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## RESEARCH ARTICLE

### Effect of Different Homework on Chronic Morbidity among Single Older People

Viktor Arkhipov<sup>1,\*</sup> and Altyn Aringazina<sup>2</sup>

<sup>1</sup>Department of Public Health, KMU Kazakhstan School of Public Health, Almaty, Kazakhstan

<sup>2</sup>KMU Higher School of Public Health, Kazakhstan Medical University, Almaty, Kazakhstan

#### Abstract:

##### Background:

A solid evidence base supports the positive relationship between regular physical activity and health, and studies have largely examined the effects of brisk walking, leisure-time exercise, or occupational activity rather than domestic activities.

##### Objective:

Determine how housework and physical activities (gardening, harvesting water and firewood (for winter), cleaning of the whole house, shopping) affect the development of morbidity among the elderly population.

##### Materials and Methods:

The 2481 members of the community were taken from two cities of the Turkestan region, Shimkent and Turkestan. For contingency tables, the  $\chi^2$  criterion was used to assess the significance of differences between the actual (identified as a result of the study) quantitative or qualitative characteristics of the sample falling into each category and the theoretical amount that can be expected in the study groups if the null hypothesis is true. For multi-table tables have used Cramer's V criterion V.

##### Results:

Gardening and Shopping showed a weak relationship between these variables at 48.9 and 36.8% with confidence levels  $p = 0,001$  and  $0,0001$ , respectively. V Cramer showed a weak bond at 0.13-0.12 for both variables. Collection of water and firewood (for winter) and cleaning of the whole house/apartment, illustrates the absence of any connection between the nominal variables under investigation and the frequency at cm2 5.6-16.4 with the confidence level  $p = 0,0003$  - $0,001$ , respectively.

##### Conclusion:

As can be seen from the above results, physical activity particularly housework does not obviously show a connection in the development of chronic morbidity among single elderly people.

**Keywords:** Geriatrics, Loneliness, Morbidity, Housekeeping, Physical activities, Homework.

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## 1. INTRODUCTION

Physical activity (PA) is one of the protective factors against non-communicable diseases such as cardiovascular diseases, stroke, diabetes and some types of cancer [1], and PA has a direct impact on improving and strengthening the mental health of a person and especially an elderly person [2], slowing the onset of dementia [3] and, in general, improving the quality

of life [4, 5]. The health benefits of PA have been fairly well researched and described in the scientific literature, supported by practical observations. At the same time, the main conclusion of the research is the conclusion that PA has a positive effect on health only with a sufficient duration, exercise and regularity of PA [6]. Being physically active is not just about going to the gym or engaging in any specific sport that requires a dedicated space, equipment, or inventory. Doing some physical activity is always better than doing nothing at all. This is especially true for older people, whose social and

\* Address correspondence to this author at Department of Public Health, KMU Kazakhstan School of Public Health, Almaty, Kazakhstan; Tel: +7 701 774 44 14; E-mail: [arkhipov.kz@gmail.com](mailto:arkhipov.kz@gmail.com)

especially physical activity with retirement becomes much less, or even stops altogether.

Due to the increase in life expectancy, the time spent in retirement has also increased significantly [7]. Currently, older people devote more and more time to those life tasks and goals that they previously did not have time to solve and implement. This is confirmed by the materials of numerous studies of this fact. Most of the research on the use of time after retirement shows that older people, regardless of gender, are more involved in social activities such as volunteering [8], leisure time [9], hanging out with their grandchildren than younger people [10] and domestic activities [9, 11] than their younger colleagues [11 - 13].

Household chores are part of the daily life of all people. However, after retirement, this activity, as a rule, becomes the main occupation of older people [14]. Shinovach, using data from many years of research [15], found that retirees devote more time to housework than their working spouses. At the same time, these data revealed gender inequality in the division of domestic labor, and in high-income societies [15, 16], this division remains to a large extent.

