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Investigation of Çanakkale urban cemeteries within the scope of landscape planning criteria

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Abstract

Cemeteries are areas which have been important to humanity since history began, with a place in every period of human life and sustained importance. As a result, they are currently planned in settlement areas or in areas close to cities. The study researched the landscape infrastructure and furnishings of two city cemeteries with an important place in the current structure of Çanakkale city. The landscape elements based on the planned and present structures were determined in these areas of "Çanakkale Municipality City Cemetery" and "New City Cemetery". For this, literature screening and data obtained from observations represent the basis of the study. Within the scope of the obtained data, it was identified that the main criteria for cemetery planning and design were not included sufficiently in construction of the two cemeteries. The main findings in relation to landscape infrastructure and furnishings are that main and side roads do not abide by standards; there is esthetic and functional insufficiency in terms of paving, car parks, distance between graves and planting; there is insufficient multifunctional space at the entrance for collection/distribution and rest; there is insufficient seating groups and boundary elements for shade and rest; and there are no sections for maintenance, security, WC, prayer rooms, florists, or open/enclosed mourning sections in buildings at the entrance. It was identified that Çanakkale Municipality City Cemetery requires 75 more fountains, while New City Cemetery requires 66 more fountains and the grave area per person is close to the recommended standard (6 m^2). Additionally, the New City Cemetery was calculated to have potential for 11,266 graves. In conclusion, in line with the obtained data, attempts are made to develop recommendations to solve problems in these study areas.

Keywords: Çanakkale, city cemeteries, landscape planning.

Özet

Mezarlıklar insanlığın tarihiyle başlamış, her dönem insan hayatında yer almış ve önemini devam ettirerek sürdürmüş alanlardan birisidir. Bu nedenle günümüzde de yerleşim alanlarında ya da kente yakın yerlerde planlanmaktadır. Çalışmada Çanakkale kentinde mevcut yapısıyla önemli bir yer arz eden iki kent mezarlığının peyzaj altyapı ve donatıları araştırılmıştır. "Çanakkale Belediyesi Şehir Mezarlığı" ve "Yeni Şehir Mezarlığı" olarak öne çıkan bu alanlarda planlanmış mevcut yapı itibariyle peyzaj ağırlıklı öğeler belirlenmiştir. Bunun için literatür taraması ile gözlem sonucunda elde edilen veriler çalışmanın temelini teşkil etmektedir. Elde edilen veriler kapsamında mezarlık planlama ve tasarımına yönelik başlıca kriterlere her iki mezarlık yapılanmasında çok fazla yer verilmediği tespit edilmiştir. Öyle ki; ana ve ara yollarda standartlara uyulmaması, zemin döşeme, otopark, mezarlar arası mesafe ve bitkilendirmedeki estetik ve fonksiyonel yetersizlikler, girişte yeterli ölçüde toplanma/dağılma, dinlenme gibi çok fonksiyonlu meydana yer verilmemesi, gölge ve dinlenme amaçlı oturma grupları ve sınır elemanları yetersizliği ile yine girişte yapı bileşenleri kapsamında idare, güvenlik, wc, mescit, çiçekçi, açık/kapalı taziye bölümlerinin olmaması peyzaj altyapı ve donatıları kapsamında öne çıkan bulgular olmuştur. Çanakkale Belediyesi Şehir Mezarlığı için 75; Yeni Şehir Mezarlığı için 66 çeşmeye daha ihtiyaç olduğu; kişi başına mezar alanlarının standarda yakın (6m^2) olduğu da tespitler arasında yer almaktadır. Ayrıca Yeni Şehir Mezarlığı için 11266 mezar potansiyelinin olduğu da hesaplanmıştır. Sonuç olarak, elde edilen veriler doğrultusunda söz konusu çalışma alanlarına yönelik çözüm önerileri geliştirilmeye çalışılmıştır.

Anahtar kelimeler: Çanakkale, kent mezarlıkları, peyzaj planlama.

