

Relationship between oral health and general health in Elderly Population in Georgia

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Abstract

Background: Elderly population increases worldwide and it is predicted to increase further. This demographic shift provides significant challenges for the health authorities worldwide. Significant increase of the older population is also observed in Georgia.

Aim: The aim of the study was to assess correlations between oral health and general health in the elderly population in Georgia.

Methods: We conducted the study based on WHO recommendations. We examined 843 older people (aged 65 years and more) representing the Georgian population, including 582 female and 261 male; also divided them into three age groups: 65-74, 75-84, >85 years old. The study was conducted in 2017-2018 years. For statistical analysis, we used the Statistical Package for Social Sciences (SPSS) version 22.0. The study got the approval from the bioethics council.

Results: We assessed correlations of oral conditions with diabetes, cardiovascular diseases, Gastroenterological diseases, respiratory diseases, cancer and dementia. Good oral hygiene was observed only in 2.2% of patients with healthy periodontal tissue and 0.5% of patients with unhealthy periodontal tissue. $P < 0.0001$.

Conclusion: This study supports the correlation between oral health, general health and quality of life. Also, demonstrates an urgent need of answering to the challenges in dental care services.

The possible outcomes may include a better integration of oral health care into general health care, implementation of new programs in order to improve access to oral health care. (TCM-GMJ March 2023; 8 (1):P26-P31)

Keywords: Gerodontology, Oral health, General health.

Introduction

The elderly population is observed to be increasing worldwide and it is predicted to continue growth further in the near future, hence, affecting the population aging. As a result, an increasing number of older adults will face more disabilities and therefore will need more health care services. (1,2) However; this demographic revolution is the outcome of decreased fertility and increased life expectancy. It is assumed that roughly 600 million people are aged 60 years or more and this number is expected to increase twice by 2025. Significant increase of the older population is also observed in Georgia: from 9,2% in 1990 year to 14,4% in 2017 year. (3,4,5,6) Georgia is a country with a Human Development Index score of 0.780.7 There has not been conducted an epidemiological survey of oral conditions and correlations with general health among older adults in Georgia before. The aim of the study was to assess correlations

between oral health and general health in the elderly population in Georgia.

Oral health is considered as a human right and is crucial for general health and quality of life. Primary health care and general health promotion programs should include promotion of oral health and prevention of dental diseases. The World Health Organization proposes new challenges in maintaining the dentition and oral health of people aged over 65 years. Since oral health influences the quality of life, it may limit daily activities and result in social isolation. Additionally, functional limitations may lead to handicap. For instance, active caries causing pain affects the physical activities of older people. (7,8,9,10)

In addition, increasing age and frailty may result in difficulties in maintaining daily activities for general health, including oral health activities. (11,12) Moreover, oral health-related behaviors, socio-demographic factors and perceived oral health status are considered to influence oral health status in the elderly population. (13) Still, there is a need to raise awareness of the associations between social determinants and oral health outcomes due to the quality of life of the population. (14) Statistically significant data proves that oral health strongly influences the general health. It is assumed that

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oral health is responsible for the general state of well-being and quality of life.(15,16) In addition, tooth loss is considered to influence mastication and esthetic.(17) Tooth loss results in reduced consumption of fruit and vegetable but increased consumption of carbohydrate, rice and confectionery products in older adults.(18,19) Non adequate diet and reduced intake of most nutrition may partly explain the higher risk of chronic diseases in edentulous people. (20) However, masticatory ability is not the only factor that affects nutritional intake and status.(19)

Despite caries and periodontal diseases which are considered to be the main cause of tooth extraction, (5) there are some subjective but no less important factors that lead individuals to lose their teeth, such as ethnic and cultural factors, sociocultural levels and etc.(21)

It is worth to mention that oral health status might influence medical costs among elderly persons.(22)

Materials and Methods

We assessed the Oral health status based on World Health Organization recommendations, under natural light using dental mirror, dental explorer probe and dental tweezers. We were two dentists and five assistants working together on the research. The sampling design of the study was multistage. Clusters consisted of ten geographical units, including all 9 regions of Georgia and the capital, Tbilisi. We stratified the clusters and formed the strata based on variables of the interest in the study including age groups and gender. We examined 65< years old 843 person (582 female and 261 male), divided them into three age groups: 65-74, 75-84, 85 and more years. Participation in this study was voluntary. Only 7 people, 4 female and 3 male, refused to participate in the survey. In order to presume correlations between oral health and general health, we also gathered information about general health, and then we transferred the whole information about oral health and general health in special medical forms. We assessed correlations of oral health with diabetes, cardiovascular diseases, gastroenterological diseases, respiratory diseases, cancer and dementia. All participants of the survey conducted were informed about study goals.

All statistical analyses were performed using SPSS version 22. Continuous variables are expressed as Mean \pm SD, and categorical variables as frequencies and %. Continuous variables were compared with the use of the two-tailed independent t test and categorical variables with the use of the Fisher's Exact Test. p value < 0.05 was considered as statistically significant. The Odds ratio (OR) and 95% confidence intervals was made using Multiple logistic regression analysis. Correlation analysis between categorical variables was performed Spearman correlation analyses.