Elderly single people tend to predominate among those who have never been married, widowed or divorced. It is this category of elderly people who are often careless about their health [17 - 19]. Interestingly, a meta-analysis of 53 independent studies shows that widowhood, divorce or never married are significantly associated with an increased risk of serious illness and death [20]. Not all studies take into account the impact of lack of family life on the mortality rate among older people in retirement, so this factor is not fully investigated and it would be wrong to take it as the main one. At the same time, the data on the effect of loneliness among the elderly on mortality in groups of people differing in age, sex, material, marital status and health status are not uniform. For example, significant age-related heterogeneity is clearly demonstrated in a meta-analysis that found social isolation to be a more predictive factor for death among those under 65 [21]. Previous studies of mortality among elderly people living alone were mainly carried out in economically developed countries of the West and Japan. Minor studies have been conducted in Asian countries (excluding Japan) whose populations are aging faster. Kazakhstan is a developing state both geopolitically and demographically: the share of the population aged 60 years and over is approximately 11%, which allows the state in this indicator [22] to occupy an average position in the Commonwealth of Independent States (CIS). It should be noted that the relative number of elderly people in Kazakhstan in the age groups > 60 and > 65 years old is increasing, although this process is rather slow and unstable, and the number of people aged 80 years and older is relatively constant and makes up about 1% of the total population of Kazakhstan over the past 35 years [23]. Total life expectancy (both men and women) in Kazakhstan in 2010-2015 was 69 years, which is 12 years lower than in Western Europe [24]. We estimated the baseline parameters for age, marital status, sex, health status and emotional state of single elderly people over 65 years old living in Kazakhstan, and determined the effect of loneliness on their morbidity, taking into account

socio-demographic, family indicators and health status.

## 2. AIM OF STUDYING

This study tested the hypothesis that housework activities are associated with the development of major chronic illnesses independently of other sociodemographic factors among lonely elderly people over 65 years old.

At the time of writing, no research on this topic has been conducted in Kazakhstan, which makes this study more important to determine the emotional state of older people in the Republic of Kazakhstan.

Determine the determinants of housework physical activities (gardening, harvesting water, and firewood (for winter), cleaning of the whole house, shopping) on the development of morbidity among the elderly population of the Turkestan region, the Republic of Kazakhstan.

## 3. MATERIALS AND METHODS

### 3.1. Study Design

An initial guide was developed for interviewing and questioning lonely members of the community living in the territory of the Turkestan region, the Republic of Kazakhstan, and receiving treatment at local primary care centers. The inclusion criteria were residences over 65 years of age who are considered as single people according to local primary care centers and who permanently live in the Turkestan region, participants who did not meet these criteria were excluded. This was a cross-sectional study with quantitative methods. The important point of the interview was focused on more specific issues, such as loneliness, the frequency of communication with relatives or children, participation in public life, and frequency of physical activity. In most cases, the survey took place face to face, as well as during a telephone conversation. Interviews were conducted in an informal conversation, but the study was based on an initial guide with clearly posed questions in the questionnaire. The questionnaire included five blocks of questions, such as family composition, self-sufficiency, social activity, and health assessment.

### 3.2. Participants

The analysis involved lonely elderly people who permanently reside in the territory of the Turkestan region. The members of the community were taken in two cities of the Turkestan region, Shimkent and Turkestan, as well as in the four districts of Sozak, Tulkibas, Tolebi, and Sairam. According to the data on the selected territory registered 2973 lonely elderly members of the community. A total of 2481 (84.5%) questionnaires were analyzed, which is 0.13% (according to data from July 1, 2018) of the total population of the Turkestan region. The general characteristics of the respondents are presented in Table 1. The object of the study was elderly people aged 60 to 75 years; however, persons over 75 years of age were also represented in the study, but in small numbers. The analysis of the survey results of respondents in the Turkestan region reveals the relationship between the assessment of the quality of their health and the age of respondents. As the analysis showed, the answers were

distributed almost equally in the responses to the health assessment observed among respondents of all presented age periods, namely: 0.2–2.2% indicated that they needed medical care for complications of chronic diseases, while 5.0– 8.3% of respondents said that they did not need medical care for complications of chronic diseases, they felt well and did not seek medical care - 8.3% -14.0%. The unevenness of the respondents ' answers was noted in the points-he sought medical help because of one or more chronic diseases (66-70 years - 59.0%, 76 years and older-61.8%) and only during acute diseases he sought medical help (76 years and older-11%). The largest proportion of 2481 respondents sought medical care for one or more chronic diseases - 434 of 833 respondents aged 60-65 years (52.1%), 482 of 817 aged 66-70 years (59.0%) and 400 of 695 in the age period 71-75 years (57.6%).

