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ENGELLİ BİREYLER İÇİN MUTFAK TASARIMI

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Özet- Bu çalışmada, engelli bireyler için mutfakların taşıması gereken kullanım özelliklerinin belirlenmesi amaçlanmıştır. Bu doğrultuda engelli bireyler tarafından kullanılan mutfaklardaki dolaplar ve diğer ekipmanlara erişim özellikleri incelenmiştir. Çalışma, günümüz mutfak planlamasının incelenmesine dayanmaktadır. Mevcut tasarımlarda engelli bireylerin kullanımlarını kısıtlayan tasarım özelliklerini belirlemek amacıyla 30 engelli bireyle yüz yüze görüşme yöntemi kullanılarak anketler uygulanmış ve mevcut mutfaklarının fiziksel koşulları değerlendirilmiştir. Katılımcıların 17'si Kırıkkale'de, 13'ü Ankara'da ikamet etmektedir. Elde edilen veriler, Türkiye'de erişilebilir mutfakların oldukça az olduğunu ve var olan mutfakların da genellikle zayıf tasarlandığını ortaya koymaktadır. Bu eksiklik, engellilerin günlük mekansal davranışlarını ciddi derecede sınırlandırmaktadır. Bu araştırma, mutfaklar için özel tasarımların engelli insanlar için son derece önemli olduğunu göstermektedir.

Anahtar Kelimeler- Engelli, Mutfak tasarımı, Mekan tasarımı, Özel dolaplar.

SPATIAL KITCHEN DESIGN FOR DISABLED PEOPLE

Abstract- In this study, it is aimed to determine the usage characteristics of kitchens for people with disabled. In this respect, accessibility features of that kitchen cabinets and other equipment used by disabled individuals has been examined. The study is based on an examination of present day kitchen planning. Surveys were conducted using face-to-face interviews with 30 disabled individuals to determine the design features that limit the use of disabled individuals in current designs and the physical conditions of existing kitchens were assessed. 17 of the participants reside in Kırıkkale and 13 of them in Ankara. Resulting data's reveal that in Turkey, accessible kitchens are few and far between and those that do exist have been often poorly designed. This lack of provision severely delimits the daily spatial behavior of people with disabilities. This research shows that special designs for kitchens are highly important for people with disabilities.

Key Words- Disability; Kitchen design; Spatial design; Special cupboards.

Bu makale, 4. Uluslararası Mobilya ve Dekorasyon Kongresi'nde sunulmuş ve İleri Teknoloji Bilimleri Dergisi'nde yayınlanmak üzere seçilmiştir.

1. GİRİŞ (INTRODUCTION)

The time spent by elderly and / or disabled people in the home is higher than in the physically impaired and/or healthy individuals. Due to this reason, solving the obstacles of access in both public and private places has gained importance in recent years. This understanding has many reasons; the most important reason is the concept of human rights and equality. Designing interior and exterior spaces where physically handicapped people can live in equal conditions with normal individuals by removing obstacles that they have experienced can be shown as the main reason for human rights.

The anonymous definition of disability is based on the Disability-Free Town Planning Information Report published by the World Disability Foundation (WDF) in 2010, the United Nations Declaration on the Rights of Persons with Disabilities Quote and World Disability Union. Accordingly, persons with disabilities are persons who are "unable to make a normal person's work in his / her personal or social life to do his / her own work, any hereditary or post-modern consequence of physical or mental abilities". According to the Law on Disabled People (No. 5378), "Disabled is the person who has difficulties in adapting to the social life and in meeting daily needs due to the loss of physical, mental, psychological, sensory and social capabilities at various levels by birth or by any reason thereafter and who therefore need protection, care, rehabilitation, consultancy and support services" [1]. Different institutions prefer the term "disabled", "people with disabled" or "impaired people". This article adopts the use of the more common words "disabled" or "people with disabled".

Disability is classified according to the following basic types:

- Physical barrier
- Visually impaired
- Mental obstruction
- Hearing impaired
- Specific learning difficulty
- Spastic obstacle
- Attention deficit hyperactivity disorder
- Pervasive developmental disorder
- Language and speech impairment

The problems faced by people with disabled vary due to different need for rehabilitation to the point of view of the population with disabilities.