The study got the approval from the bioethics council of the National Center for Disease Control and Public Health (Georgia).

Results

Due to differences in participants' age and gender, we divided them into following groups: 68% female and 32% male in the age group of 65-74, 70% female and 30% male in two age groups 75-84 and >85.

Dental health:

Investigation of the prevalence of dental crowns, bridges, partial and full removable dentures, implant-supported dentures, showed the different results of prosthetic status in different gender. Study results demonstrated crowns, partial and full dentures to be more prevalent in female rather than in male. (Table 1) We presumed the needs of prosthetic treatment as the following: those participants who had no prosthetics, but needed prosthetic treatment and those, who had old prosthetics that were esthetically and functionally unsatisfactory, we combined in one group - participants with the needs of prosthetic treatment. Others fell into the second group - participants without the needs of prosthetic treatment. 85.2% of women and 92.3% of men were observed to be in need of prosthetic treatment. 23 We assumed that socioeconomic status was the main predictor in the need for prosthetic treatment and was observed in 94% of older adults with needs of prosthetic treatment. Older adults, who need prosthetic treatment, but didn't recognize it, were 6% (P<0.0001). 87% of participants with the needs in prosthetic treatment complained about chewing disabilities. Also social integration was limited due to the esthetical discomfort, particularly, in the age group of 65-74. Nutritional disorders were observed in 85%; however dental status was not the only influencing factor of their diet. Socio-economical factor was mostly responsible for the daily diet.

Healthy periodontal tissue: good oral hygiene - 2.2%, satisfactory oral hygiene - 69.6%, unsatisfactory oral hygiene - 22.7%, poor oral hygiene - 6.1%.

Unhealthy periodontal tissue: good oral hygiene - 0.5%, satisfactory oral hygiene - 11%, unsatisfactory oral hygiene - 51%, poor oral hygiene - 37.5%.

Prevalence of edentulism was divided into three groups by the number of extracted teeth: first group - 0, second group - 0-20, third group - 20<. Among the observed participants none of them fell in the first group, 26.2% were in the second group and 73.8% in the third group respectively.

Conditions of periodontal tissue were also observed in all age groups. All participants with healthy periodontal tissue were divided into three age groups as the following: 60.8%, 33.7% and 5.5%; All participants with unhealthy periodontal tissue also were divided into three age groups as the following: - 44.6%, 44.7% and 10.7% respectively.

Oral health and systemic health:

Periodontal diseases were observed in participants of the survey as the following: diabetes - 3.8%, cardiovascular diseases - 66.3%, gastroenterological diseases - 8.2%, respiratory diseases - 8.4%, cancer - 3.3%, dementia - 12.5%.

We analyzed the Information of fully edentulous participants separately. Full edentulous was observed to be as the following: diabetes - 2.2%, cardiovascular diseases - 44.4%, gastroenterological diseases - 0.7%, respiratory diseases - 7.4%, cancer - 5.2%, dementia - 17.8%.

We assessed relationships between oral health status and systemic diseases as the following: conditions of periodontal tissue, edentulism and oral hygiene were assumed

and analyzed in participants in accordance with systemic diseases. The study results support periodontal diseases to be in positive correlation with cardiovascular diseases, and dementia. Poor oral hygiene was observed to be in positive correlation with gastroenterological diseases, cardiovascular diseases and dementia. (Table 2). Full edentulism was also assessed to be in positive correlation with dementia ($r = 0.101^{**}$, $p = 0.003$).

Barriers to dental care services:

We assessed barriers to dental care services. Dental care services are available in all regions of Georgia, including rural areas. However, preventive dental care seems not to be available for the most of the participants of this survey. Only 0.3% of the participants had regular visit to dental care services - twice per year. All of them were in the age group of 65-74. In addition, dental care is not integrated in general healthcare policy systems in Georgia. So, they have to pay unless they are ensured by the employers with the private health insurance policies. However, people aged of 65 years and more are mostly unemployed and do not have private policies. Besides, private policies mostly don't include prosthetic and implant treatment. Majority of the participants of the survey from all age groups were unemployed, all participants aged 85 years and more were unemployed. Socio-economic status was assessed and low income families from all age groups were observed. The main barrier to proper dental care was noted to be economical status in all age groups, without significant difference between male and female (Figure 1).

Discussion:

Age related oral health changes require special treatment for elderly population. Making considerable progress towards a healthier world requires strong political action, broad participation and long-term advocacy.(9) there is abundant scientific evidence to support the correlation between oral health and general health. Non communicable diseases are considered to be the main reason of disability and mortality, therefore in the near future health and social policy-makers will face tremendous challenges. Oral condition influences general health of the elderly population.(24,6) Edentulous is considered to be an important public health issue worldwide as a result of its high prevalence and associated disability.(25)

The data on edentulism corresponds similar studies and confirms that edentulous older adults without prosthetic treatment face mastication and nutritional problems and often deny the pleasure of eating.(26,15) their diet is mostly monotonous and can result in malnutrition.(15) Furthermore; it has an impact on social functioning and overall wellness.(27,10) Involvement of elderly population in healthcare programs, prosthetic treatment, even with removable dentures may improve mastication and speech activities and result in better oral health related quality of life. Besides, it is essential to increase access to dental implants and proper prosthetic treatment. (28,29)

Poor oral hygiene leads to the formation of the microbial biofilm, causing gingival inflammation.(30, 31) the

results of this study confirm other findings as well, like the risks of periodontal diseases in older adults are linked with cardiovascular diseases and unsatisfactory oral hygiene. (15)

This study demonstrates that there is an urgent need of challenges in dental care services. However, special departments of geriatric dentistry are not available for older adults living in Georgia.