Introduction

Urbanization continuously develops with the impetus of the urban population potential increasing through internal and external migration and linked to this, involves a changing and developing dynamic city planning and design for urban furnishings. Generally during city planning, elements like population structure, groups and potential population in the future (population projections) are ignored (Özhancı and Aklıbaşında, 2017). As a result, we cannot get ahead of rapid urbanization. Linked to rapid urbanization, it is common that urban green spaces and urban lands are consumed in slapdash fashion, even encroached. However, in consolation, city cemeteries are preserved as urban green spaces and ensuring their sustainability and permanence will guarantee this important city component (Sarı and Koçak, 2005). Linked to increasing population, the dimensions of city cemeteries change and develop. Linked to rapid urbanization, cemeteries are one of the problems occurring in metropolitan cities (Afla and Reza, 2012). At the point of identifying grave locations, the effects of local and administrative management are dominantly mentioned. An unplanned and unformulated approach limits the working areas for urban planners or landscape architects and at the same time pushes the welfare of society into the background (Lehrer, 1974). At this point, planning, design and economy of use of grave locations are important dimensions. There is a need for evaluation of metropolitan cemeteries within the scope of public services in terms of variety and wealth of use and for evaluation for recreational aims (Afla and Reza, 2012; Lehrer, 1974). The principle for calculating cemetery area in urban planning changes linked to information such as population projections for the town 20-30 years later, estimated death rates, and unit grave area (Uslu, 1997). Though cemeteries were designed to be outside cities previously in history, over time they have been included in the city settlement and have taken a place as open and green spaces in human life. This situation has led to cemeteries becoming insufficient linked to the increase in population over time. It is unavoidable that during this process new locations appropriate to standards outside the city, in the style of the satellite town model, must be planned as cemeteries. Cemeteries are locations where the bodies of the dead are buried without loss of time and without harmful effects to the environment and especially humans. At the same time, they are symbolic areas representing the other dimension of life that is worth memorializing for the remaining community (Uslu, 2009). According to the urban texture "cemeteries", indexed to humans and their lives throughout our existence, with location prioritized by distance, are important urban green spaces that should be evaluated in terms of physical dimensions like soil structure, field slope, climate characteristics, dominant wind direction, ground water, aspect, elevation, architecture and planting (Uslu, 2009; Özkardaş, 2010; Capels and Senville, 2006). Additionally, factors like beliefs, traditions/customs/habits, health conditions, and burial methods shape cemeteries. The consideration of the belief that life continues after death suggests that cemeteries are eternal resting places. In line with this, attempts are made to keep the esthetic effect of cemeteries high. In fact, even food, clothing and personal items are placed on graves (Akdoğan, 1962). Additionally, the results of locating cemeteries with mistaken strategies affecting groundwater near the city comprises a risk factor in terms of the city's inhabitants. At the same time, this situation primarily affects human and environmental health but also affects welfare levels (Üçışık and Rushbrook, 2001). However, when planning these spaces rationality and necessary criteria that should be primarily considered are often ignored, making it possible they are insufficient both in terms of urban esthetics (urban identity) and benefit (functionality). This study attempts to examine the present landscaping and furnishings in two city cemeteries located in urban Çanakkale. Within the text "Çanakkale Municipality City Cemetery" is referred to as "Old Cemetery", while the "New City Cemetery" is referred to as the "New Cemetary". Within this scope, the main insufficiencies in planning and design of these areas were identified. Finally, recommendations are made about development of these areas.

Material and Methods

This study was completed in two important urban cemeteries in Çanakkale of the "Çanakkale Municipality City Cemetery" and "New City Cemetery". The "Çanakkale Municipality City Cemetery" is located in the city, while the "New City Cemetery" is located outside the city adjacent to the "15 July Democracy Bus Station". The "Çanakkale Municipality City Cemetery" is located at coordinates 40° 9' 5.79" north 26° 26' 42.36" east and has 90 da area (Figure 1).

