e-ISSN: 2822-5244

AKDENIZ UNIVERSITY JOURNAL OF THE FACULTY OF ARCHITECTURE

AKD U JFA

www.mimarlikdergi.akdeniz.edu.tr

EVALUATION OF OLDER ADULT CARE AND REHABILITATION CENTER'S COMMON AREAS' RISK CONDITIONS IN TERMS OF SAFETY

Yaşlı Bakım ve Rehabilitasyon Merkezleri Ortak Kullanım Alanlarının Güvenlik Açısından Risk Durumlarının Değerlendirilmesi

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Makale Bilgisi

Makale Geçmişi:

Geliş	14.04.2023
Düzeltme	17.04.2023
Kabul	24.04.2023

Anahtar Kelimeler:
Yaşlı
Yaşlı bakım ve rehabilitasyon merkezi
Ortak kullanım alanı
Güvenlik
Risk

ÖZ

Yaşlı Bakım ve Rehabilitasyon Merkezlerindeki ortak kullanım alanlarının güvenlik açısından risk durumları incelenmesi amacıyla 'A' ve 'B' adlı yaşlı bakım merkezlerinin ortak kullanım alanları ele alınmaktadır. Bu çalışmada 11 iç mimar, 11 mimar ve 11 peyzaj mimarı toplam 33 uzman görüşü ile yaşlı bakım merkezlerine ait mekanların risk ihtimallerini tasarım değişkenlerine göre belirlenmiştir. Bu kapsamda mekanların risk seviyesini belirlemek için L tipi matris yöntemi kullanılarak mekan risk ihtimalleri ile yaşlı bireyler için hasarın büyüklüğü yani riskin şiddeti arasında çarpımsal bir ilişki kurularak meydana gelebilecek risk seviyesi "düşükten çok yükseğe" kademelendirilmiştir. Her iki merkezde de çok yüksek ve de yüksek seviyede riskli bir mekan bulunmamıştır. Risk skorları incelendiğinde 'A' merkezinde bahçe mekanı, 'B' merkezinde ise havuz alanı için önlemlere öncelik verilmesi gerekmektedir. Bu doğrultuda, tehlikeleri önlemek için öncelikle bahçe mekanı için döşeme malzemesi değiştirilmesi ve kot farklarının kaldırılması; havuz alanı için de döşeme malzemesi değiştirilmesi ve tavan kotunun daha aşağıda olmasını sağlayacak tasarımlardan kaçınılması geekmektedir.

Sonuç olarak, Yaşlı Bakım ve Rehabilitasyon Merkezlerindeki ortak kullanım alanlarının güvenli olabilmeleri için mekan bileşen ve öğeleri ile belirlenen 38 tasarım değişkeninin ilişkili olduğu risk seviyelerine yönelik önlemler tanımlanmıştır.

Article Info

Article History:

Received	14.04.2023
Revised	17.04.2023
Accepted	24.04.2023

Keywords:
Older adult
Older adult care and rehabilitation center
Common area
Safety
Risk

ABSTRACT

The 9 common use areas of 'A' and 10 common use areas of 'B' senior care and rehabilitation centers are discussed to examine the risk statuses of the common use areas in the older adult care and rehabilitation centers in terms of safety. Firstly, the design variables for older adult care centers were determined by 33 experts from 11 interior architects, 11 architects, and 11 landscape architects. The expert group then assigned risk probabilities to the spaces belonging to these centers based on the design variables. L-type matrix method was used to establish a multiplicative relationship between the spatial risk possibilities and the magnitude of the damage for the older adults which is the severity of the risk and the level of risk that may occur in the spaces in these centers. When the risk scores were examined, neither center had a very high or high-risk space. Precautions must be prioritized for the garden space in A Center and the pool area in B Center. First and foremost, the flooring material for the garden area needs to be changed, and the level differences need to be eliminated in order to prevent hazards. The flooring material for the pool area should be changed, and designs that would lower the ceiling should be avoided.

Consequently, 38 design variables have been determined and measures have been defined for the risk levels they are associated with to make the common use areas in the older adult care and rehabilitation centers safe.

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To Cite This Article: Gül, M., Ertaş Beşir, Ş., Özturan, Ö. (2023). Evaluation of Older Adult Care and Rehabilitation Center's Common Areas' Risk Conditions in Terms of Safety. *Akdeniz University Journal of the Faculty of Architecture*, 2(1): 19-32.

RESEARCH ARTICLE / ARAŞTIRMA MAKALESİ

1. INTRODUCTION

The common areas of older adult care and rehabilitation centers are the communication points where the older adults gather, eat, engage in various activities, and meet with their visitors. Most of these spaces are areas for seating and resting, restaurants, cafes, different hobby rooms, retail stores, and multipurpose spaces for entertainment, meetings, movies, and performances (Cakır, 2004).