Within the scope of accessibility, it is inevitable to consider the bathroom and kitchen designs used in indoor areas such as residential, business and shopping centers. According to the Universal Declaration of Human Rights dated December 10, 1948 and numbered as 217, each individual has the right to freedom of life. Because of this reason, it has crucial importance to remove obstacles faced of disabled people.

When the literature is examined, the relation of the elderly and disabled individuals to the environment has been evaluated from many perceptions. Designers have often studied problems based on physical difficulties and obstacles. The most important element in healthy aging is human psychology [2-3-4]. Besides physical possibilities and physical environment are strengthened by friendships and social ties. It is important to make designs that enable the elderly and the disabled to live more comfortably by using the technical advantages in the environment that the human life continues [5-6-7-8].

If the places where people have lived cannot meet their needs, they can never be a home for them. Gerontology and ergonomic arrangements should be made while designing engineering

calculations for today's aging population. All independence, election and lifestyle freedom should be encouraged and efforts should be made to promote on-the-spot aging and elimination of barriers. In addition to residence independence for both elderly and disabled people, safety, the need to take into account the physical and psychosocial characteristics of people for making quality-of-life-enhancing designs by promoting the attractiveness of virtual topology [9].

Due to elderly people's and people with disabled, diminished physical capacity, reduced ability to do daily requirements, and such these reasons, better accommodation conditions should be established in order to meet their increasing needs. Accessibility capacity of houses designed for the elderly and the people with disabled should be increased and solutions for the needs of daily life should be introduced with the addition of necessary designs. The concept of universal design is great importance for users who interact with the environment [10-11-12-13]. According to Sanoff (1990), "all designers who want to improve their living standards and quality should work on the user's body'' [14]. In fact, design is a projects-focused process and is a process that involves designers to carry out design activities, including problem solving and during this phase it is necessary to achieve effective design goals. Participation of individuals must be organized for information, responsibility and resource sharing [14-15-16-17].

In this study, the problems experienced by the disabled individuals were researched by interviewing with the questionnaire method one by one and designs were suggested to eliminate the obstacles according to the survey results.

There are not enough companies in our country that design special kitchens for disabled people. Specially designed kitchens and bathrooms are imported from Europe and America. Overcoming the obstacles will be not only through the efforts of individuals but also by the consciousness of the society. There should be courses in these subjects in primary school and other educational level which supports each individual family.

According to the 2011 Demographic and Housing Survey results in Turkey, the population with at least one disability (3 years of age and over) is 6.9% (4.876.000 people). This rate is 5.9% for males and 7.9% for females [18]. As can be seen in this statistics, the amount of people with disabled in Turkey is too high to be ignored. Besides everyone can be turn into disabled somehow (accident, disease etc.). That is why; eliminating obstacles for people with disabled is not only related with disabled individual but also healthy people.

Nowadays, we are in the age of information, so we must investigate and evaluate the many benefits provided by digital products. Smart home models are designed and implemented thanks to developing computer technology and internet facilities. These designs can be developed and presented to the requirements of people with disabled.

2. YÖNTEM (METHOD)

By using questionnaires and face to face interviews, data were collected, considering the needs, habits and problems faced by the physical disability with wheel chair while using the kitchen. This study was performed with 30 individuals suffering from different forms of body impairment. The questionnaire consisted of closed, open and semi-open questions. The subject covers problems concerning the use of the kitchen by peoples with disabled, basic information on the respondents participating in the study, identification of dangerous situations while performing individual's activities connected with meal preparation, evaluation of kitchen furniture in their possession. Besides this study also covers, while they are using their kitchen as well as information on the needs and preferred changes in kitchen furnishings. Research method was shown in Figure 1.

