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Survey results of sanitary-hygienic conditions and landscaping of urban forest parks in the Republic of Armenia (RA)

M.H. Galstyan^a, H.Ya.Sayadyan^{b,*}, K.Sh. Sargsyan^a, Z.H. Hoveyan^a,
I.L. Hakobjanyan^a

^aArmenian National Agrarian University; 74, Teryan Sr., Yerevan, 0009, Republic of Armenia

^bYerevan State University; 1, Alex Manukyan Str., Yerevan, 0002, Republic of Armenia

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ABSTRACT

The survey results conducted on the evaluation of sanitary and hygienic conditions, services, and landscaping in urban forest parks of the RA are introduced in the current article.

According to the study and survey data the blue and green areas (parks, lakes, alleys, etc.) of the republic are mainly used as intended by the population. Anyhow, there are some obstacles for the enhancement of management efficiency in the mentioned areas, particularly in terms of increasing and expanding the people's attendance, which are especially related to the pollution issues, poor conditions of individual parks, lack of signboards, improper organization of public transport and catering, as well as their availability, hence calling attention of the relevant structures and organizations.

Keywords: Urban forest park, landscaping, survey, evaluation, pollution, sanitary hygiene, availability, preferences.

*Corresponding author: Hovik Sayadyan; E-mail address: hovik.sayadyan71@gmail.com

Introduction

Since time immemorial the humanity has been conscious of the role and significance of the settlement gardening and artificial afforestation, particularly in woodless areas.

In the southern located countries mitigation of the solar radiation intensity is of utmost importance. Upon multiple investigations it has been substantiated that inside the green plantations the solar radiation is about ten times weaker, than in open areas. Providing shade in forest parks and green areas is the most important issue, since it ensures the organization of people's proper rest in southern conditions. In forest parks and green zones, the heat is reduced more intensively as compared to other types of green plantations, since in the green

masses the sun rays first fall on the surface of the plants foliage and are mostly absorbed by them. In green areas the air temperature is at least 3-4 0C lower than that of recorded in the surrounding areas. In the inner layers of the tree and shrub foliage grown in recreation areas the temperature is considerably lower due to the circumstance, that via the evaporation process the leaves saturate the environment with humidity [1-3].

The studies have shown that in conditions of Yerevan city the temperature inside the foliage of the trees and shrubs grown in the intensely landscaped parks is 5-8 0C lower than that of in open, non-landscaped areas [1- 4]. It has been also found out that the effect of the green areas on the air temperature is figured out not only inside the plantations but also in their surroundings, sometimes

in the distance of up to 0.5 km. The mentioned effect is mainly related to the size of green areas: the larger the area is, the higher its favorable effect on high temperature mitigation is.

Landscaping is one of the key problems for the current urban development; it has a multifaceted significance. Trees and shrubs absorb 72.0 % of the dust suspended in the air, 60.0 % of the sulfur gas and other harmful substances [2,3,4]. Regulating the temperature and relative air humidity saturating air with oxygen and simultaneously imbibing carbon dioxide from the atmosphere, the green areas, particularly coniferous species, emit phytoncides, which have bactericidal properties, in addition, they also kill pathogens dangerous for human health. According to the data introduced by numerous authors [4 - 8], the green areas in the cities absorb 26.0 % of the overall sound energy fallen on those territories. The researchers have justified that in the high-rise buildings located at the roadside the borders of which are lacking any green plantations, trees and shrubs, the noise is 5 times higher than in the buildings near the walkways with trees and greens. Urban parks should be looked upon as ecosystems, which can be effective for a long time in case of some human intervention (support). This is not about the periodic spraying of the parks with chemical pesticides, which contaminate (poison) the whole environment, but it is about the reasonable regulation of the animal and plant amount rather. It is necessary to sow wild grasses, where insects dwell, which birds feed on, to hang birds' nest in the parks and feed them in winter, etc.

Thus, by so much emphasizing the role of parks, green areas and urban forest parks in the recovery of human health and labor capacity, it is also of extreme significance to have an insight about their state, so as to develop the needed measures in the given city or settlement to improve such an important branch as proper which would be aimed at the human health and labor capacity recovery and proper organization of environmental work.

Materials and methods

The Armenian National Agrarian University (ANAU) participated in "Urban Blue-Green Infrastructures in Eastern and Western Europe" education-research grant program supported by the Swedish Institute (SI). This is multi-national (Sweden, Ukraine, Georgia and Armenia) project with the aim to identify and evaluate the sanitary and

hygienic state of urban forest parks, health resorts and recreation sites within that specific country, the frequency and ability of the people to visit those areas, as well as to implement activities concerning the internationalization of the collaborating universities. To accomplish the mentioned goals, upon the multiple discussions held with the researchers engaged in the grant programs implemented at the partner universities of the mentioned countries, questionnaires were compiled, based on the answers (online and face-to-face) of which the state of the mentioned areas in the preferable cities of the certain country was evaluated. Then after some analyses and summary evaluation of the received results a system of required measures was developed in order to expand the blue and green areas in the settlements and to promote the population's healthy lifestyle, as well as to ensure life expectancy extension via their effective functionality.

