First, needs can be assessed differently by an individual, his/her informal carer and professionals (30). There is evidence that

professionals may less frequently notice the need for information on condition and treatment, incontinence, eyesight/hearing needs, memory and psychological distress (30). Informal carers more frequently than patients identified the need for mobility and eyesight/hearing (30). Furthermore, people that have identified the need may not seek help from informal carers or formal services (31); the reasons for that may be withdrawal, resignation and low expectations. Individuals that have needs may have asked for services, but their needs were not recognized or delivered by service providers (31). Even informal carers may have difficulties in seeking and organizing services to older persons or even to themselves (32), due to the unawareness of the availability of services, or the rigidity of formal service providers. Further exploration of such barriers is needed to understand the underlying processes of care provision in Slovenian context, which is marked by fragmented LTC system and different entry points for its users. It may also be the case that social home care and community nursing is not sufficient to fulfil all needs of older people with very high needs, since the provision of social home care is limited (up to 20 hours per week). Another possible explanation would also be low awareness of formal services in rural areas as well as a relative novelty of this service.

Among other two enabling determinants, income does not have a significant effect on the probability of having unmet needs, contrary to other studies (11-12), while living setting has an expected and predicted effect (12, 22-26), confirming that in Slovenia rural setting would significantly increase the probability of having unmet needs. As the rural areas were shown to have lower availability of formal care provision (22), it may also be the case that, owing to the fragmentation of Slovenian LTC system, the formal services are less aware of people with unmet need needs, or that formal services are less acceptable for potential users and that informal care is preferred, but may be insufficient for people with very high needs. It is very encouraging that there do not exist significant differences across education or income. While more educated and richer older people may fulfil their needs on the private market of care services (not measured in our study), they may also have less needs because of healthier life styles. We may also consider that the institute of means testing for the reduction of payment of social home care has preventive effects and enables access to the services according to needs and not according to means of recipients. Not surprisingly, increasing needs strongly predict the probability of having unmet needs, similarly as in other studies (12, 14, 15).

The novelty of our study is the presentation of the first representative data about people having unmet needs in Slovenia, and the exploration of what determines the probability of having unmet needs. While this study

proves that Slovenia is, in most characteristics, similar to other countries, especially in determining factors, it does not give a clear answer to the question whether or not the share of older population with unmet needs is comparable to other European countries. This question should be answered using comparative data sets, such as SHARE. Another limitation is a relatively small number of cases, which prevents us to include more factors in our model (such as the gender of informal carer, the purchase of care services on the private market, perceived barriers), which would probably reveal more about reasons for having unmet needs. It is also clear from studies using qualitative research methods (30-32) that having needs and seeking care are two very complex and interrelated phenomena, which probably cannot be fully explored in quantitative design.

5 CONCLUSION

The estimated number of people with severe unmet needs suggests that there are significant opportunities for social policy changes and development of new public and private services for older people in need, as well as for the integration of fragmented LTC system in Slovenia. Moreover, considering enabling factors which are most influenced by policy measures, residential settlement was the strongest predictor of unmet needs. More emphasis should be put on the development of services that are acceptable in rural areas, or services that are less developed or less available or acceptable in rural areas. Informal carers should be more supported by social policy with measures, such as paid leave of absence from work, flexible working hours or organization of respite care.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

Not required.

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