Even though everyone has different needs and expectations in life, older adults in nursing homes have access to the most fundamental necessities of life. These needs include food, rest, sleep, personal hygiene, safety from dangers, order, attachment, and aesthetic needs. These requirements must be met in addition to those relating to proper temperature control, noise protection, security, personal space, and adequate lighting. The expectations and needs of the older adults must be taken into account to increase their life satisfaction (Phillips et al., 2005).

For older adults, their living quarters and nearby neighborhood units are important. Some aging issues, such as being unable to travel far from one's home, physical limitations, and a decline in sociocultural activities, force older adults to engage in more local relationships and interactions with their immediate surroundings. Therefore, the physical surroundings that are closest to older adults, particularly the indoor spaces they inhabit, have a greater impact on their quality of life (Kaya, 1994).

An organized approach to daily tasks aids the individuals more in problem-solving and makes life easier to manage. The design should consider the changing characteristics of older adults, such as loss of balance, cognitive (related to cognition and comprehension) impairment, vision and hearing impairment, and loss of strength. Older adults should be given the opportunity to live independently for as long as possible through design and planning (Leonardi et al., 2008).

Planning a nursing home should prioritize creating a healthy environment that makes residents feel "at home" and satisfies their socio-economic, psychological, and physiological needs (Cakır, 2004). It should concentrate on the best ways to ergonomic designs for older adults' living spaces so that they can continue to carry out their daily activities. Five different arrangements are important for the interior space: ergonomic, anthropometric, physiological, spatial, psychological, information, and security (Ertas, 2012). The safety criterion has great importance in terms of the health of the older individuals in the environment they live in. The safety of space means that the space can be felt and seen. The most critical factor is to prevent

injury to older individuals. Every safety measure must be taken on this account. Older individuals may not be aware of the dangers and problems that may occur. The most important thing is to avoid putting older people's health and lives in danger and to create environments that adhere to norms and standards. Accidents frequently happen in places with poor safety measures or as a result of reckless behavior. Therefore the location must be set up in accordance with the instructions to prevent accidents (Erkan,1996; Ertas, 2012).

This study's aim is to evaluate the risk factors associated with common areas used for socialization in older adult care and rehabilitation facilities, which will be more frequently utilized by this age group considering the projected growth in the older population. As a result, the relationship between space and user in older adult care and rehabilitation centers has been defined in terms of safety. The risk probabilities of the spaces were determined by 38 design variables and the risk levels of the spaces were listed. Therefore, the actions that can be taken in accordance with the risks associated with the spaces have been proposed.

2. MATERIAL AND METHOD

2.1. Material

Since the elderly care and rehabilitation centers examined in this study could not be reached by the authors, their identities are coded as 'A' and 'B' in the study.

Physical data (such as plan/section, etc.), space photographs, and all relevant information in the literature were reached at a sufficient level to be examined in terms of security in common use areas. For this reason, nursing homes and care centers named 'A' in Tokyo, Japan, and 'B' in Wisconsin, USA, are reviewed in the study.

'A' Senior Care and Rehabilitation Center is located in central Tokyo. The center, which is 1600 m² wide, can accommodate 88 beds. The main structure of the building is reinforced concrete and steel. The center has a large garden and 20 different places with different functions.

The common areas of 'A' Senior Care and Rehabilitation Center are the foyer area, sitting area, dining room, beauty salon, party room, fitness and rehabilitation room, main bathroom, and terrace areas (Table 1).

'B' Senior Care and Rehabilitation Center is located in Wisconsin, USA that was designed in 1987. The retirement community can accommodate 44 beds. 'B' center has 15 different spaces that are serving different functions (Table 1).

The common areas of the living room, dining area, chat corner, area for creative activities, museum, cafe, fitness and therapy room, and pool area are just a few of these. There are 10 common areas in the 'B' and 9 in the center of 'A'. These are combined into one group (Table 1).

Table 1. 'A' and 'B' center common use areas
Tablo 1. *'A' ve 'B' merkezi ortak kullanım alanları*

	Eating Area		Sitting Area		Fitness Area		Bathroom		Garden		Chatting Area		Pool Area	
A Senior Care and Rehabilitation Center	**1**	Dining Hall	**2**	Sitting/ Visiting Area	**6**	Fitness and Rehabilitation Room	**7**	Bathroom	**8**	Garden	-		-	
			3	Foyer Area					**9**	Terrace				
			4	Conference Area										
			5	Party Room										
A Senior Care and Rehabilitation Center	**1**	Dining Hall and Cafe	**2**	Sitting/ Visiting Area	**3**	Fitness and Gymnastic Room	**5**	Bathroom	**6**	Garden	**8**	Conference Area	**10**	Pool Area
					4	Therapy Room			**7**	Terrace/ Balcony	**9**	Chatting Area		