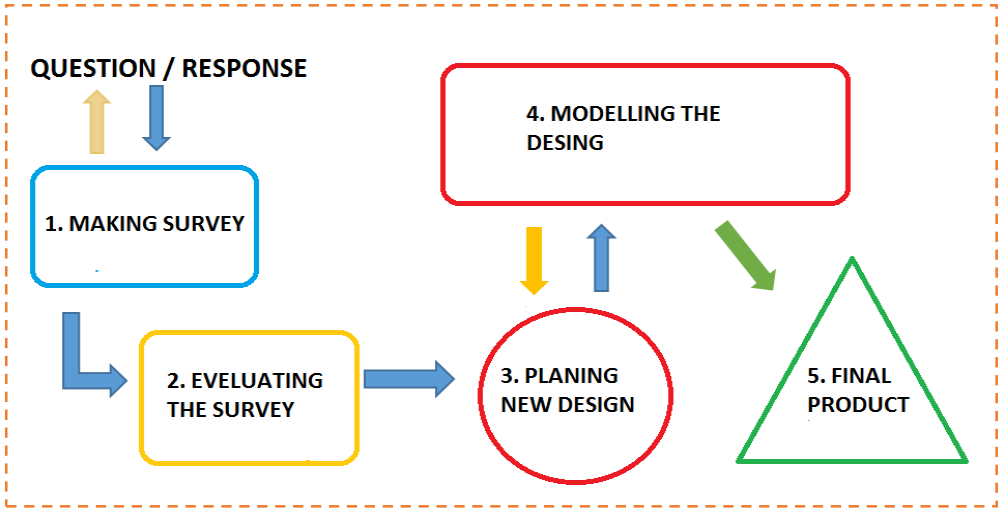

Fig. 1. Research Method (Araştırma Metodu)

Within the scope of the study, a total of 30 people was interviewed and designed together with individual persons. 17 of the respondents are residing in the province of Kırıkkale and 13 of them are residing in the province of Ankara. Five important actions in kitchen design have been examined. These actions include storage of food, preparation of food, cooking of food, cleaning and washing dishes.

Mistakes that has been made in the design of living room can be repaired or redesign more or less easy. But when we talk about the kitchen where the change of design requiring to make changes in the kitchen installations, such as those for water supply and drainage, electrical wiring, gas supply and other installations then you have a big problem and more expensive task. The areas most challenged by interviews are shown in Figure 2.

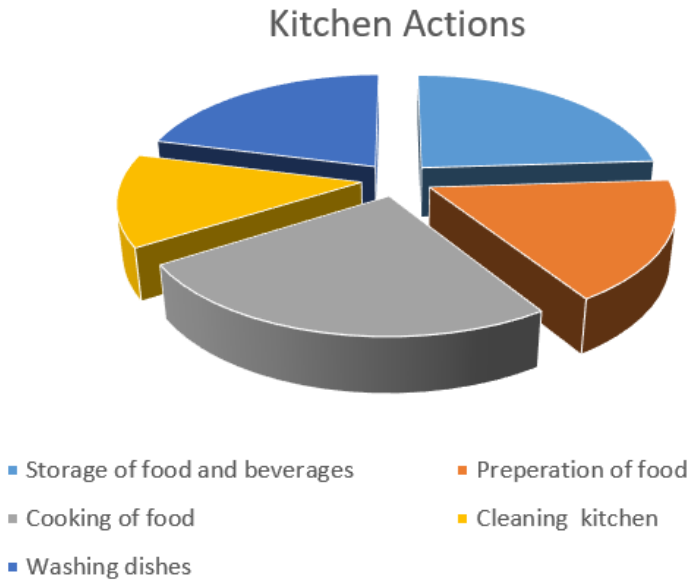

Fig. 2. The most problematic kitchen actions (En sorunlu mutfak eylemleri)

The figure 2 shows that cooking food and storage food and beverages are more problematic actions than others. We know that it is not an easy way to live alone when you are disabled. In

Europe and USA many disabled people live alone without any help, this situation could be explained by widespread usage of special designs for disabled people.

3. BULGULAR (FINDINGS)

According to survey data, the demographic values of disabled persons participating in the survey are given in table 1.

