

SOCIODEMOGRAPHIC PREDICTORS OF GENERAL HEALTH AND QUALITY OF LIFE IN THE ELDERLY IN COMMUNITY OR NURSING HOME DURING THE COVID-19 PANDEMIC

Marcella Erwina Rumawas^{1*} & Erik Wijaya²

¹Faculty of Medicine, Tarumanagara University, Jakarta
Email: marcellar@fk.untar.ac.id

²Faculty of Psychology, Tarumanagara University, Jakarta

**Corresponding author*

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ABSTRACT

During the COVID-19 pandemic, older people are the most vulnerable to experience physical and psychological problems, which in turn will affect their quality of life (QoL). The sociodemographic backgrounds of elderly dwelling in the community and their counterparts in nursing homes may differ. This cross-sectional study aimed to determine the sociodemographic predictive factors of the perceived general health and QoL among 67 elderly in the community and 34 elderly in nursing homes. Data on sociodemographic and QoL (measured by the WHOQOL-BREF instrument) were collected during January–July 2021 and analyzed using the multivariate regression model. The study found that among the community-dwelling elderly, those who lived with a paid assistant indicated a poor to average perceived QoL, while older age was a predictive factor for an increased in the QoL scores especially the physical health, psychological and environment domains. On the contrary, higher education level predicted higher physical health scores, and spiritual belief was a positive predictor in each QoL domain. As to older respondents in nursing homes, women tended to have a better perceived QoL, those with higher level of spiritual belief was likely to perceive a good general health, whereas those who had higher education level was likely to have a lower social domain scores. Conversely, elderly in the nursing home whose marital status was widowed or separated had the lowest scores in both physical health and psychological domains, while those who never communicated with family had the lowest social and environment scores.

Keywords: *Quality of life, general health, sociodemographic predictors, elderly*

1. PREFACE

Older individuals are the most vulnerable group of people during the COVID-19 pandemic. Social restrictions are one strategy to limit the spread of the COVID-19 virus through human-to-human contact, including the elderly [1]. Due to social restrictions, the elderly are limited to where they live, and are also limited to do various activities such as sports, recreation and worship while interacting with other people [2].

In all segments of society including the elderly, the COVID-19 pandemic has indeed resulted in anxiety about transmission and its consequences including death, uncertainty about the future, panic due to misinformation, and problems adapting to different situations and lifestyles.

Compounded by social restrictions, the elderly are prone to experiencing feelings of loneliness and boredom, which can develop into serious psychological problems such as anxiety disorders, sleep disorders and depression [3]. Frailty that affects the physical health of the elderly, psychological problems, and limitations on social and environmental access during the COVID-19 pandemic may reduce the quality of life of the elderly [1].

In general, the elderly can be categorized into two main groups, i.e. those who live in the community (community-dwelling) and their counterparts who live in institutions (nursing home

or social institution). Before the COVID-19 pandemic began in 2020, several studies had provided an overview of the quality of life level of the elderly in Indonesia [4]. However, since the COVID-19 pandemic, information on the quality of life of the elderly especially in Indonesia has been limited, remained inconclusive, and incomprehensive to cover both the elderly in the community and in nursing homes.

Related work

A growing body of evidence shows that sociodemographic factors such as age, gender, education, marital status, religion, can influence health outcomes as well as quality of life [5-7]. Meanwhile, several studies reported the influence of sociodemographic factors on the spread of COVID-19, including among people in Indonesia [8].

One study reported that among a sample of elderly people in several communities in Turkey, personal characteristics such as educational status, marital status, health insurance, internet use, chronic disease status and communication with doctors appeared to have a protective effect on the quality of life of the elderly during the COVID-19 pandemic [9].

In Indonesia, to the best of our knowledge, there has not been a published study investigating the contribution of sociodemographic factors to perceived general health and quality of life, both in the community as well as in nursing homes.

The current study aims to determine the sociodemographic predictive factors on the perceived general health and quality of life among elderly dwelling in the community or nursing homes during the period of pandemic COVID-19.

Our contribution

The current study aims to determine the sociodemographic predictive factors (predictor) of the perceived general health and quality of life among elderly dwelling in the community or nursing homes during the period of pandemic COVID-19.

We hope that this paper will contribute to knowledge about the role of sociodemographic factors on general health and perceived quality of life in the elderly, both living in the community and in nursing homes.