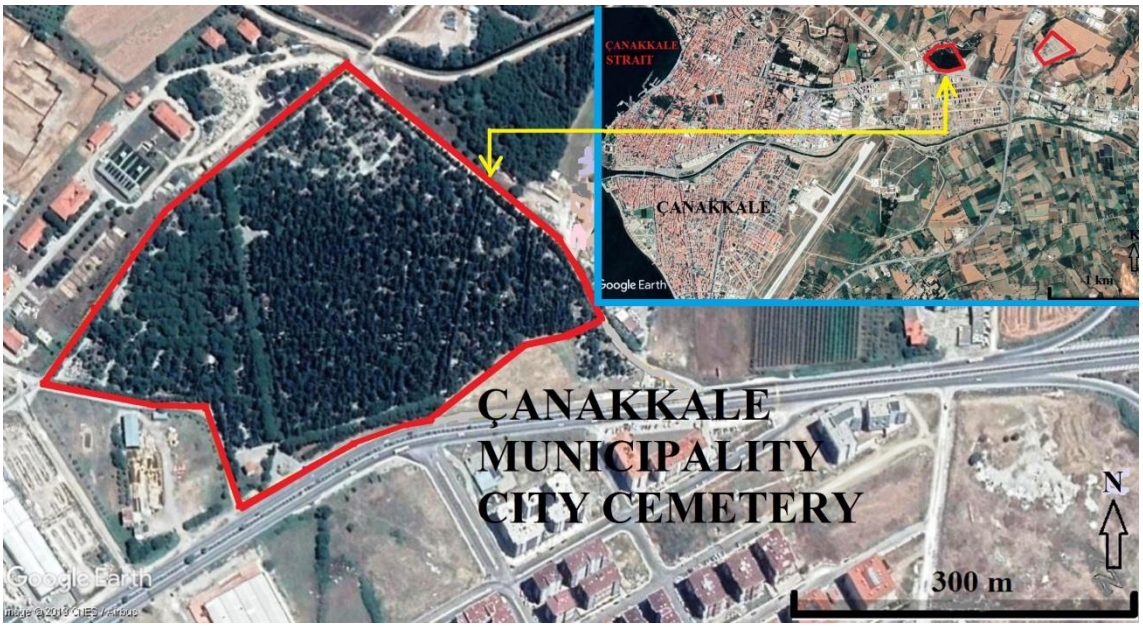

Figure 1. Location of Çanakkale Municipality City Cemetery (adapted from Google Earth (2019))

Located outside the city, the "New City Cemetery" has coordinates 40° 9' 4.99" north 26° 27' 34.68" east and has 93.6 da area (Figure 2). The area measurements and coordinates were determined from Çanakkale Implementation Development Plan and Google Earth (2019). The study conceptualized the identification of landscape infrastructure and furnishings within the scope of these cemeteries located within the urban green space system. With this aim, initially the areas were visited for observations in an attempt to analyze the current status. For this, first planting and plant types were identified. Secondly the structural (physical) status of the cemeteries were determined. In this stage, attempts were made to access current data through contact with the Çanakkale Municipality Cemetery and Burial Operations Unit. Finally, findings obtained through analysis in terms of visuals, technical and theoretical details were evaluated within the scope of landscape planning and design criteria, cemetery planning criteria, and laws and directives, and attempts were made to recommend solutions for the areas. With this aim, comparisons were made of data from some national- and international-based studies with data from this study.

Results

The "New Cemetery" is a newly created cemetery due to the lack of burial potential in the "Old Cemetery". The area consists of 20 blocks, with grave construction on these blocks having a planned structure. According to burial density, the number of blocks can be increased to include more graves. The area criteria were identified as 93,600 m^2 and 90,000 m^2, respectively. The findings obtained for both study areas can be listed in general below. Of the cemeteries, the Municipality City Cemetery is

within the town, while the other is located adjacent to the bus station and has no limits in terms of access.