**Table 1. General characteristics of the studied objects.**

Independent Variable		n/%
		2481
Age	60-65	833/33,6%
	66-70	817 /32,9%
	71-75	695/28,0%
	76 and older	136/5,5%
Gender	Men	1037/41,8%
	Women	1444/58,2%
Nationality	Kazakhs	1746/70,4%
	Uzbeks	436/17,6%
	Russians	184/7,4%
	Uighurs	3/0,1%
	Other	112/4,5%

**3.3. Data Analysis**

When processing the data, the methods of modern statistics were used (data grouping, calculation of relative values, methods for assessing the reliability of the difference in the data obtained).

For contingency tables, the  $\chi^2$  criterion was used to assess the significance of differences between the actual (identified as a result of the study) quantitative or qualitative characteristics of the sample falling into each category and the theoretical amount that can be expected in the study groups if the null hypothesis is true. The *p*-value was also used.

For multi-table tables, to assess the strength of the relationship between nominal/categorical variables, it is more appropriate to use Cramer's V criterion V.

Statistical and mathematical data processing was performed using the SPSS software package version 22.0, Statistic version 6.0 on a personal computer, Aspire E 15 Intel Core i5 2.8 GHz.

**4. RESULTS**

An analysis of the incidence among the loneliness in elderly in the Turkestan region has been shown. Epidemiology is mainly determined by chronic heart failure (79.5%), this group of diseases makes up the largest number of cases among

those surveyed. Next came in descending order, namely obstructive or chronic lung disease (25.8%), rheumatoid autoimmune (11.6%), liver disease (8.8%), diabetes mellitus (8.7%), arterial hypertension (4.1%), gastric ulcer and 12 duodenal ulcers (2.8%), depression (2.5%), malignant tumors (1.7%) and infectious and parasitic diseases (1.1%). Next, we analyzed the relationship between chronic morbidity and various types of household chores among single older people.

An analysis of a questionnaire survey of 2,481 participants sought medical care for one or more chronic diseases and amounted to 347 of 1400 respondents who responded positively to the question about “Are you gardening” as a type of physical activity (52.6%) and 1053 of 1400 responded negatively (57.8%) with *p*- 0.001. The calculated Kramer V criteria and the conjugacy coefficient showed in Table 2.

The vast majority of 2481 respondents sought medical help due to one or several chronic diseases and amounted to 479 out of 1400 respondents who answered positively to the question of whether they have been harvesting water and firewood (for winter) (19.3%) and 921 out of 1400 who answered negatively (37.1%) with *p*- 0.0003. The calculated criteria of Cramer's V and the conjugation coefficient showed a medium-strength connection between the studied nominal variables in the question “sought medical attention because of one or several chronic diseases” at the level of -0.04 (Table 2).

An analysis of elderly people in the Turkestan region on the relationship between assessing the quality of their health and the fact of cleaning of whole house/apartment, as a type of physical activity, revealed that 0.2-1.2% indicated that they needed medical care for complications of chronic diseases. The largest percentage of 2481 respondents sought medical help due to one or several chronic diseases and made up 342 out of 1400 respondents who answered positively to the question of “Cleaning of whole house/apartment” as a type of physical activity (13.8%) and 1058 out of 1400 responding negatively (57.2%) with *p*- 0.001. The calculated criteria of Cramer's V and the conjugation coefficient showed a weak connection between the studied nominal variables “sought medical attention because of one or several chronic diseases” at the level of -0.08 (Table 2).