2.2. Method

Research Model

A Case Study Design and Interview Technique, as the qualitative research methods, were used in this research. In case studies, the researcher carefully examines a situation, frequently a plan, an action, a procedure, or one or more people in case studies (Creswell, 2014). Interviews are an effective method for learning about participants' perceptions, reactions, and experiences as well as for validating observational and written data. It is powerful for gathering data because it allows for interaction between the researcher and the data source and makes it easier for the researcher to verify, delineate, and elaborate the information gathered (Yıldırım and Şimşek, 2013).

Research Procedure

To evaluate the common areas in terms of safety, 33 expert academicians and practitioners consisting of architects, interior architects, and landscape architects who have worked on space design for older individuals were asked 7 semi-structured questions prepared through a conference call. In a total of 7 questions, they were asked to determine the design variables that define the floor, column, beam, wall, staircase, door, window, furniture, and accessories (Ozdemir, 1994) as the main components of the space. The reason why the number of experts was determined as 33 is to reach eleven experts from three types of expertise (architect, interior architect, landscape architect).

Data Collection and Analysis

The research utilized semi-structured interview forms as a means of gathering data. There are 7 questions total in this context, each with two components. The first point outlines the design factors that determine the security risk status that may develop in spatial components and elements. All quantitative spatial variables that the designer can alter in the design to improve safety are included in this set of variables. As a result, the most appropriate solution alternative set will be to unfold all the problems rather than computing solution alternatives for each problem that results from the risk situations (Arpacıoglu et al, 2020).

The risk score and level of the spaces are determined using the L-type matrix method for data collection and analysis carried out in the second point of the research. In small businesses, analysts can use the L-type matrix method to independently understand cause-and-effect relationships and carry out risk analysis. First, the outcome is rated and measured using this method if an event has a certain probability of occurring. Probability and severity are combined to create the risk value (Bayram, 2021). The L-Type Matrix Method is often used to decide which hazards need to be addressed as soon as possible (Ceylan and Bashelvacı, 2011). Risk = Severity x Probability is the probability of an event that has the possibility of causing harm to a certain degree and the size of the damage this event would cause make up the risk. Probability is defined as the frequency of occurrence of the danger, and severity is defined as the magnitude of the damage that occurs after the event has occurred (Korkmaz, 2020). In the study, the risk level that could arise is rated from "low to very high" by establishing a multiplicative relationship between the spatial risk probabilities determined in accordance with the risk probabilities of the design variables and the severity of the risk for the older adults (Table 2).

In the first step, 33 experts were asked to rate the likelihood of hazards occurring on sample photographs of the locations on a scale of 1 to 5 as "very small, small, medium, high, and very high". The probability of risk arising from the design variables was calculated by allocating a percentage of the total score to the expert group. The total risk probability average of the spaces was then calculated based on all design variables (D.V.) by dividing the total risk value score of the space components and elements by the total number of experts and the 38 design variables (Table 2).

Table 2. Probability and severity rating, acceptability values of the result (Ozkılıç, 2005; Koltan et al., 2010) and data analysis

Tablo 2. *Olasılık ve Şiddet Derecelendirme, Sonucun Kabul Edilebilirlik Değerleri (Özkılıç, 2005; Koltan vd., 2010) ve Veri Analizi*

Probability Rating (Özkılıç, 2005; Koltan ect, 2010)

Point	Probability	Rating	
1	Very small	Almost never	
2	Small	Very few (once a year)	
3	Medium	Few (several times a year)	
4	High	Often (monthly)	
5	Very High	Very often (once a week, every day)	

Severity Rating (Özkılıç, 2005; Koltan ect, 2010)

Point	Probability	Rating	
1	Very mild	First aid required	
2	Mild	Ambulatory treatment, first aid treatment required	
3	Moderate	Mild injury, inpatient treatment required	
4	Serious	Serious injury, prolonged treatment	
5	Very Serious	Death	

Acceptability Values of the Result (Özkılıç, 2005; Koltan et al., 2010)

Risk Level	Result	Action
Very Low	**Minor Risks (1)**	Planning control measures and keeping track of the actions to be taken to eliminate identified risks might not be necessary.
Low	**Bearable Risks (2,3,4,5,6)**	The identified risks may not require any additional control measures. However, existing controls should be maintained, and it should be checked that these controls are maintained.
Mild	**Moderate Risks (8,9,10,12)**	The identified risks should be mitigated through action. Measures to reduce risks might take some time.
High	**Serious Risks (15-16)**	Works should not be started until the identified risk is reduced, if there is an ongoing activity, it should be stopped immediately. If there is a risk associated with continuing the work, immediate action must be taken, and as a result of these actions, the decision to continue the activity must be made.
Very High	**Unbearable Risks (20-25)**	If there is any ongoing activity, it should be stopped as soon as the identified risk is decreased to an acceptable level before work can begin. The activity should be stopped if the risk cannot be decreased despite the measures taken.