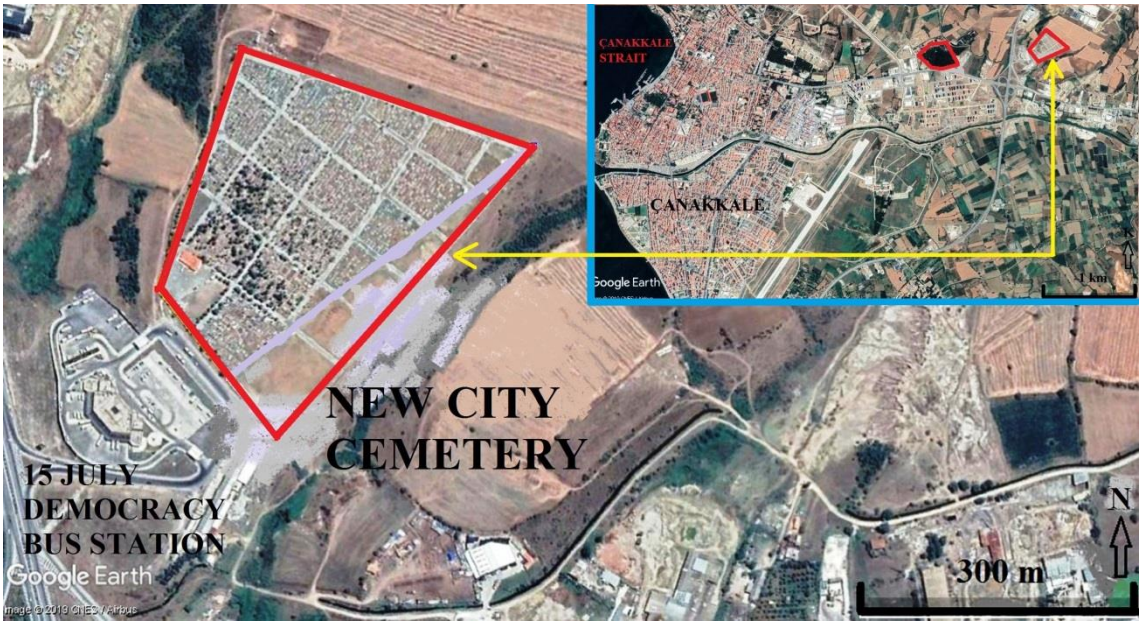

Figure 2. Location of Çanakkale New City Cemetery (adapted from Google Earth (2019))

Within the scope of insufficient landscape planning components, for the Old Cemetery it is possible to list pedestrian footpaths, more than one esthetic and functional entrance, mourning area at the entrance, sufficient/planned car park, seating groups for resting, side roads with paving in block plans, maintenance/service building providing washing (abdest) facilities, morgue, prayer room, WC, storage, security, lighting units, florist, ironmonger, stonemason, warning/information panels, and management/doctor/religious personnel services, wide/standard side roads between graves, boundary elements and fountains. For the New Cemetery, the list includes road (alles) tree planting, uniform/planned/esthetic, functional and ecological planting (Usta et al., 2018), throughout the area, square for collection/distribution/mourning at the entrance, planned car park, seating benches, paving of side roads, maintenance/service building with security, florist, ironmonger, stonemason, warning/informative panels and management/doctor/religious personnel services, more than one entrance, boundary elements and fountains (Odabaş et al., 1994).

Sufficient landscape planning components; can be stated as sound system, lighting units, sufficient metal waste containers, washing (abdest), morgue, prayer room, WC and storage facilities at the entrance, separate entry planning for vehicles and pedestrians, evergreen trees, and inclusion of small trees and bushes for the New Cemetery (Figure 3) (Odabaş et al., 1994). For the Old Cemetery, these elements can be listed as separate entry planning for vehicles and pedestrians, plant types included in planting (evergreen trees, small trees and bushes) (Figure 4) and amounts are uniform and sufficient, side roads with asphalt or parquet/keystone paving, metal waste containers, access system within the cemetery and main roads being close to standard.

Figure 3. Views from Çanakkale New City Cemetery (New Cemetery).

As seen in Table 1, the area of the Old Cemetery is 90,000 m^2, and is a cemetery which has fulfilled its potential for 14,500 filled graves. The area per grave was calculated as 6.2 m^2 (90000/14500) and this is at standard levels (Anonymous, 2011). Data was reached that there are currently 70 fountains (Anonymous, 2019a). However, as stated by Özkan et al. (1996), it is necessary to provide 1 fountain

per 75-100 graves, and it was identified that the cemetery should have 145 fountains (145000/100) based on the current number of graves in the cemetery.

Accordingly, it was concluded that there is a need for 75 more fountains. The New Cemetery has 67,600 m^2 empty area, with a total area of 93,600 m^2 and 26,000 m^2 filled grave area. Additionally, information obtained from counts by Municipality personnel on 09.07.2019 identified 4369 filled graves and 90 fountains. With the calculation 4369/100=43.69 fountains required, there were 90 fountains present. Additionally, the grave potential of the cemetery was calculated as 93600/6=15,600 graves. According to current data, with current 67,600 m^2 empty area, the cemetery had potential for 11,266 further grave sites (67600/6). According to the literature, this requires 15600/100 or 156 fountains. Currently there are 90 fountains showing 66 more fountains are required. Additionally, it is notable that the current status has 5.95 m^2 area per grave, so the "New Cemetery" is at standard levels.