**Table 2. The results of the analysis of factors of physical activity.**

Independent Variable	n participating/not participating	CI	$\chi^2$	Cramer's V
Gardening	347/1053	OR=0.24(95%CI 0.188 to 0.292)	48,9	0,13
Harvesting water and firewood (for winter)	479/921	OR=0.34 (95% CI 0.288 to 0.392)	5,6	0,04
Cleaning of whole house/ apartment	342/1058	OR=0.24 (95% CI 0.188 to 0.292)	16,4	0,08
Shopping	837/695	OR=0.59 (95% CI 0.538 to 0.642)	36,8	0,12

Elderly members who answered positively to the question “Are they shopping to...” the largest percentage of 2481 respondents who answered positively to the question “Are they shopping to...” and at the same time seeking medical help because of one or several chronic diseases was 59.8% versus 49.7% of the respondent's negative answer to the above question with  $p = 0.0001$ . The calculated criteria of Cramer's  $V$  and the conjugation coefficient showed an insignificant relationship between all the studied nominal variables at the level of  $-0.12$  (Table 2).

## 5. DISCUSSION

This study has provided the first empirical data on domestic activities and their association with illness in elderly single residents in Kazakhstan. The study shows the link between physical activity and health status in elderly single people and thus shows opportunities to reduce the rise in health care costs.

As shown in the study (Table 2), such physical activity at home as gardening, collecting water, firewood, coal, cleaning the whole house / apartment, shopping for various goods, do not have a direct effect on the occurrence of diseases among lonely elderly people in the Republic of Kazakhstan. In the course of the study, we did not receive convincing data that one of the listed factors can affect chronic morbidity. At the same time, two factors that can indirectly affect chronic morbidity can be considered - gardening and shopping, which in the course of the study showed a weak statistical relationship. At the same time, further additional studies are required for a more detailed study of the relationship between the PA of lonely elderly people and the occurrence of specific diseases in them.

Our research focused on single people over 65 and the impact of household chores on their health. Most modern research focuses on just one of the parameters. For example, a meta-analysis [20] found the effect of loneliness on mortality. At the same time, he did not reflect the effect of PA on morbidity and did not take into account the age of the patients. Another equally important study [21] found a link between household chores and morbidity. This analysis focused on people under the age of 65.

It must be said that the results of this study did not take into account the gender factor. However, this issue has been discussed in previous studies [25 - 28]. Some of the existing theories about gender differences in household chores, such as the Relative Resource Model, the Time Availability Model, and the Gender Ideology Model, mostly target adults in their prime. However, some theories, due to the different physical conditions of pensioners, may not be applicable in explaining gender differences in households among elderly single people. Perhaps gender differences in household chores are time-related and should be explored and reflected in future research. Historical, cultural and social value factors [29] can also be reflected in the analysis. Due to the fact that in Kazakhstan, due to the established centuries-old household traditions, women of different ages do most of the housework, we did not initially conduct a study on the basis of gender. However, the gender factor must be taken into account depending on the

territory of residence of the people. Our research took place in the Turkestan region, in the south of the Republic of Kazakhstan, where traditions and customs are strong. At the same time, in the north of the Republic of Kazakhstan, society is less traditional in this regard, so the research results may not coincide. This will be taken into account in further research on this topic.

The link between loneliness and chronic morbidity was clearly seen when major biological and behavioral risk factors (e.g. cardiovascular disease, alcohol use, smoking, overweight) were monitored. Social isolation also leads to an increase in the need for medical care, as evidenced by the intake of a large variety of drugs prescribed for chronic diseases [30].

Another significant aspect requires attention, which establishes the relationship between chronic morbidity and the psychological state of an elderly person (for example, depression, anxiety, anxiety, fears and phobias), as well as negative behavior of a person, including alcohol consumption, and his PA level. Prospective long-term studies have identified loneliness as a risk factor for the onset of depressive symptoms, especially in lonely elderly people [31, 32].