Research results

The results of the investigations (surveys) carried out in the Republic of Armenia (RA) have indicated that out of about 1200 respondents more than 81.5 %, highly prioritize the role of green and blue areas, visit those sites with varying frequency and take rest there. Besides, 10 % of the attenders or 120 people visit parks every day, 24.5 % (294 people) – several times a week, 17.0 % (194 people) – once a week and 27.5 % or 330 people visit parks once a month (Fig. 1), while only 18.5 % of the respondents hardly ever attend such places, which is accounted for the fact, that 35.0 % of the visitors are dissatisfied with green and blue spaces availability, service quality, and what is more important, they are short of time and have health problems (Figure 2).

As the survey results conducted for the park availability, affordability and service quality have shown, only 17 % of the respondents (204 people) are satisfied or very satisfied with the parks' availability and service quality and 50 % - with its affordability (Fig. 2). From the rest of the respondents about 5 % or 60 people are very dissatisfied, 35 % are dissatisfied with the mentioned criteria, while 37.0 % expressed neutral opinion towards the criteria of availability, affordability and service quality, which, once more, comes to prove the fact that there are some people in the society, who are indifferent to the environmental protection, particularly towards the parks, their conditions and to the rendered service quality.

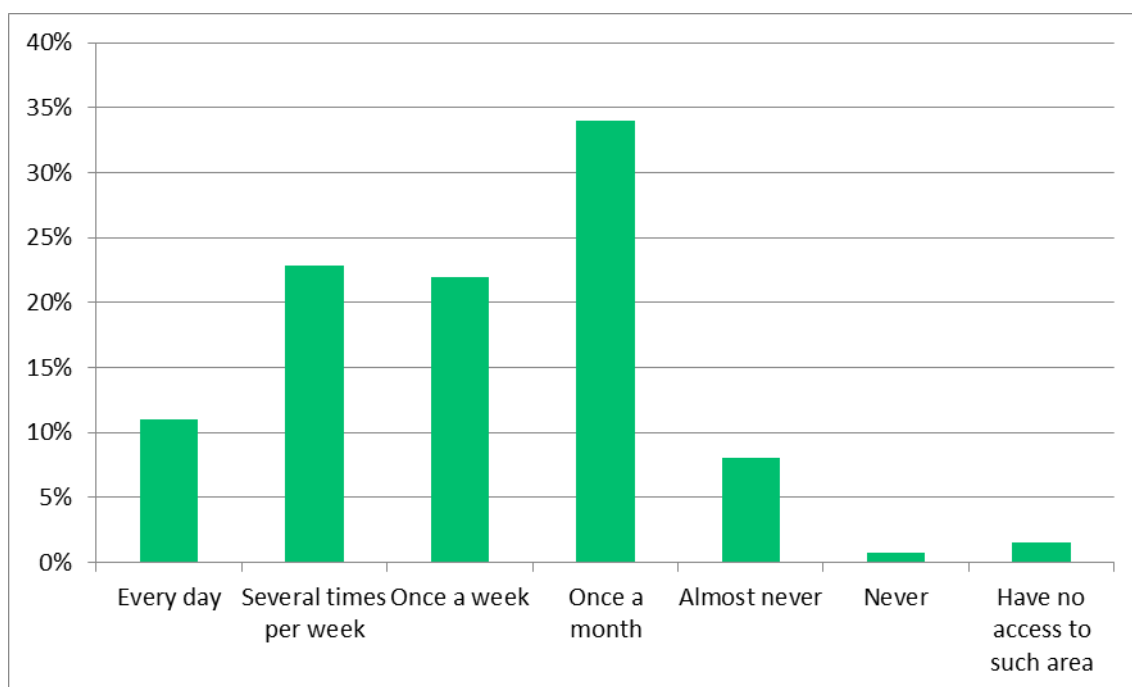


Fig. 1. Frequency of urban green areas' use

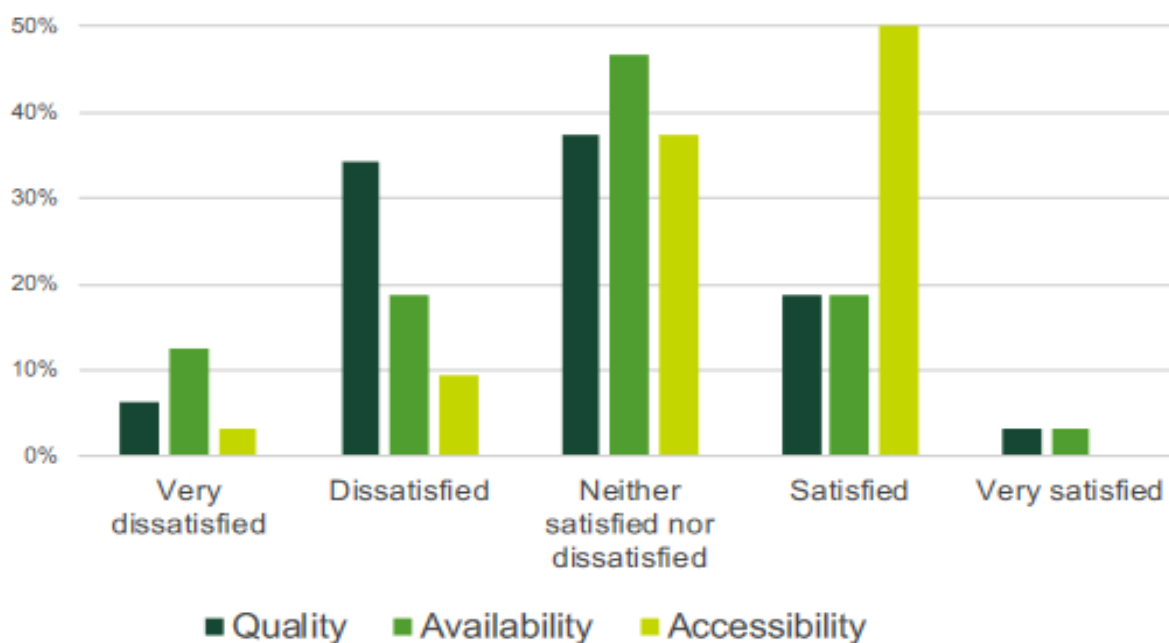


Fig.2. Perceived quality, availability and accessibility of urban green areas

The 74.5 % of the overall respondents or 894 people expressed their great concern about the pollution of the parks and 25.0 % mentioned that they didn't see any problems in the parks which they had visited. Meanwhile there is a certain number of people among the respondents, with

negligible percentage, who were in the opinion that the frequency of the visits can be affected by the problem related to lack of signboards in the parks, existence of overgrown or toxic plants, the hazard of getting hurt due to the relief characteristics and the noise of children (Fig. 3).

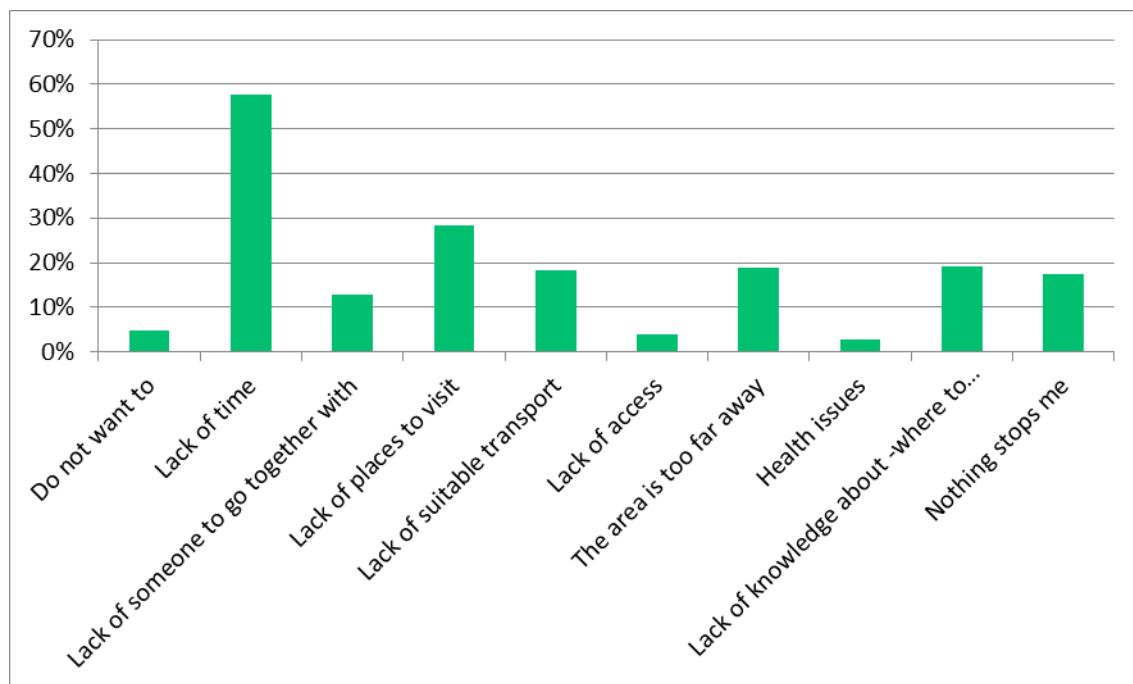


Fig.3. *Perceived problems*

The results of the surveys conducted about the preferable blue and green areas by the respondents are introduced in Fig. 4. According to those data, 72.0 % of the respondents or 826 people prefer visiting large parks, 46 % (529 people) – small parks and 42.0 % or 483 people visit forests.