Data Analysis

$$x1 \ldots . = \textit{the total score of the risk probability rating steps } (1,2,3,4,5)$$

$$\text{Total score} = x1$$

$$risk\ probability = \frac{Total\ score\ (x1)}{33(expert\ group\ number)}$$

$$Total\ risk\ probability = x1 + y1 + z1 + \cdots.$$

$$Total\ risk\ probability\ average = \frac{Total\ risk\ probability\ calculation}{33(expert\ group\ number)} \div 39$$

In the second step, the expert group rated the harm that could be done to older adults when dangers occur for the violence severity (S) variable, again from 1 to 5 as “very mild, mild, moderate, serious, and very serious”. Based on these findings, a risk score (Risk= Severity x Probability) was calculated for each place, and the risk level was formed in accordance with the score range shown in Table 2. As a result, the numerical magnitudes of the risk scores were used to determine the tolerability of the risks and the priorities of the measures to be taken (Ozkılıç, 2005; Koltan et al., 2010; Bayraktar et al., 2019), (Table 2).

3. RESULTS

'A' senior care center has dining areas, sitting areas, fitness areas, bathrooms, and garden areas; 'B' senior care center has the dining area, sitting area, fitness area, bathroom, garden, chatting area and pool area as the common areas. The following 38 design variables and the scores for the risk probabilities of the spaces associated with these variables are based on the opinions of 33 expert groups; including 11 interior architects, 11 architects, and 11 landscape architects (Table 3).

The most important design variable that may pose a risk for the dining area in 'A' senior care center was found to be the window size with 4,787 value and the perception of the window with 4,666 value with a very high probability risk. In the 'B' senior care center, blocking elements with a value of 4,666 on the wall; ceiling lighting with a value of 4,636 and ceiling level with a value of 4,575 was found to have a very high probability risk. Besides, ergonomics of the furniture with a value of 4,878, the lighting intensity of the accessories with a value of 4,666, the position of the accessory with a value of 4,757, and the perception variable with a value of 4,636 were found to have a very high probability risk. 'A' Center’s ceiling lighting, which has a value of 4,030 was determined to be at high risk for the seating area. On the other hand, Creekview South was found to be at a very high probability risk with a value of 4,545 for the ceiling level, 4,939 for the lighting intensity of the accessory; 4,878 for the accessory number, 4,757 for the accessory location, and 4,575 for the accessory perception.

When the fitness area was examined, the wall material in the 'A' senior care center was found to be very high risk with a value of 4,545. In 'B' senior care center, wall material with 4,545 value, wall color with 4,515 value, ceiling lighting with 4,575 value, ceiling level with 4,636 value, and perception variable with 4,666 value was found to have a very high probability risk.

Table 3. Design variables that determine the risk status of spatial components and elements in terms of security; risk probability of places

Tablo 3. *Mekansal bileşen ve öğelerin güvenlik açısından risk durumlarını belirleyen tasarım değişkenleri; mekanların risk ihtimalleri; mekanların risk seviyeleri*

Design Variables

	Spatial Components					Spatial Elements	
	Floor	**Wall**	**Ceiling**	**Door**	**Window**	**Furniture**	**Accessories**
Design Variables	Material Slipperiness Reflection Texture Level Colour Perception	Material Texture Colour Blocking Elements	Lighting Colour Ceiling Level	Size Material Colour Type Form	Size Material Type Form Reflection Perception	Dimension and Size Ergonomics Material Form/Shape Number Location	Size Material Lighting Intensity Form Number Location Perception