Table 1. Demographic characteristics of disabled persons (Engelli bireylerin demografik özellikleri)

Demographic Values	1. Group- Ankara	2. Group - Kırıkkale
Average Age	43	49
Education	University (10) / High School (3)	University (5) / High School (6) / Middle School (6)
Person Number in the House	3	4
Working Condition	Retired (5) / Working (8)	Retired (10) / Working (7)
How many years as disabled	25	37

After survey, it was seen that the design of special appliances for disabled people and the construction of automated kitchen cabinets working with electric motors were the first priority. This section describes the survey data.

3.1. Engelli Mutfak Tasarımı Özellikleri (Characteristics of Disabled Kitchen Design)

Under our survey, disabled kitchen is well designed if it has following characteristics at the below.

- Ergonomics kitchen design.
- Energy efficiency.
- The appropriate size of the kitchen
- Equipment for the kitchen that meets the disability
- Good ventilation.
- Easy to maintain.
- Moveable cupboards
- Automatic water taps

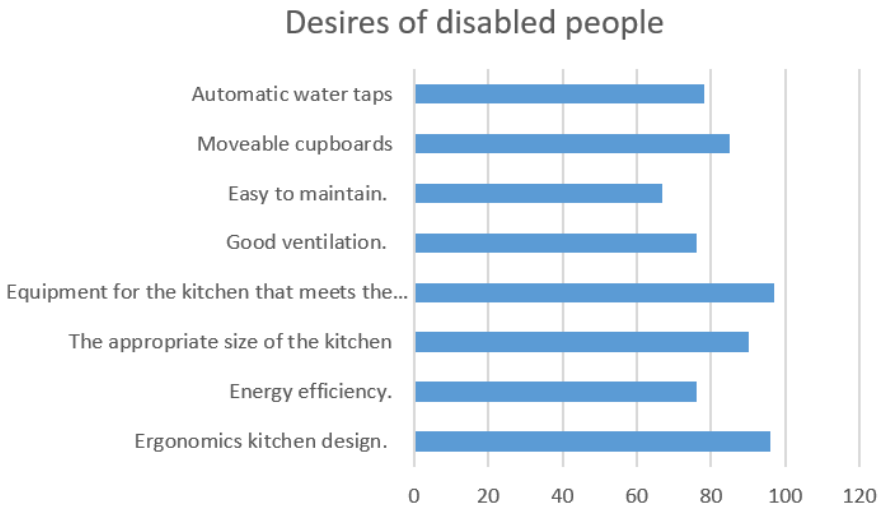

Fig. 3. Desires of people with disabled (Engelli insanların istekleri)

Kitchen design directly affects the energy consumption and accessing ability of people with disabled. This is one of the most important factors that you need to consider when planning kitchen for people with disabled. For example energy consumption and ability to perform kitchen actions of people with disabled is directly related with accessibility of appliance. The size of kitchen should be proportional to the size of the wheel chair. Of course, different types of disabled people have different needs, but without any doubt there is relationship between performance of people with disabled and ratio of the size and capacity of the kitchen. As a general rule, it is necessary to provide at least 152 cm clearance for the radius of rotation of the wheelchair in the kitchen area. This rule is also valid for all interior design applications. Recommended wheel chair circle shown at figure 4.

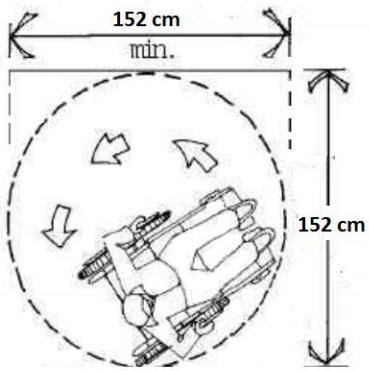

Fig. 4. Recommended minimum diameter measure for wheelchair (Tekerlekli sandalye için önerilen minimum çap ölçüsü)

Kitchen equipment must meet the needs according to the type of disability and it should be considered that disabled people want to have different equipment. But if you fill out their desires they will be more satisfied. Let them explain the benefits of the use of certain kitchens tools and then decide about their necessity.

3.2. Ergonomik Engelli Mutfağı Tasarımı (Ergonomic Disabled Kitchen Design)

The ergonomic disabled kitchen design minimized movement of people with disabled while they are working in the kitchen. This is one of the most important factors that influence in the time savings for cooking the meals and reduces the risks associated with accidents in the kitchen. Ergonomic kitchen design for people with disabled is shown at figure 4. Also, unwanted food spilling is minimized.