Paper structure

The rest of the paper is organized as follows. Section 1 introduced the concept of general health and quality of life. Section 2 presents the method used in our research, including the study design and participant as well as measurement of the variables and data analysis.

The findings of this study are presented in section 3, while a discussion based on the research findings is presented in section 3. Section 4 concludes the paper and suggests the direction for future research.

The concept of general health and quality of life

According to the World Health Organization (WHO), health is a state of complete physical mental and social well-being and not merely the absence of disease or infirmity. In line with the definition of health, WHO also defines quality of life as an assessment of the degree of health that is not solely based on "presence/absence" of disease or "illness/curing", but is

comprehensive in nature, covering aspects of physical health, psychological well-being and level of freedom, social relationships and relationships to environmental characteristics [10].

Quality of life according to the WHO model is a self-evaluation of perceived general health and quality of life, as well as the four domains constructing the quality of life. From a public health perspective, quality of life measurement is increasingly being used as an effective indicator to evaluate the well-being of the elderly [11].

Sociodemographic factors

Socio-demographic factors are a compilation of factors which are a combination of social and demographic factors. Sociodemographic factors can be defined in many ways, depending on the context in which they are used. However, one thing in common is that sociodemographic factors can be used to compare the level of achievement in a person's life. Thus, a person's sociodemographic characteristics often refer to a person's social status in the social order.

For example, in everyday life humans compete for social position and achievement of success such as in academic structure, work, family, etc. In principle, sociodemographic factors are sociodemographic profiles of individuals, based on their motivation to achieve and maintain positions, both biologically and socially.

These sociodemographic factors are obtained and controlled in a systematic and hierarchical manner, integrating several universal attributes that are generally accepted at the individual level (such as education, occupation, family, etc.) as well as at the population level (such as gender and biological age) [12].

2. RESEARCH METHODS

Study design and participant

The design of this study was cross-sectional, using secondary data from a previous study on elderly aged 60 years and over. Respondents were recruited from 3 different communities in Jakarta and 1 social institution in Bengkulu City during the period January – July 2021 [11, 13-15]. The criteria for selecting the sample are male and female individuals aged at least 60 years with complete data.

Measurement of the variables

Sociodemographic data and perceived general health and quality of life data were collected by interview method using a questionnaire. Sociodemographic data consisted of age, gender, marital status, education level and spiritual belief.

The latter was measured on three questions (i.e. whether their spiritual belief gave meaning in life, gave strength to face adversity, or helped to understand the difficulties in life), which each question was scored from 1 to 5 and the total score (range from 1 to 15) indicated the level of spiritual belief [16].

In addition, respondents who lived in the community were asked who they lived with, while those who lived in nursing homes were asked about the frequency of family visits and the frequency of communication with their families.

Perceived general health and quality of life were measured using the WHOQOL-BREF instrument consisting of 26 questions regarding self-assessment of the level of quality of life and general health [10]. The first two questions measured general health and perceived quality of life, with each question being scored from 1 to 5 indicating very dissatisfied to very satisfied for perceived health, or very poor to very good for perceived quality of life.

The other 24 questions measure the quality of life domain, namely physical health (7 questions), mental (6 questions), social relations (3 questions), and the environment (8 questions). Physical health domain consisted of an assessment of general condition, health, physical ability and energy/energy possessed in carrying out activities of daily life, dependence on drugs and medical aids, mobility, pain and discomfort, sleep and rest, and working capacity.

The psychological domain was an assessment of body image and appearance, negative/positive feelings, self-esteem, spirituality/religion/belief, ability to think/learn, memory and concentration. Environment domain had a fairly broad scope, consisting of an assessment of the adequacy of financial resources, freedom, sense of security, accessibility of health and social care services, home environment, opportunities to acquire new information and skills, participation and opportunities for recreation/fun activities, and physical environmental conditions.

The domain of social relations was an assessment of personal relationships, social support and relationships with the closest partner/family. Each question was scored from 1 to 5, and the total score for each domain was converted to a scale of 0 – 100, with the interpretation of quality of life getting better with higher scores [10].

Data analysis

Statistical analysis was carried out using SPSS version 23 software. The distribution of numerical data was normal with normality test results $p > 0.05$, the mean value was close to the median, and the degree of skewness < 1 . Simultaneous analysis was carried out on respondent data in the community as well as in nursing homes.