All respondents indicated that parks should have

playgrounds (35.0 %) and it is desirable that they had swimming pools (37.0 %), where apart from swimming it would be also possible to hold sports events. The interviews also show data retrieved from the respondents who had alternatives to the abovementioned rest areas, such as own garden, lake, river, sea, farmland, etc.

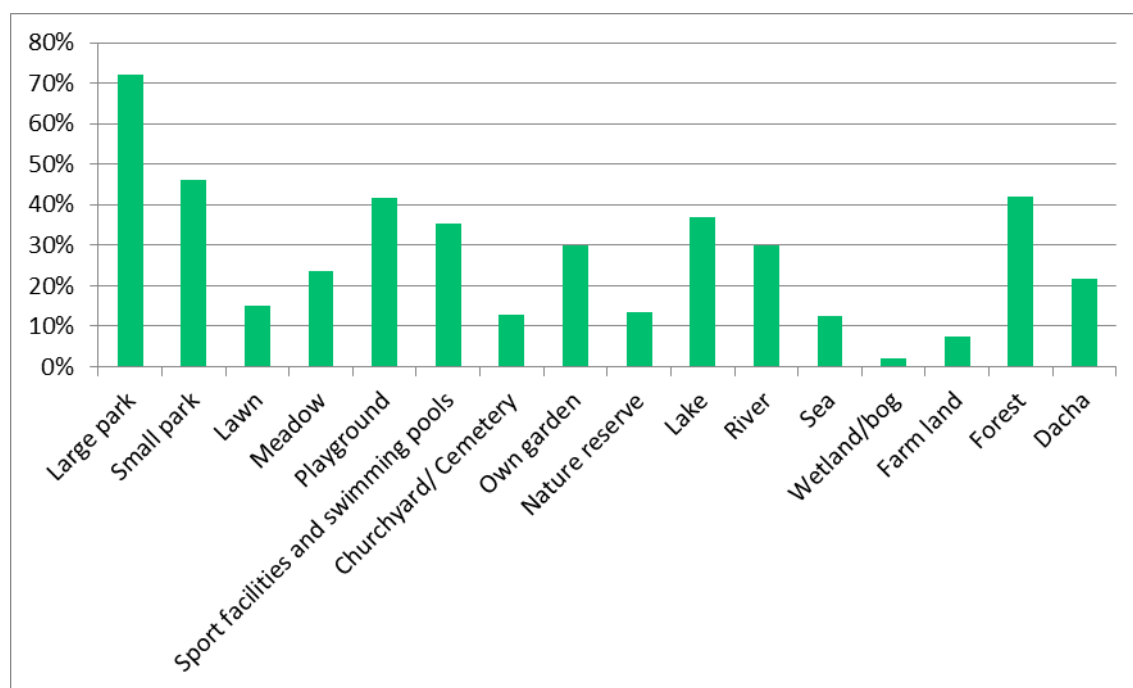


Fig.4. *Selected urban blue-green areas*

Conclusions and recommendations

- [1] Thus, according to the survey results, the targeted use of blue and green areas (parks, lakes, alleys, etc.) of the Republic of Armenia, expansion of those areas and increase of people's attendance to the mentioned sites, as well as the enhancement of their efficiency are particularly affected and interfered with such circumstances as pollution, poor conditions of individual walkways, lack of signboards, improper organization of public transport and catering services and their affordability, which are claimed to be overcome with the support of relevant state bodies.
- [2] In order to handle the current situation related to the blue and green areas and to establish efficient management system, as a vital component in the ecological and economic complex policy of the cities, it is required to implement reforms in the management policy of green plantings and recreation sites.
- [3] In the contemporary conditions the promotion of urban landscaping and the proper management of green plantings and parks can be possible only in case when the management of the mentioned areas is implemented via the consistent combination of the following three components: service, development and control.
- [4] Special accent should be put on the vertical landscaping of the buildings, as a result of which the microclimatic and sanitary-hygienic conditions of the cities, particularly those of located in the southern belts, such as Yerevan, will improve, and at the same time the buildings and constructions will look more spectacular.

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