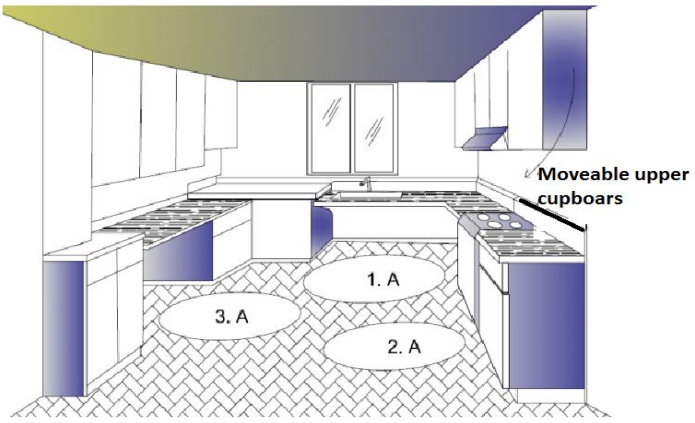

Fig. 5. Sample kitchen for people with disabled (Engelli insanlar için örnek mutfak)

Working in the kitchen is not possible without very good ventilation. The presence of steam and smoke in the kitchen is unacceptable. Also, you do not want that your guests “smells” like food after they leave your home. How easy is to maintain keep tidy the entire kitchen depends on the material that kitchen is made, the arrangement of elements and the way how cookware in the kitchen has been stored. For example, the automatic shelves are a very good choice because of the availability of dishes, during food preparation and serving, but a motorized cabinet with doors is much easier for maintaining. Accessible kitchen plan is shown at figure 6.

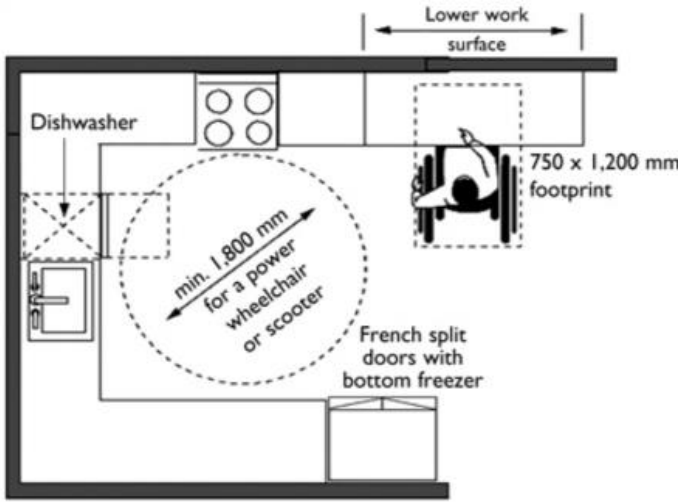

Fig. 6. Accessible kitchen design (Erişilebilir mutfak tasarımı)

Automatic water taps will be useful during food preparation and serving. Disabled people will be less tired with automated taps. Upper cupboards are always big problem for disabled people; it is not easy to use standard cupboards. There are new methods for automated cupboards are shown at figure 7.

Fig. 7. Fixing moveable cupboards (Hareketli dolapları sabitleme) [19]

With these system cabinets and kitchen appliance move forward to people with disabled and they can easily reach to all stuff and work in the kitchen safely. These kinds of solution also ensure that support to psychosocial self-confidence and life comfort.

The work for the details of the kitchen sink and furnace, which is important for hygiene, is given in figure 8. The most important consideration here is; the wheelchair should be designed to fit

comfortably and wheelchair users should be able to comfortably clean the kitchen utensils in the kitchen.