Prediction of sociodemographic factors on perceived general health or perceived quality of life were analyzed using multivariate logistic regression method, whereas the predictions of sociodemographic factors in each domain of quality of life were analyzed using the multivariate linear regression method. The statistical significance predictive factor was determined at the level of $p < 0.05$.

3. RESULT AND DISCUSSION

In this study, of the 67 community-dwelling elderly participants the majority was women (mean age approximately 70 years), divorced/widowed, had basic education level, lived with family (spouse and/or children), with the mean score of spiritual belief was close 13 of the maximum 15. Of the 34 elderly respondents in the nursing home, there were more men than women (mean age 76 years), most were widowed/divorced, had basic education level, never visited by their family, communicated with their family monthly or never at all, with the mean score of spiritual belief of 14 (Table 1).

Table 1
Participant sociodemographic characteristics

Characteristics	Community (n = 67)	Nursing Home (n = 34)
Gender*		
Men	7 (10.4)	20 (58.8)
Women	60 (89.6)	14 (41.2)
Age (years) †	69.9 (6.3)	76.1 (9.8)
Marital status*		
Single	5 (7.5)	1 (2.9)
Married	15 (22.4)	9 (26.5)
Divorced/widowed	47 (70.1)	24 (70.6)
Education level*		
Basic	29 (43.3)	26 (76.5)
Middle	22 (32.8)	7 (20.6)
Higher	16 (23.9)	1 (2.9)
Spiritual belief †	12.9 (2.1)	14.0 (1.6)
Live with whom*‡		
Family (spouse &/or children)	56 (83.6)	-
Relatives &/or friends	7 (10.4)	-
Paid assistant	4 (6.0)	-
Frequency of family visit*§		
Once to several times per week	-	1 (2.9)
Once to several times per month	-	7 (20.6)
Once to several times per year	-	10 (29.4)
Never	-	16 (47.1)
Frequency of communication with family*§		
Once to several times per week	-	2 (5.9)
Once to several times per month	-	13 (38.2)
Once to several times per year	-	6 (17.6)
Never	-	13 (38.2)

*n (%); †mean (SD); ‡characteristic applied only to participants living in the community; §characteristic applied only to participants living in the nursing home

There were a greater proportion of elderly respondents in the community perceived their general health on the level of dissatisfied to somewhat dissatisfied, yet most of them rated the perceived quality of life as good (Table 2). The results among the elderly in nursing homes showed the opposite trend, with a larger proportion being satisfied with their general health, but perceiving their quality of life at a poor to average level.

In the community-dwelling elderly, the social relation domain received the highest score, followed by the scores of physical health, environment and psychological domains. Social relation was also the domain with the highest score among elderly in the nursing homes, followed by the scores of psychological, physical health and environment domain.

Among elderly in the community, the multivariate regression model showed the factor of living with whom as a predictor of perceived quality of life (Table 3). Those living with a core family

(spouse and/or children) were likely to rate their QoL as good, while those living with paid assistants were likely to rate it as poor to average. While among older people in nursing homes, women were more likely to rate a good quality of life than men, and those with higher levels were more likely than those with lower levels of spiritual belief to rate general good health.

Table 2

Perceived general health and quality of life and the quality of life domains scores among the older participants dwelling in the community or nursing home

Variables	Community (n = 67)	Nursing Home (n = 34)
Perceived general health*		
Satisfied	31 (46.3)	19 (55.9)
Dissatisfied to somewhat dissatisfied	36 (53.7)	15 (44.1)
Perceived quality of life*		
Good	39 (58.2)	12 (35.3)
Poor to average	28 (41.8)	22 (64.7)
Quality of life scores [†]		
Physical health domain	63.67 (13.45)	57.71 (13.57)
Psychological domain	66.16 (12.27)	65.94 (15.77)
Social relation domain	68.67 (17.26)	59.58 (18.68)
Environment domain	64.34 (12.29)	59.50 (12.88)

*n (%); [†]mean (SD)

Table 3

Results of the multiple logistic regressions applied to analyze the predictive sociodemographic factors on perceived general health and quality of life among older people living in the community or nursing home