An attempt is made to list the decorative plant groups commonly used in the Old and New Cemeteries. Decorative plants in the tree/small tree group: *Cupressus sempervirens/*Mediterranean cypress, *Cupressus arizonica/*Arizona cypress, *Cupressus macrocarpa/*Monterey cypress, *Pinus pinea/*stone pine, *Catalpa bignonioides/*southern catalpa, *Ligustrum vulgare/*wild privet, *Olea europaea/*olive, *Platanus orientalis/*oriental plane, *Morus sp./*mulberry sp., *Melia azedarach/*chinaberry, *Pyrus communis/*European pear, *Pyrus elaeagnifolia/*oleaster-leaf pear, *Punica granatum/*decorative pomegranate, and *Ulmus minor/*field elm. Decorative plants in the shrub group: *Rosmarinus officinalis/*rosemary, *Euonymus japonica/*evergreen spindle, *Pyracantha coccinea/*scarlet firethorn, and *Rosa sp./*rose species. Decorative plants in the creepers, climbers and ground cover group: *Lampranthus roseus/*rosy dewplant, *Narcissus pseudonarcissu/*wild daffodil, *Lilium sp./*lily species, *Portulaca grandiflora/*moss rose, *Lavandula officinalis/*lavender, *Tradescantia zebrine/*inch plant, *Osteospermum ecklonis/*cape marguerite, *Tagetes erecta/*marigold, and *Cedrus libani glauca/*Lebanon cedar (Figure 3-4).

Table 1. Data obtained in relation to Çanakkale city cemetery (Anonymous, 2019a)

	Çanakkale Municipality City Cemetery/Old Cemetery (m²)	New City Cemetery/ New Cemetery (m²)
Area (m²)	90000	93600
Empty area (m²)	–	67600
Full area (burials) (m²)	90000	26000
Number of graves (no)	14500	4369/15600
Number of fountains	70	90
Number of fountains required according to total number of graves (no)	145 (14500/100)	156 (15600/100)
Number of fountains required (no)	75 (145-70)	66 (156-90)
Cemetery area per person (m²)/person	6.2 (90000/14500)	Current status: 5.95 (26000/4369)
Cemetery area required for 6 m² per grave	87000 (14500x6)	15600 (93600/6)
Number of graves required (no)	–	11266 (67600/6)

Per grave, 6 m² is the required standard area (Anonymous, 2011)

There should be 1 fountain for every 75-100 graves (Özkan et al., 1996)

In the current empty area of the New City Cemetery, there is potential for 11266 more graves.

There is a need for 75 more fountains for Çanakkale Municipality Cemetery and 66 more fountains for the New City Cemetery.

Figure 4. Views from Çanakkale Municipality City Cemetery (Former Cemetery).

Discussion

In Currently it is not very accurate to say that cemeteries are spaces only designed for the dead. This is because if funeral procedures and mourning activities are assumed to be integral to cemeteries, the necessity to evaluate these areas as social spaces is revealed. As a result, it is necessary to shape these areas from multiple aspects and with different criteria, led by grave planning and design but incorporating laws and directives, regional climate characteristics, dominant wind, soil structure, topography, geographic, geologic and geophysical features, aspect and elevation. Apart from this, when landscape infrastructure and furnishings are considered together, it will be possible for the area to serve more rationally. The study by Lehrer (1974) emphasized that in terms of solution recommendations to save cemeteries from derelict structure and unmaintained form, demands for use in line with planning for recreational or social activities will be a gain in terms of society and the town. Among his proposed uses, there were alternatives including design of grave cities and many bodies in shrine models in multistory residences. In this way, the excess amount of open space in cemeteries was considered. Here the proportion of open and green spaces in the urban texture, and as a result amount of green space per person, naturally increases. In this framework, an increase in the working area for urban planners, especially landscape architects may be ensured. Afla and Reza (2012) dealt with investigation of current problems with Malay cemeteries and the equipment and uses of Muslim cemeteries in the Kuala Lumpur metropolitan region. In conclusion, they developed applicable design recommendations. Üçışık and Rushbrook (2001) investigated the mixing of gases and products resulting from physiologic and chemical decomposition of cemetery burials with groundwater. The study results developed recommendations about improving these waters and locations and design of future grave sites. There is a need to deal with cemetery planning with the same sensitivity as any other urban uses in the structure of developed cities and to structure planning and design (Capels and Senville, 2006). Cemeteries in rural America from the 1850s are counted as strong symbols of the period. The esthetic and teaching qualities of these strong structures in relation to this period come to the fore. A thesis study by Buckley (2013) attempted to develop opinions and recommendations to guide development of these areas. The study by Özkan et al. (1996) emphasized that in planning cemeteries, slope of 15% at most may be appropriate; however, the use of flat or close to flat areas as cemeteries may cause a drainage problem and not be appropriate. Additionally, the same study stated that main access roads should be 12-18 m, while side roads should be 2-4 m (Çetiner, 1991; Güçlü et al., 1996; Anonymous, 2011; 2019a; b). According to these criteria, when the current status of the cemeteries included in this study are examined, the Old Cemetery is located on a flat/close to flat area and is distant from planning norms. The New Cemetery has appropriate qualities in terms of the slope factor. The cemetery entrances and side roads within the cemeteries appear to be close to standard in both cemeteries. Anonymous (2019b) stated the need to surround the cemeteries with 2 m walls according to the Municipal Cemetery Regulations. This is the situation in the Old Cemetery. However, it is clear this is not very rational because this structure traps air within the cemetery and odors that may spread may reach uncomfortable dimensions. At the same time, this is not a very attractive aspect in terms of visitors to the cemetery. In fact, this may lead to shorter visits by relatives of the dead, and even be a repellent force in relation to this topic. If these areas are surrounded by more open boundary elements, supported by esthetic and functional landscape infrastructure and furnishings, they will become more attractive and may even gain use for recreational aims, as in other countries.

