The Impact of the Socioeconomic Background and Dental Service Deficit on Oral Health of the Population in High Mountainous Regions of Georgia

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Summary
In Georgia, particularly in the population of its high mountainous regions, the dental diseases still remain to be an actual issue. It is not yet established the structure of the dental diseases, the prevalence of general diseases and their causing reasons. The study was performed in high mountainous regions of Georgia, namely in Svaneti, Racha and high mountainous villages of Samegrelo. All in all, 614 people were investigated (in Svaneti – 208, Racha – 202, Samegrelo – 204 people) in 5 age groups, as delivered by the International Organization of Health: (35 – 44y.o.) – 221 people, (45 – 54y.o.) – 152 people, (55 – 64y.o.) – 124 people, (65 – 74y.o.) – 66 people, (74 – 85y.o.) – 51 people. On the whole, 269 men and 345 women were investigated. The population Survey and dentistry investigation have been performed. The sociological questionnaire, made by us, consisted of questions to detect the risk factors: social status and financial income of the family, presence of some diseases, people's attitude towards the habits of oral hygiene (cleaning teeth, usage of dental floss and oral rinse), affordability of dentistry, dental activity of the population, smoking, consumption of meat, milk and other products. The dentistry status of the population was assessed on the basis of the WHO methodology. The oral cavity investigation was performed in natural lighting conditions, using the dentistry mirror, dental zond and parodontal zond (CPI) (to measure the parodontal pockets). We performed the Caries diagnosing and registration using DMFT index, stated by the WHO that means the sum of the caries, extracted and filled teeth. As the result of investigation of three regions, we found that the caries spread and intensity is extremely high. The inhabitants of lower Svaneti region indicated that there were no dentistry institutions in villages. Furthermore, there was also the deficit of service and in case of pain they had to visit the Imereti or Tbilisi that is linked with the financial and time problems. The same reason was in Racha, namely in Ambrolauri and Samegrelo. According to the results, the low socio-economic background and absence of services in high mountainous regions significantly affects the oral diseases.
Abbreviations: WHO – World Health Organization; DMFT index - the sum of caries, filled and extracted teeth.
Key words: caries spread, dentistry service, socioeconomic background, high mountainous region.

Problems Statement:

In spite of significant success in the field of oral health, the dentistry diseases still remain to be the actual and keen problem, especially in non – privileged groups of the world population in the developed as well as in the developing countries (Tsitaishvili.L.2015).

In dentistry diseases, the most prevalent is the Tooth Caries and the Parodontal Inflammatory Diseases. In their development, the main role is played by the microbe. However, these diseases have multifactorial nature and their development is affected by a lot of local and general factors (Petersen PE, Bourgeois D, 2005). The caries development is affected by the nature of the nutrition (diet) (abundance of Carbohydrates) and the regime, quantity of salivation and its degree (Hyposalivation or Xerostomy), general diseases and conditions of the organism (they decrease the structural resistence of the dental tissues to the caries), genetic predisposition, F consistency in the drinking water, external factors, affecting the organism (radiation), smoking, poor hygiene of the mouth (existence of dental stones and plaque, Orthodontal and Orthopedic constructions of the poor quality). However, poor hygiene of the mouth is the risk-factor in the development of not only the Caries, but also the Parodontal diseases. Locally, the disease development is promoted by the low vestibule, the short ligament of the tongue and lip, short stretches of the mucosa, teeth standing and order anomalies, imperfect and incorrectly made fillings, Orthopedic and Orthodontal structures and etc. The general factors, facilitating the development of Parodontal Inflammatory diseases, include: Gastrointestinal, Endocrine, Circulatory, Haematopoietic, Nervous, Immune system diseases. (Peterson P.E. 2005).

The pain, discomfort and loss of teeth, caused by the Caries or Parodontal disease lead to functional and aesthetic disorders and hinders to the person's healthy integration in the society (Tsitaishvili.L.2015).

The Dentistry Diseases require serious professional approach and treatment to avoid further complications. In the whole world, the affordability of dentistry services is significantly low in elderly as well as in people with the poor education and income. Subsequently, the Oral Health is deteriorated in the population with the low social status. Hence, developing such social projects and programs which consider the maximum integrity of the poor and low social stratum in treatment and prevention of the Oral Diseases, is the Healthcare and State prerogative (Michael G McGrady, Roger P Ellwood, 2012).