Criterion variable: Perceived general health	Community (n = 67)			Nursing Home (n = 34)		
Predictors*	B	SE	p-value	B	SE	p-value
constant	1.99	4.28	0.64	-8.04	5.53	0.15
Gender	0.22	0.94	0.81	-0.26	1.05	0.80
Age	0.08	0.05	0.07	0.05	0.06	0.32
Marital status	0.71	0.52	0.18	-1.81	1.18	0.12
Education level	0.96	0.39	0.14	-0.88	0.99	0.38
Spiritual belief	0.07	0.13	0.62	1.01	0.41	0.01
Live with whom [†]	0.51	0.58	0.38	-	-	-
Frequency of family visit [‡]	-	-	-	-0.26	-0.72	0.71
Frequency of communication with family [‡]	-	-	-	-0.93	0.61	0.13

Criterion variable: Perceived quality of life	Community (n = 67)			Nursing Home (n = 34)		
Predictors	B	SE	p-value	B	SE	p-value
constant	1.92	4.67	0.68	-4.66	7.17	0.52
Gender	0.24	0.96	0.79	3.05	1.22	0.01
Age	0.10	0.05	0.05	-0.09	0.07	0.17
Marital status	0.82	0.57	0.15	-0.26	1.19	0.83
Education level	0.87	0.47	0.07	0.40	0.98	0.69
Spiritual belief	0.54	0.17	0.17	0.19	0.25	0.62
Live with whom [†]	0.86	0.62	0.001	-	-	-
Frequency of family visit [‡]	-	-	-	0.97	1.52	0.22
Frequency of communication with family [‡]	-	-	-	0.24	0.17	0.68

*B: regression coefficient, SE: standard error; [†]predictor applied only to participants in the community; [‡]predictor applied only to participants in the nursing home

As shown in Table 4, within the quality of life domains, the physical health domain was positively predicted by the level of education and spiritual beliefs, and inversely predicted by age. Younger age, higher level of education, and higher level of spiritual belief were likely to contribute to better physical health. Age and spiritual level were also predictive factors for the psychological domain of the elderly in the community.

Elderly respondents who were younger or higher in spiritual level had a tendency to score their psychological conditions better than those who were older or lower in spiritual level. Spiritual belief was the only predictor of the social domain, in which the elderly community with higher spiritual level tended to have high scores in the social relations domain.

Similarly, spiritual belief was also a positive predictor for the environmental domain, in addition to age and education level. Older respondents with higher levels of spiritual belief and education, as well as those who were younger tended to score higher on the environmental domain than respondents with the opposite situation.

In older respondents in the nursing home, marital status was the only predictor of physical and psychological health domains (Table 4). Compared to respondents who were married or single, those who were widowed or divorced tended to rate their physical and psychological health scores lower. Two factors, which were the level of education and the frequency of communication with family, were inverse predictors of the domain of social relations. Lower levels of education and less frequent communication with family were predictors of lower social relations domain scores. In the nursing home respondents, the frequency of communication with family was also an opposite predictor of environmental domain scores.

In this study, the sociodemographic factors analyzed were age, gender, marital status, education level, and level of spiritual belief. In addition, the factor of family support was also included in the analysis, where the factor was represented by the factor of living with whom (applied only to elderly individuals living in the community), or the frequency of family visits and the frequency of communication with the family (applied only to elderly individuals in the nursing home).

We found a varied combination of sociodemographic factors that predict general health and quality of life, in both the community and nursing home elderly. It is not unexpected that most of the sociodemographic factors that predict general health and quality of life are exclusive to where a person lives.

Generally, we found that in this study, the predictive factors for general health and quality of life were age, education, spiritual belief and family support for the community-dwelling elderly, while the for the elderly in the nursing homes the predictive factors were gender, marital status, education, spiritual belief and family support.

As comparison, a study consisted of 402 elderly people in Kahramanmaras City, Turkey found that factors such as marital status, education level, health insurance, chronic illness status and communication with the physicians appeared to have a protective effect on quality of life during the COVID-19 pandemic [9].

A survey in a selected six low- and middle-income Asian countries included Bangladesh, Iran, Iraq, Malaysia, Palestine, and Sri Lanka, socio-demographic factors such as age, country of

residence, marital status, number of male children, current employment status, health insurance, ability to pay household bills, frequency of family visits, and receiving support during the COVID-19 pandemic affecting both physical and mental quality of life in people age 55 years and above [17].