Risk Probability of Places

			DESIGN VARIABLES	Risk Probability of Spaces Based on Design Variables											
				'A' Senior Care and Rehabilitation Center					'B' Senior Care and Rehabilitation Center						
				Dining	Living	Fitness	Bathroom	Garden	Dining	Living	Fitness	Bathroom	Garden	Chatting	Pool
Spatial Components and Elements	Floor	1	Material	2,181 (72)	2,363 (78)	2,454 (81)	2,363 (78)	4,878 (161)	2,151 (71)	1,151 (38)	1,181 (39)	2,090 (69)	4,272 (141)	1,242 (41)	4,212 (139)
		2	Slipperiness	2,454 (81)	1,060 (35)	3,060 (101)	1,181 (39)	3,424 (113)	2,212 (73)	1,272 (42)	2,242 (80)	2,333 (77)	3,424 (113)	1,181 (39)	4,575 (151)
		3	Reflection	2,000 (66)	2,212 (73)	3,787 (125)	1,181 (39)	2,909 (96)	4,272 (141)	1,181 (39)	3,263 (111)	1,848 (61)	3,333 (100)	1,181 (39)	4,424 (146)
		4	Texture	1,969 (65)	1,151 (38)	1,181 (39)	1,272 (42)	4,666 (154)	1,848 (61)	1,272 (42)	2,272 (75)	2,303 (76)	4,454 (147)	1,363 (45)	4,181 (138)
		5	Level	1,181 (39)	1,242 (41)	1,121 (37)	1,333 (44)	4,939 (163)	1,181 (39)	1,060 (35)	1,242 (41)	1,363 (45)	3,181 (105)	1,060 (35)	2,060 (68)
		6	Colour	1,242 (41)	1,181 (39)	1,272 (42)	2,212 (73)	4,424 (146)	3,393 (112)	1,333 (44)	1,060 (35)	1,333 (44)	3,303 (109)	1,121 (37)	4,030 (133)
		7	Perception	1,242 (41)	2,363 (78)	3,181 (105)	3,909 (129)	4,787 (158)	4,000 (132)	1,060 (35)	2,151 (71)	2,242 (74)	3,787 (125)	2,212 (73)	4,515 (149)
	Wall	1	Material	1,060 (35)	1,363 (45)	4,545 (150)	2,303 (76)	2,333 (77)	2,151 (71)	1,303 (43)	4,545 (150)	2,333 (77)	2,,303 (76)	2,333 (77)	3,151 (104)
		2	Texture	1,151 (38)	2,151 (71)	4,030 (133)	1,303 (43)	2,303 (76)	2,666 (88)	2,454 (81)	2,909 (96)	2,333 (77)	2,333 (77)	3,242 (107)	2,666 (88)
		3	Colour	1,272 (42)	1,363 (45)	4,181 (138)	3,333 (100)	2,151 (71)	4,303 (142)	3,181 (105)	4,515 (149)	3,000 (99)	2,000 (66)	4,181 (138)	4,454 (147)
		4	Blocking Elements	1,272 (42)	1,181 (39)	3,424 (113)	2,151 (71)	2,151 (71)	4,666 (154)	3,787 (125)	4,454 (147)	4,181 (138)	2,181 (72)	4,303 (142)	3,181 (105)
	Ceiling	1	Lighting	2,151 (71)	4,030 (133)	1,060 (35)	1,242 (41)	1,242 (41)	4,636 (153)	4,121 (136)	4,575 (151)	4,181 (138)	1,060 (35)	4,939 (163)	4,636 (153)
		2	Colour	1,363 (45)	1,272 (42)	1,181 (39)	1,151 (38)	1,121 (37)	3,909 (129)	2,303 (76)	4,030 (133)	3,303 (109)	1,333 (44)	3,393 (112)	4,878 (161)
		3	Ceiling Level	1,151 (38)	1,242 (41)	1,242 (41)	1,272 (42)	1,121 (37)	4,575 (151)	4,545 (150)	4,636 (153)	4,666 (154)	1,272 (42)	4,181 (138)	4,757 (157)
	Door	1	Size	2,787 (92)	1,848 (61)	1,151 (38)	3,787 (125)	2,333 (77)	1,969 (65)	2,333 (77)	1,969 (65)	1,848 (61)	2,454 (81)	2,303 (76)	2,151 (71)
		2	Material	1,060 (35)	1,363 (45)	1,060 (35)	3,242 (107)	2,333 (77)	1,151 (38)	1,060 (35)	1,303 (43)	1,060 (35)	2,333 (77)	1,969 (65)	2,303 (76)
		3	Colour	1,181 (39)	1,272 (42)	1,333 (44)	3,060(101)	2,242 (74)	1,242 (41)	1,848 (61)	1,181 (39)	1,272 (42)	2,151 (71)	2,060 (68)	1,181 (39)
		4	Type	2,363 (78)	1,242 (41)	1,363 (45)	4,272 (141)	2,242 (74)	2,424 (80)	2,333 (77)	2,151 (71)	2,060 (68)	2,454 (81)	2,212 (73)	2,333 (77)
		5	Form	2,727 (90)	1,181 (39)	1,272 (42)	3,909 (129)	1,969 (65)	1,969 (65)	2,151 (71)	1,848 (61)	2,060 (68)	2,212 (73)	2,454 (81)	2,151 (71)
	Window	1	Size	4,787 (158)	2,363 (78)	1,121 (37)	4,454 (147)	3,393 (112)	2,181 (72)	2,242 (74)	2,333 (77)	2,303 (76)	3,272 (108)	1,272 (42)	3,151 (104)
		2	Material	3,909 (129)	1,363 (45)	1,060 (35)	3,060 (101)	3,333 (100)	1,060 (35)	1,242 (41)	1,181 (39)	1,333 (44)	3,424 (113)	1,969 (65)	2,454 (81)
		3	Type	3,757 (124)	1,181 (39)	1,151 (38)	4,181 (138)	3,424 (113)	2,454 (81)	2,181 (72)	1,363 (45)	1,181 (39)	3,393 (112)	2,060 (68)	2,181 (72)
		4	Form	2,878 (95)	2,454 (81)	1,242 (41)	4,030 (133)	2,666 (88)	1,242 (41)	2,363 (78)	2,333 (77)	2,212 (73)	3,242 (107)	2,000 (66)	3,333 (100)
		5	Reflection	4,393 (145)	1,848 (61)	1,363 (45)	4,121 (136)	3,263 (111)	1,151 (38)	2,242 (74)	2,212 (73)	2,212 (73)	3,060 (101)	3,424 (113)	3,303 (109)
		6	Perception	4,666 (154)	2,303 (76)	1,333 (44)	3,787 (125)	3,151 (104)	2,242 (74)	2,363 (78)	1,242 (41)	1,151 (38)	2,909 (96)	2,333 (77)	4,030 (133)
	Furniture	1	Dimension and Size	1,151 (38)	1,242 (41)	4,030 (133)	1,121 (37)	4,272 (141)	3,909 (129)	4,181 (138)	4,121 (136)	3,424 (113)	2,303 (76)	1,333 (44)	3,060 (101)
		2	Ergonomics	1,272 (42)	1,303 (43)	2,181 (72)	1,060 (35)	4,303 (142)	4,878 (161)	3,787 (125)	3,909 (129)	4,181 (138)	3,060 (101)	1,151 (38)	2,333 (77)
		3	Material	1,242 (41)	1,151 (38)	2,363 (78)	1,848 (61)	4,303 (142)	3,181 (105)	2,333 (77)	2,060 (68)	1,848 (61)	2,212 (73)	1,272 (42)	1,969 (65)