The traditional (conventional) medical dentistry service represents the essential economic burden in the developed countries of the world, where the 5 – 10 % of the social health budget is used for treatment and prevention of the Oral Diseases (Oral helth, 2012). In the developing countries with low and medium income, the social programs of Oral Health are rare. The huge expenses of the dentistry service can be avoided by the effective prevention and the well planned prophylaxis is the essential step on the way to the disease reduction (FRANCISCO J.RAMOS-GOMEZ, 2010).

The arrangements, reducing the dentistry diseases first of all should be directed to remove risk factors. The less consumption of carbohydrates, the balanced diet, smoking reduction, perfect hygiene of the oral cavity interferes with the development and spread of the Parodontal diseases and Caries. It is also essential to maintain the optimal amount of the Fluorine on the tooth surface that is provided by the consumption of fluorinated toothpastes, rinses, drinking water, milk and salt. Delivering the optimal amount of fluorine to the organism significantly reduces the risk of Caries morbidity (Walter J. Loesche. 1996).

The certain requirements are established to assess the Dentistry morbidity. As recommended by the WHO, the condition of teeth and the Parodont are assessed at the age of 3 – for the Milk teeth, at the age of 6 – for the first Molars, at 12 – for Constant teeth and at 15 – for the Parodontal condition, at 35 – 44 and 65 – 74 both the teeth and parodont are assessed (Patel. N, 2013) .

Despite optimistic trends in frequency and severity of oral diseases of recent years, the Tooth Caries is still a very prevalent disease in the majority of countries all over the world and covers 60 – 90% of children's contingent and the big majority of adult population (Petersen PE, Bourgeois D, Ogawa H, Estupinan – Day S, Ndiaye C.,2005). In the most of developing countries, availability of dentistry aid is limited. Teeth often remain without treatment or are extracted for the reason of pain, discomfort and poverty. The loss of teeth and deteriorated functional condition of the oral cavity turns into the Social Health issue (Tsitaishvili.L 2015).

In the age group, the Acute Generalized Parodontitis ranges within 5 – 15% in various regions of the world and the presence of chronic mild and moderate forms is observed in big majority of adult population (Marulanda AM, Coral D, Sabogal D, Serrano C. 2014).]. In the industrial countries with high income, Oral Health is achieved by the medical and preventive measures and is based on private or state systems while in the developing countries, the poor people, certain ethnic minorities, the homeless, people with limited abilities and the elderly are not satisfied with dentistry services. These countries suffer the deficit of oral health service personnel. The service is mainly provided by regional or (and) urban centers and less attention is payed to prevention and restorative treatment (Nainar SM, 2001).

By the Human Development Index 0.744 (Human Development Report 2012 – 2013), the population of Georgia comes to about 4.5 million, 53% of which lives in urban areas (Gamkrelidze A. Kereselidze M, 2012).

In 1990s, for the reason of significant deterioration of the socioeconomic side, the health condition of the population dramatically changed. The health indicators were very different from the indexes of European countries. The increased consumption of cigarettes and drugs took place. High indices of smoking led to the main health issue and it was particularly prevalent in women and adolescents. The abundant consumption of alcohol and drugs was the dramatic result of disappointment and pesimism, caused by heavy socioeconomic conditions of living and unemployment (FRANCISCO J. RAMOS – GOMEZ, 2010).

Socioeconomic and political development step by step led to relative increase of medical and dentistry services and the quality of medical education and culture. Subsequently, the dentistry activity increased that significantly reduced the danger and trends of spreading the oral diseases. However, the multifactorial dentistry diseases still remain to be the actual issue in Georgia (Margvelashvili V. Tsitaishvili L. 2015).