Therefore, it is extremely important to understand the relationship between chronic morbidity, medical care and social isolation of pensioners in order to take appropriate measures by the state in the field of health care, develop social programs for longevity and active old age for people of retirement age, and take other measures to increase the emotional background of such citizens. Research suggests that housework alone cannot be intense enough to achieve specific goals to maintain, restore, or improve the health of anyone, much less the elderly. Therefore, older people should not consider homework as a physical activity at the level of active training, they should look for options for physical exercises that train all muscle groups.

Thus, regular exercise will help prevent chronic illness among single seniors. The intensity of physical exercise must be set and / or changed depending on the physical capabilities of a person and his preparedness for them. For exercise to be most effective, exercise programs must be designed and focused on improving health, not just weight loss, as health and mobility gains from exercise in older adults may occur regardless of changes in their body mass index. Despite the fact that vigorous physical activity is not recommended for older people who lead a sedentary lifestyle, older people in the past are athletes, and older people who previously had a physically active lifestyle can exercise and participate in sports activities with a sufficiently high physical activity. At the same time, the adverse health effects during the competition of such trained elderly people are minimal and no more than for young people.

This study, despite the following limitations, provides new and reliable information on the effect of PA on chronic diseases of pensioners over 65 years old, and is the first such study in the Republic of Kazakhstan. A cohort study was chosen as a method for studying people over 65 and analyzing demographic, social and biological data. The consistency of our findings with clinical practice allowed the analysis to take into account risk factors that are usually considered when assessing patients. The use of multiple indicators of loneliness and social isolation is associated with a lack of consensus on

which tools are best for assessing social relationships. It is hoped that the selection of tools that may be most appropriate for use in epidemiological studies comparing the overlap of indicators and their relationship to different outcomes will help clarify future research.

## 6. LIMITATIONS

We have listed the limitations that may affect the effectiveness of our study below.

First, the survey method was chosen as the main source of data on physical housework, which is based on the subjective assessment of the respondent. Second, as in other similar studies, it can be very difficult, and sometimes impossible, to establish a causal relationship between variables. Thirdly, the sample among women turned out to be larger; this is due to a number of factors. First of all, with a life expectancy.

We have not interviewed all people who were part of the study in absentia (2973 vs 2481). The remaining 492 (16,5%) members of the company were not included in the research for the following reasons, 326 (66,5%) people refused to participate, 74 (33,5%) files were rejected due to incomplete data, and we were also unable to contact with 92 members of the community.

## 7. IMPLICATIONS

According to the results of our research, we can assume that housework for older people over 65 is the basis of their physical activity. Therefore, practicing physicians, when examining this category of patients for chronic diseases, should take into account this fact, but not put this reason as the main one when diseases occur.

For public health, we believe that our finding that there is no link between household chores performed by lonely retirees over 65 and the occurrence of chronic disease suggests that secondary and tertiary prevention strategies will not be able to positively impact health maintenance or recovery. At the same time, strategies for the primary prevention of loneliness may be a more promising way to combat social isolation in the category of people we studied and have a beneficial effect on their health.

## CONCLUSION

As mentioned above, we have not found any significant values for which physical activity (domestic work) affects the development of chronic morbidity among single older persons. However, Gardening and Shopping showed a weak relationship between these variables at 48.9 and 36.8% with  $p < 0.001$  and 0.0001, respectively. V Cramer showed a weak bond at 0.13-0.12 for both variables

Given the variable factors of physical activity, we obtained the following conclusion. The presence of factors such as physical activity, such as a collection of water and firewood (for winter) and cleaning of the whole house/apartment, illustrates the absence of any connection between the nominal variables under investigation and the frequency at  $\chi^2$  5.6-16.4 with the confidence level  $p < 0.0003$  -0.001, respectively.

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The present study was approved by the Ethics Committee of Kazakhstan's medical university "KSPH", Kazakhstan (Code: LEK KMU "KSPH" is No. IRB-A074 / A).

## HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent was obtained from all participants, for remote participants, a consent form was sent by post.

## AVAILABILITY OF DATA AND MATERIALS

The data supporting findings of this study is available from the corresponding author [V. A], upon reasonable request.

## FUNDING

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest, financial, or otherwise.

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