In Indonesia, an ecological study that included 34 provinces identified certain sociodemographic factors such as years of schooling and income to be associated with COVID-19 pandemic [8]. However, this study did not specifically aim to assess the contribution of sociodemographic factors to general health and quality of life in the elderly. To date, there is still lack of evidence reporting the influence of sociodemographic factors on the general health and quality of life of the elderly, especially during the COVID-19 pandemic in Indonesia.

We have not been able to find previous study in Indonesia that aimed to determine the sociodemographic factors related to the perceived general health and quality of life among the elderly living in the community or nursing homes during the period of COVID-19 pandemic. Age is a non-modifiable sociodemographic factor. In this study, increasing age decreased quality of life, particularly the domain of physical health, psychological and environment in the community-dwelling elderly, but did not appear to be a predictive factor among those in nursing homes.

The age distribution of the elderly in nursing homes, which was generally older and more homogeneous than the sample in the community, cannot be ruled out as one of the potential causes of this finding. However, it is also possible that the age factor has more influence on the quality of life of the elderly in the community than in the nursing homes due to the aging process and the conditions of the COVID-19 pandemic itself.

As it is well known, the aging process experienced by the elderly not only causes physical and physiological weakness including a decreased immune system, but also increases the risk of suffering from multiple comorbidities due to various chronic degenerative diseases. The weakening of the immune system and the presence of these comorbidities cause the risk of the elderly to be infected with COVID-19 with severe symptoms and even greater death [18].

While the COVID-19 virus is transmitted primarily through person-to-person contact, social distancing to prevent it may be more difficult to apply to those living in communities than in nursing homes. The vulnerability of the elderly due to their age not only reduces physical health, but may also have an impact on psychological conditions such as anxiety and depression due to fear of infection and its impact as well as uncertainty about the future [3].

Table 4

Results of the multiple linear regressions applied to analyze the predictive sociodemographic factors on quality of life domains among older people living in the community or nursing home

Criterion variable: Physical health domain						
Predictors*	Community (n = 67)			Nursing Home (n = 34)		
	B	SE	p-value	B	SE	p-value
constant	67.16	24.22	0.007	114.75	26.23	<0.001
Gender	1.60	5.15	0.76	7.96	4.65	0.09
Age	0.63	0.25	0.01	-0.37	0.24	0.15
Marital status	2.34	2.82	0.41	-9.08	4.03	0.03
Education level	4.81	2.09	0.03	-9.36	4.67	0.05
Spiritual belief	1.79	0.75	0.02	0.18	1.51	0.91
Live with whom [†]	-0.47	3.11	0.88	-	-	-
Frequency of family visit [‡]	-	-	-	-3.64	-3.64	0.22
Frequency of communication with family [‡]	-	-	-	1.64	1.64	0.49

Criterion variable: Psychological domain						
Predictors*	Community (n = 67)			Nursing Home (n = 34)		
	B	SE	p-value	B	SE	p-value
constant	72.39	20.92	0.001	119.89	29.02	<0.001
Gender	-2.05	4.45	0.65	4.61	5.15	0.38
Age	-0.57	0.21	0.009	-0.31	0.27	0.27
Marital status	2.34	2.44	0.34	14.92	4.46	0.003
Education level	3.41	1.81	0.07	-9.38	5.17	0.08
Spiritual belief	2.26	0.64	0.001	1.81	1.68	0.29
Live with whom [†]	-3.05	2.69	0.26	-	-	-
Frequency of family visit [‡]	-	-	-	1.26	3.20	0.69
Frequency of communication with family [‡]	-	-	-	-4.81	2.58	0.07

Criterion variable: Social relation domain						
Predictors*	Community (n = 67)			Nursing Home (n = 34)		
	B	SE	p-value	B	SE	p-value
constant	26.12	31.02	0.40	103.23	29.48	0.002
Gender	-2.48	6.59	0.71	8.32	5.23	0.12
Age	-0.05	0.31	0.87	-0.18	0.27	0.52
Marital status	-1.49	3.62	0.68	-6.14	4.53	0.19
Education level	1.93	2.69	0.48	-16.65	5.25	0.004
Spiritual belief	3.86	0.95	<0.001	2.38	1.70	0.18
Live with whom [†]	1.25	3.99	0.76	-	-	-
Frequency of family visit [‡]	-	-	-	-2.28	3.25	0.49
Frequency of communication with family [‡]	-	-	-	-9.92	2.62	0.001