We suppose that the very unsatisfactory socioeconomic status clarifies the less affordability of dentistry service for the population of Georgia when compared with European countries. Healthcare services are mainly funded by private insurance companies and the population itself. The WHO data of 2010 show, that 350000 people are included in private corporative insurance schedules. The state cannot finance all sorts of medical services. In general, the dentistry service is funded by private insurance companies and it refers to individuals, working in State Structures or private companies. That is why most people have to pay for their dentistry service by themselves or cannot afford it for inappropriate financial condition. This problem particularly prevails among the inhabitants of high mountainous regions. 80% of the population don't have private insurance and nor state programs function. The population of high mountainous regions is mainly busy with agriculture. The material income is very low and taking care of their oral cavity health is somewhat luxurious for them. Material conditions decrease the frequency of visits to the dentist and probability of oral sanitation that in turn deteriorates the oral health and facilitates to the development of Caries and Parodontal diseases. In addition, other risk factors also might play a role: Climato–Geographical inherited predisposition and structural inadequacy of tissues, general diseases of the organism and conditions with subsequent reduction of the immune system as well as behavioral factors whose significant role in developing oral diseases have been described in a number of Epidemiologic studies: Level of medical awareness, realizing of the necessity and importance of dentistry services for general health, nature and regimen of the diet, non-healthy lifestyle (tobacco, drugs and drinks),

patients' attitude to the habits oral care hygiene. All the above affect the development and distribution of oral diseases. Presence of high Epidemiology indicators and ignoring them will make medicosocial and economic problems to the population of Georgia in the way of frequent expectable complications and the negative impact on the organism (Kalandadze.M, 2003).

Therefore, revealing these indicators, studying and assessing them are actual challenges. Furthermore, there have been no epidemiology data for dentistry diseases for the last 24 years, in Georgia. This is especially true for high mountainous areas that hinders to the registration of the spread, frequency and intensity of such diseases as well as to detection of facilitating and provoking factors (medicobiological, climate – geographic, socioeconomic and etc.) and on the basis of the processed data, to make preventive arrangements of the dentistry diseases, which has significant practical cost in order to reduce the prevalence of the diseases.

The aim of the research:

The aim of the research was to esteblish the prevalence and the rate of general dentistry diseases in the adult population of high mountainous regions of Georgia and to make assessment of the roles of the factors, linked with socioeconomic status and the dentistry service deficit, in the disease development.

Target groups and methodology of research:

The investigation was performed in high mountainous villages of Racha and Samegrelo, regions of Georgia. All in all, 614 people have been studied (Svaneti- 208, Racha-202, Samegrelo-204 people) in five age groups, delivered by the World Health International Organization: 35-44years old – 221 people, 45-54 y.o. – 152 people, 55-64 y.o.-124 people, 65-74 y.o. – 66 people, 74-85 y.o. – 51 people. On the whole, according to the gender, 269men and 345 momen have been investigated.

The research was performed by an experienced doctor practicist – the Dentist, accompanied by 4 assistants on the basis of the informed consent of investigated individuals. The municepalities of each region was informed in advance about the goals, challenges and progress of the research study. They helped us to ensure maximal engagement during the process of people's application and their investigation.

The held arrangements consisted of quantitative as well as quality investigation components. The sociobiological questionnaire, created by us consisted of the questions to detect risk-factors: Social status and material income of the family, presence of certain diseases and people's attitude to the habits of hygiene of oral healthcare (such as cleaning teeth, use of dental floss and oral rinse), affordability of dentistry aid, dentistry activity of population, smoking, consumption of meat, dairy and other products.

The dentistry status of the investigated population was assessed on the basis of WHO methodology (WHO – ''Oral Health Assessment Form 2013''). The oral cavity was investigated in conditions of natural lighting, using the dentistry mirror, dental zond and parodontal zond (CPI) (to measure parodontal pockets).

We performed the diagnosing and recording using the Caries intensity DMFT index, delivered by WHO which means the sum of caries, extracted and filled teeth [6]. (Levin L, Margvelashvili V, 2013).

According to the questionnair and data of dentistry investigation, the electronic base of the data was formed, which was processed statistically using the program packet SPSS.21. Obtained results were presented for analysis as schedules and charts.

Research results:

In high mountainous regions of Georgia, the indicator of Caries prevalence is significantly high (see schedule #1).

Prevalence of Tooth Caries by regions

Region	Prevalence for 1000 inhabitants
Svaneti	947 %0
Racha	980%0
Samegrelo	1000%0

Caries intensity is very high as well in all three regions by the DMFT index.