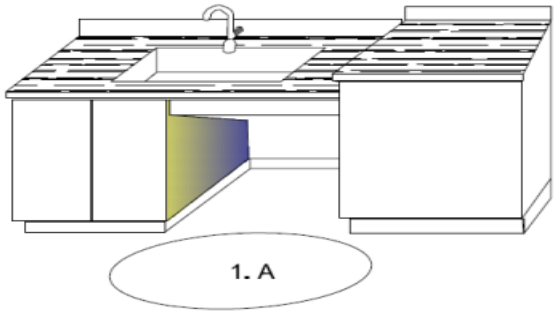

Fig. 8. Details of the kitchen sink (Mutfak lavabo detayı)

Figure 9 shows an example of the under-counter dishwasher. Here, the distance that disabled people can easily reach dishwasher.

Fig. 9. Under-counter dishwasher (Tezgah altı bulaşık makinesi) [20].

Figure 10 depicts the location where the cooking point in the kitchen is performed. For wheelchair users to easily approach the furnace a space is provided below the counter to provide an area of motion and an approach angle. This allows enough movement space for with a wheelchair. This design also support to people with disabled while they performed cooking and cleaning activities in the kitchen.

Fig. 10. The space for furnace usage (Fırın kullanımı için alan) [21]

In Figure 11, the third important point in the kitchen is the kitchen counter visual, where the food preparation is made. The point to note here is that the wheelchair space should be double side space. With the wheelchair, both the right hand and the left hand must be placed in the middle of the gap and the possibility of movement must be ensured. Unfortunately traditional kitchen design is not support to usage comfort of people with

disabled. Generally, the bottom of traditionally designed kitchen countertops are covered with cabinets and the cupboards have fixed too high for people with disabilities.

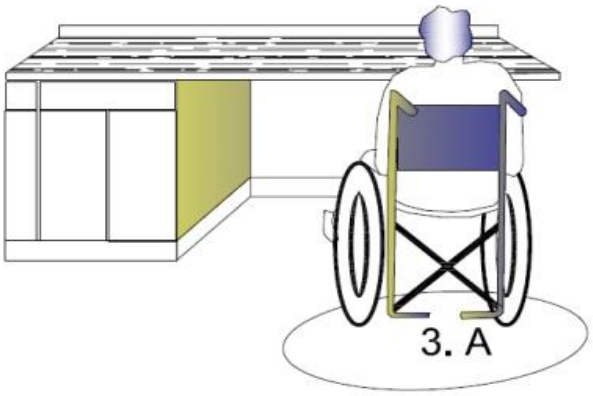

Fig. 11. Kitchen countertop for people with disabled (Engelli kişiler için mutfak tezgahı)

4. SONUÇ VE TARTIŞMA (CONCULUSION AND DISCUSSION)

In this research, it has been carried out on reaching activities for wheelchair users in everyday activities. After survey, we understand that there are three reach ranges, which are intended to relate to the physical demands of an activity or action in terms which is normally carried out. The first reach range is comfortable range for people with disabled. It is determined by the ability of a person to reach cupboards in a comfortable and relaxed manner without stretching or bending from the waist and is appropriate for an activity that requires precision in its execution and is frequently performed. The second reach range is extended range for people with disabled. It is determined by the ability of a person to reach when stretching and/or bending the body and is appropriate for an activity that does not require precision and is infrequently performed. The third reach range is electronic range for people with disabled. It is determined by the ability of person using appliances without any help from someone.

After survey the major design elements of a disabled kitchens were investigated, the major design elements are determined as below;

- Kitchen countertops arrangements,
- Automated cupboards, drawers and pantries,
- Food preparation areas regulations,
- Special kitchen appliances for people with disabled,

For minimal effort is an important principle of disabled kitchen design. We are planning for efficiency considers the location and relationship of all major elements within the kitchen. Emptying the dishwasher is easier if the dishes and glasses are stored nearby. Baking is easier if baking supplies are close to a work surface and the oven. Meal clean-up is easier if the table is located close to sink, dishwasher and garbage.

Flexibility and efficiency of effort can be achieved through such design considerations as providing storage options at a variety of heights. Planning for efficiency of effort and ease of use incorporates features such as more lighting, a place to sit down to work, a lower workstation, and storing materials where they can be easily seen and reached. In future researches, interior and exterior equipment, accessory elements and cabinets can be re-evaluated and designed according to the flexibility and efficiency thanks to innovative technologies and new designs.

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