		4	Form/ Shape	1,060 (35)	1,242 (41)	3,303 (109)	2,242 (74)	4,636 (153)	4,454 (147)	4,000 (132)	4,272 (141)	3,181 (105)	3,000 (99)	1,060 (35)	4,000 (132)
		5	Number	1,151 (38)	1,242 (41)	3,000 (99)	2,212 (73)	3,303 (109)	3,393 (112)	3,787 (125)	4,030 (133)	2,696 (89)	3,393 (112)	1,363 (45)	4,272 (141)
		6	Location	2,212 (73)	1,303 (43)	3,000 (99)	2,060 (68)	4,181 (138)	4,000 (132)	4,575 (151)	4,303 (142)	3,060 (101)	3,242 (107)	1,181 (39)	4,181 (138)
	Accessory	1	Size	1,303 (43)	1,060 (35)	2,333 (77)	1,060 (35)	4,030 (133)	2,909 (96)	4,272 (141)	3,181 (105)	3,303 (109)	2,333 (77)	2,303 (76)	3,424 (113)
		2	Material	1,151 (38)	1,242 (41)	2,454 (81)	1,848 (61)	4,757 (157)	3,060 (101)	4,121 (136)	2,212 (73)	3,151 (104)	2,454 (81)	1,060 (35)	3,181 (105)
		3	Lighting Intensity	2,151 (71)	2,424 (80)	1,303 (43)	1,333 (45)	3,060 (101)	4,666 (154)	4,939 (163)	3,909 (129)	4,030 (133)	1,303 (43)	3,263 (111)	4,181 (138)
		4	Form	1,060 (35)	1,151 (38)	1,848 (61)	2,000 (66)	4,303 (142)	4,272 (141)	3,787 (125)	4,181 (138)	4,303 (142)	2,424 (41)	1,848 (61)	4,000 (132)
		5	Number	1,242 (41)	1,181 (39)	3,242 (107)	2,333 (77)	3,909 (129)	3,787 (125)	4,878 (161)	4,121 (136)	3,333 (100)	1,121 (37)	2,333 (77)	3,787 (125)
		6	Locations	1,181 (39)	1,242 (41)	2,333 (77)	2,151 (71)	4,181 (138)	4,545 (150)	4,757 (157)	4,272 (141)	4,181 (138)	1,242 (41)	1,181 (39)	3,909 (129)
		7	Perception	1,272 (42)	1,060 (35)	3,424 (113)	2,212 (73)	4,939 (16,)	4,636 (153)	4,575 (151)	4,666 (154)	3,393 (112)	2,181 (72)	1,848 (61)	4,545 (150)
Avg. Space Risk Probability				**1,888**	**1,524**	**2,076**	**2,337**	**3,354**	**2,993**	**2,728**	**3,057**	**2,477**	**2,487**	**2,1174**	**3,355**
Avg. Space Risk Intensity				2,111	1,255	2,312	1,998	2,789	2,456	2,223	2,211	2,566	2,987	1,765	2,889
Avg. E.R.C Risk Probability				2,235				2,744							