Tooth Caries intensity by regions

Region	DMFT index	p
Svaneti	12.56 ± 9.541	<0.05
Racha	9.67 ± 9.153	<0.05
Samegrelo	10.36 ± 8.262	<0.05

It is worth to point out that the indicator of Caries intensity increases (see schedule # 3).

Schedule 3. Caries Intensity by age groups

Age		N	Mean	Std. Deviation	Std. Error Mean
35-44 y.o.	Age	221	1.00	.000[a]	.000
	DMFT	221	6.52	5.576	.375
45-54 y.o.	Age	152	2.00	.000[a]	.000
	DMFT	152	10.01	7.881	.639
55-64 y.o.	Age	124	3.00	.000[a]	.000
	DMFT	124	12.08	9.317	.837
65-74 y.o.	Age	66	4.00	.000[a]	.000
	DMFT	66	17.98	9.882	1.216
75-84 y.o.	Age	51	5.00	.000[a]	.000
	DMFT	51	20.27	9.900	1.386

Careful attention must be paid to the employment issue of the population of high mountainous regions, which will then be reflected by the socioeconomic status.

64% of the investigated people have profession, 39% are employed. Remaining 61% are unemployed. The 13% of the latter are busy with agriculture.

On the basis of the survey, we assessed what was the the rate of application to the dentist and what was the reason, explained by people. The impact of application rate on the Caries Intensity was also assessed (see schedule #4).

Schedule #4. Impact of dentistry application on Caries intensity

Application	DMFT index	P
For the last 1 year	8.98 = 7.534	< 0.05
Long time age	13.21 = 10.285	< 0.05
Have never applied	6.07 = 7.383	< 0.05
Don't remember	16.46 = 9.121	< 0.05

The majority of the investigated people indicated that the application rate to the dentist was caused by pain, much more rarely – by the reason of prosthesing and checking up (see schedule #5).

Schedule #5. Reason for visiting the dentist

Application		Freq.	%
For the last one year	Pain	243	73.9
	In order to check up	37	11.2
	For prosthesing	49	14.9
	On the whole	329	100.0
Long ago	Pain	141	68.1
	For check up	10	4.8
	For prosthesing	48	23.2
	Don't remember	7	3.4
	Have not applied	1	.5
	On the whole	207	100.0
Never applied	Pain	1	3.6
	For prosthesing	1	3.6
	Don't remember	2	7.1
	Have not applied	24	85.7
	On the whole	28	100.0
Don't remember	Pain	36	72.0
	For ckeck up	2	4.0
	For prosthesing	10	20.0
	Don't remember	2	4.0
	On the whole	50	100.0

Despite the Caries prevalence and intensity, the visit to the dentist is very rare in population of high mountainous regions. As the result of investigation, we found that its reason is first of all, financial problem and then the deficit of dentistry service in the inhabited areas and regions of high mountains. The last, unimportant reason was the fear (See schedule #6).

Schedule #6. Reason for not applying to the dentist

Reason	frequency	%
No clinic	285	46.41
Have never suffered	43	7.00
Financial problem	233	37.95
No quality service	36	5.86
Fear	17	2.77

On the basis of the investigation, it was stated that the more part in DMFT index belongs to the extracted teeth. As mentioned above, the majority of the investigated people, applied to the dentist in case of pain and for the reason of poverty, they had to extract those teeth which could be cured. It is well known that it is much more cheeper to have your tooth pulled out than to treat it (see schedule #7).

Schedule #7. The portion of each component in DMFT index ($p < 0.05$)

	N	Mean	Std. Deviation	Std. Error Mean
Damage	614	2.29	3.175	.128
Filling	614	.33	1.038	.042
Extracted	614	8.25	9.340	.377

DMFT index components	Frequency
Caries	48 %
Filling	14.5 %
Extracted	80.9 %

Conclusion:

As the result of the investigation of all three regions, we established that the Prevalence and Intensity of Caries is extremely high. The inhabitants of Lower Svaneti region indicated that no dentistry institutions were located in villages. Moreover, in the cery center of the region, there was the service deficit and in case of pain, they had to visit the Imereti regions or Tbilisi, that was linked with Financial and time problems. The same was the reason in Racha, namely in Ambrolauri region and Samegrelo. According to the results, received by us, low socioeconomic background and absence of services have significant impact on Oral Diseases.

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