The possible outcomes may be the better integration of oral health care into general health care. Gerodontologic departments in dental clinics, also special associations with professional groups are essential to increase knowledge of dentists and provide oral health related healthy life longevity.

Conclusion:

Oral health status is in correlation with general health in elderly population living in Georgia. Needs of prosthetic treatment are mostly associated with socioeconomic factors. Implementation of new programs is essential in order to promote healthy behavior and improve access to preventive oral health care for older adults living in Georgia.

Figure 1. Assessment of economic barriers to dental care

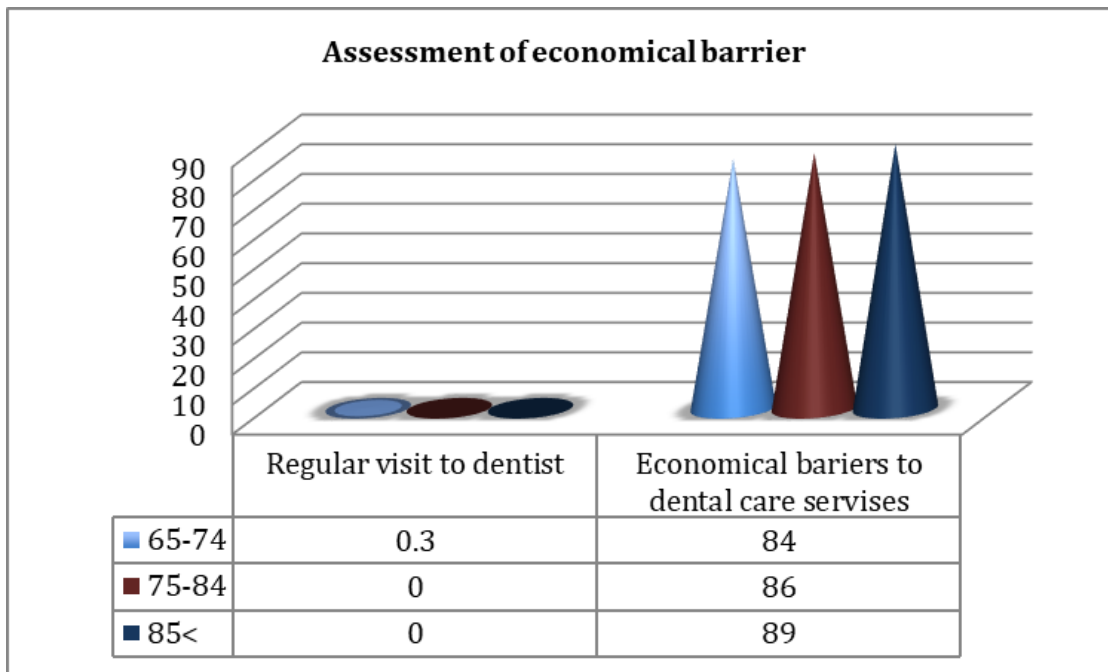


Table 1. Prevalence of removable and fixed prostheses

Types of prosthetics	Male	Female	F	Sig.
	N (%)	N (%)		
Crowns	14 (5.36)	64 (11.00)	6.85	0.0090
Bridges	20 (7.66)	48 (8.25)	0.08	0.7735
Removable partial dentures	12 (4.60)	61 (10.48)	7.94	0.0049
Removable dentures	44 (16.86)	154 (26.46)	9.33	0.0023
Implant-supported dentures	6 (2.30)	12 (2.06)	0.05	0.8261

Table 2. Correlations between oral conditions and general health (Spearman's Correlation analysis)

		Diabetes	Cardio-vascular diseases	Respiratory diseases	Cancer	Dementia	Gastroenterological
Periodontal diseases	r	-0.039	0.255**	-0.007	-0.064	0.088*	0.058
	p	0.356	<0.001	0.867	0.126	0.034	0.169
Good oral hygiene	r	-0.022	-0.051	-0.031	-0.022	-0.036	-0.104*
	p	0.600	0.224	0.452	0.607	0.396	0.012
Satisfactory oral hygiene	r	-0.007	-0.113**	-0.105*	0.075	-0.124**	-0.090*
	p	0.867	0.007	0.012	0.073	0.003	0.030
Unsatisfactory oral hygiene	r	-0.026	0.006	0.018	-0.055	-0.008	-0.072
	p	0.531	0.893	0.674	0.192	0.857	0.085
Poor oral hygiene	r	0.040	0.116**	0.090*	-0.012	0.142**	0.147**
	p	0.336	0.005	0.032	0.774	0.001	<0.001

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