When the bathroom spaces were examined, 'A' Center's window size was found to have a high-risk probability with a value of 4.454. In 'B' Center, the form of the accessory was found to have a high probability risk with a value of 4.303.

When the garden space in 'A' senior care center was examined, it was found that the floor material with the value of 4.878, the floor texture with the value of 4.666, the level difference in the flooring with the value of 4.939, and the perception of the flooring with the value of 4.787 were found to have a very high probability risk. On the other hand, the form/shape of the furniture with the value of 4,636, the material used in the accessories with the value of 4,757, and the perception of the accessory with the value of 4,939 was found to have a very high probability risk. In 'B' senior care center, the floor texture was found to have a high probability risk with a value of 4,454.

The chatting area in 'B' senior care center has a high probability risk with a value of 4,939. In the pool area, slippery flooring with a value of 4,575, pool perception with a value of 4,515, lighting on the ceiling with a value of 4,636, ceiling color with a value of 4,878, a ceiling level with a value of 4,757, and perception of accessories with a value of 4,545 was found to have a very high probability risk.

In the light of collected data, the garden space in 'A' center with a value of 3,354; 'B' center's dining area with a value of 2,993, living area with a value of 2,728, a fitness area with a value of 3,057, and a pool area with a value of 3,355 was founded to have a medium probability risk.

Therefore, the 'A' center is less risky than the 'B' center with a value of 2,235. The risk level for each location based on their risk score (Risk = Severity x Probability) is shown below (Table 4).

Prioritizing the precautions for the garden area in 'A' center and the pool area in 'B' center's is necessary considering the risk scores. It is now even more important to consider the design of gardens and terraces where older adult people interact with nature during the pandemic due to the mandatory quarantine regulations. In this regard, the flooring material for the garden area should be changed, and level differences should be eliminated in order to prevent hazards. Likewise, the flooring material for the pool area should be changed, and designs that will lower the ceiling level should be avoided (Table 4).

Table 4. Risk levels based on the risk evaluations
Tablo 4. *Risk değerlendirmesine göre risk seviyeleri*

	Place	Probability	Severity	Score	Risk Level
'A' Senior Care and Rehabilitation Center	Eating area	2	2	4	Low
	Sitting area	2	1	2	Low
	Fitness area	2	2	4	Low
	Bathroom	2	2	4	Low
	Garden	3	3	9	Medium
'B' Senior Care and Rehabilitation Center	Eating area	3	2	6	Low
	Sitting area	3	2	6	Low
	Fitness area	3	2	6	Low
	Bathroom	2	3	6	Low
	Garden	2	3	6	Low
	Chatting Area	2	2	4	Low
	Pool Area	3	3	9	Medium

4. DISCUSSION AND CONDLUSION

Society is aging and becoming to have more and more limited mobility. Senior care facilities are becoming more popular because old age limits many daily activities for older people. The use of private space, satisfaction, quality of life, opportunities, and general assessments of older adult care center residents were all examined as they relate to older adult care centers. This study emphasizes the significance and specifications for the design of common areas in older adult care facilities, which are the primary locations where the social isolation and the sense of exclusion from society of the older adults can be minimized. When it comes to the safety of the common use areas where older people of various characteristics congregate, 38 design variables were identified that define the risk situation that may emerge (Figure 1).