According to Erkan (1983) emphasized the necessity to calculate 7 m^2 area for each grave in a cemetery. The same area was stated as 6 m^2 by Anonymous (2011; 2019a; b). With the calculation by Erkan (1983), Akbulut and Önder (2011) found 1.7 m^2 area per person in a study of Aksaray city cemeteries, while Güçlü et al. (1996) found area of 1.2 m^2 grave area per person in a study of the Contemporary and New Cemetery located in Erzurum urban area. According to the same calculation,

Aksaray was identified to need 894,401 m^2 cemetery area, while Erzurum required 146.44 ha additional cemetery area. The study by Özhancı and Aklıbaşında, (2017) found 254 ha total cemetery area with 2.7 m^2 grave area per person. According to the standard, 405 ha additional area was required. It was revealed that Çanakkale city cemeteries have values close to the standard for area measurements.

In this study, physical dimensions of "Çanakkale Municipality City Cemetery" and "New City Cemetery" were dealt with and the following recommendations are made in relation to variation and development.

- The use of higher walls as boundary elements will have cold and repellent force in addition to trapping bad odors and will unavoidably have limiting effects on visitors and surroundings. As a result, boundaries should use functional and esthetic green plant cover.
- Especially road tree planting was fully planned in Çanakkale Municipality City Cemetery, while it was included in the planning for the New City Cemetery but does not have sufficient dimensions. Additionally, it is not possible to say the planting design has homogeneous distribution in the area in general. As a result, the planting design in the New City Cemetery should have equal distribution and use esthetic/functional plant types.
- Planting work should address the area in general, the planning should not both grave and burial sections, with cemetery planting in line with functional and esthetic principles and of sufficient amounts
- Circulation within the cemetery should be developed
- Open and enclosed mourning and resting spaces should be constructed
- Entrances should be organized and developed for esthetic and functional aspects
- Circulation within the cemeteries should be developed and collection-rest areas should be created
- Structural units to meet administrative, religious, individual/social needs (flowers, stones/marble, etc.) at the entrance should be included
- Car park planning developed in line with capacity and security
- Increased landscape furnishings like resting/seating groups, waste containers, information panels/signs, fountains
- Development of security and lighting facilities
- Studies about planning the area by developing psychologically healing designs should be performed.

In conclusion, though the areal dimensions of Çanakkale city cemeteries are sufficient, it appears the landscape infrastructure and furnishings are insufficient. The study mentions the sufficient and insufficient criteria of the cemeteries and reveals the necessity to abide by standards and criteria in order to achieve contemporary cemetery planning. Currently it is necessary to ensure the use of cemeteries by individuals for recreational purposes as open and green spaces in the city (Odabaş et al., 1994). For this, important tasks await municipalities, initially, along with other local administrators.

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