Criterion variable: Environment domain						
Predictors*	Community (n = 67)			Nursing Home (n = 34)		
	B	SE	p-value	B	SE	p-value
constant	63.60	21.01	0.004	71.04	22.87	0.005
Gender	0.41	4.47	0.93	11.35	4.06	0.01
Age	-0.51	0.21	0.02	-0.02	0.21	0.95
Marital status	-0.49	2.45	0.84	-1.33	3.51	0.71
Education level	4.75	1.82	0.01	-5.17	4.08	0.22
Spiritual belief	2.36	0.65	0.001	0.09	1.32	0.95
Live with whom [†]	-1.51	2.67	0.58	-	-	-
Frequency of family visit [‡]	-	-	-	0.27	2.52	0.92
Frequency of communication with family [‡]	-	-	-	-6.09	2.03	0.006

*B: regression coefficient, SE: standard error; [†]predictor applied only to participants in the community; [‡]predictor applied only to participants in the nursing home

Another non-modifiable factor is gender. In the current study, women tended to have better perceptions of quality of life than men in nursing homes, although this factor did not appear to be predictive in the community sample. In general, gender has an effect on differences in the risk of disease suffered by men and women [19].

Possibly, the distribution of comorbidities in the sample in the community was comparable between men and women, whereas more men than women in nursing homes had health problems. Further research is needed to determine the effect of gender on the distribution of comorbidities in the elderly living in the community or in nursing homes.

The present study found that marital status was a predictive factor for elderly respondents in nursing homes, which those who were no longer married were likely to have lower scores in both physical health and psychological domains.

We suspect that this factor is probably related to the family support factor. Several previous studies reported the relationship between family supports to quality of life. For example, a sample of 200 elderly in Tresna Werdha social institution in Wuluhan Jember, East Java, found that a good quality of life on the elderly significantly increased with family support ($b = 1.93$; 95% CI: 0.47-3.39; $p = 0.01$) [20].

In our study, we found that low social and environmental scores in the elderly in nursing homes who never communicate with their families. In contrast, marital status did not appear to be a predictor of general health and quality of life of the elderly in the community, possibly because the presence of children, relatives or friends in their life could make up for the loss of a spouse who had died or been separated. This assumption was supported by the finding that older adults in communities living with paid assistants rated their quality of life as poor to average.

We found that education level was a predictive factor for physical health domain only in the community-dwelling elderly. Although the majority of the sample in the community and nursing homes had a basic level of education, the proportion of those with higher education was greater in the community sample than in nursing homes. Higher education allows one to know better about physical health, including the prevention and treatment of disease [21].

On the contrary, education level seemed to be an inverse predictor for social relation domain specifically among elderly respondents in nursing homes. It might be that among elderly in nursing homes, the contribution of educational factors to the social domain was influenced by other factors, particularly family support.

As mentioned above, the elderly in nursing homes who never had communication with their families tended to rate low social relations scores, whereas social relation domain included personal relationships, as well as social support and relationships with the closest partner/family. Further studies are needed to determine the role of interaction between sociodemographic factors on general health and quality of life in the elderly.

In the current study, spiritual belief was a positive predictive factor for both quality of life and perceived general health in the community as well as the nursing homes. Previous studies on the quality of life indicated that spiritual belief had a strong contribution to quality of life in certain societies, including in Indonesia [15]. In the quality of life model according to WHO spiritual belief was part of the psychological domain.

However, institutions in the Indonesian Government, such as the National Population and Family Planning Agency (BKKBN), consider spiritual aspects to be different but could relate to psychological aspects especially in the elderly [22].

4. CONCLUSION AND RECOMMENDATION

Overall, for the elderly living in the community, the predictive factors for general health and quality of life were age, education, spiritual beliefs and family support, while for the elderly in nursing homes the predictive factors were gender, marital status, education, spiritual beliefs, with potential interactions between these factors. Further studies with larger samples are needed to ascertain the potential interactions between socio-demographic factors and their effects on general health and quality of life in the elderly.

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