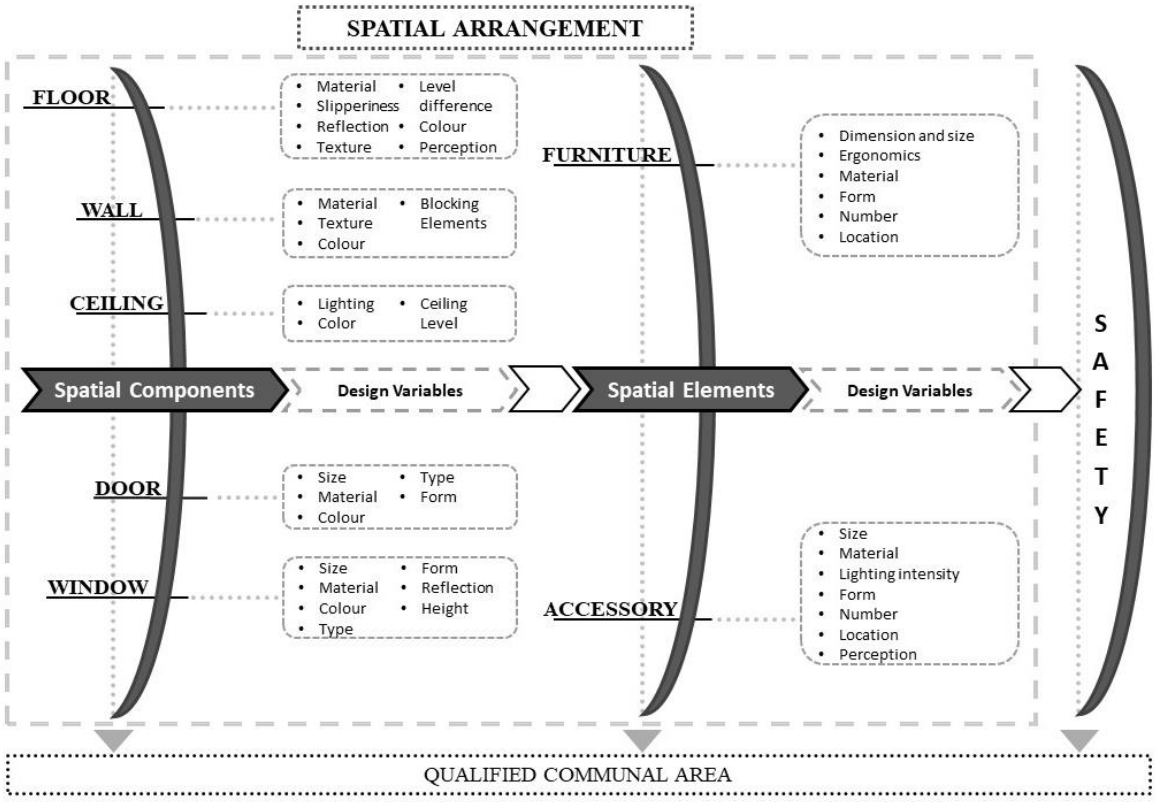

Figure 1. Relationship of spatial components and elements with design variables in terms of security

Şekil 1. *Güvenlik açısından mekansal bileşen ve öğelerin tasarım değişkenleri ile ilişkisi*

The relationships between the spaces, the spatial transitions, and the positions of the spaces relative to each other can be accepted as the decisions that determine the risk in addition to the design variables that are proposed for the older individuals to provide the optimum conditions in terms of safety.

The risk status of the spaces that have risk values can be decreased by taking precautions. The following precautions should be taken for places used by older adults in accordance with the risk levels identified by the design variables:

Spatial Components:

• Floors

- ✓ Selecting materials based on the slipperiness level that is suitable for the use of older individuals
- ✓ Avoiding level differences
- ✓ Avoiding any potential perceptual problems with color transitions

• Walls

- ✓ Making selections about the texture of the coating materials' perceptibility
- ✓ Avoiding eye-catching and misleading effects of colors
- ✓ Making sure that the objects are placed on the wall surface do not block the way

Ceilings

- ✓ Ensuring that the lightings are sufficient in number and their intensity does not block the vision of the older individuals.
- ✓ Avoiding excessive movement, form, and level difference on the ceiling
- ✓ Avoiding perceptually confusing and eye-catching colors

• Doors and Windows

- ✓ Having proper dimensions for older adult's usage
- ✓ Avoiding perceptually confusing and eye-catching colors
- ✓ Having a suitable type and form for older individual's usage
- ✓ Selecting materials that are suitable for older individual's usage

Spatial Elements:

• Furniture

- ✓ Having proper dimensions for older adult's usage
- ✓ Making sure that the furniture is in a way that does not block the passageways
- ✓ Increasing the comfort of the older individuals with the form and shape
- ✓ Protecting against accident risks
- ✓ Selecting materials that are suitable for older individual's usage
- ✓ Having a sufficient number in the space and not creating a crowd

• Accessory

- ✓ Having proper dimensions for older adult's usage
- ✓ Being perceptually visible
- ✓ Protecting older individuals against accident risks by the form and shape
- ✓ Selecting materials that are suitable for older individual's usage
- ✓ Having a sufficient number in the space and not creating a crowd
- ✓ Ensuring that the lightings that are used for accessory are sufficient in number and that their intensity does not block the vision of the older individuals.

Additionally, the appropriateness of the locations of the spaces in relation to one another, the positive relationships between the spaces, and the seamless spatial transitions should all be taken into consideration.

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