# Public Health:
# Theory, Methodology and Practice

Editor
Prof. Salim Güngör, MD.

DOI: 10.5281/zenodo.17404540

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**Editor**

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**Publisher**
Platanus Publishing®

**Editor in Chief**
Prof. Salim Güngör, MD.

**Cover & Interior Design**
Platanus Publishing®

**The First Edition**
October, 2025

**ISBN**

978-625-6454-51-4



**Platanus Publishing®**
**Address:** Natoyolu Cad. Fahri Korutürk Mah. 157/B, 06480, Mamak, Ankara, Turkey.

**Phone:** +90 312 390 1 118
**web:** www.platanuspublishing.com
**e-mail:** platanuskitap@gmail.com

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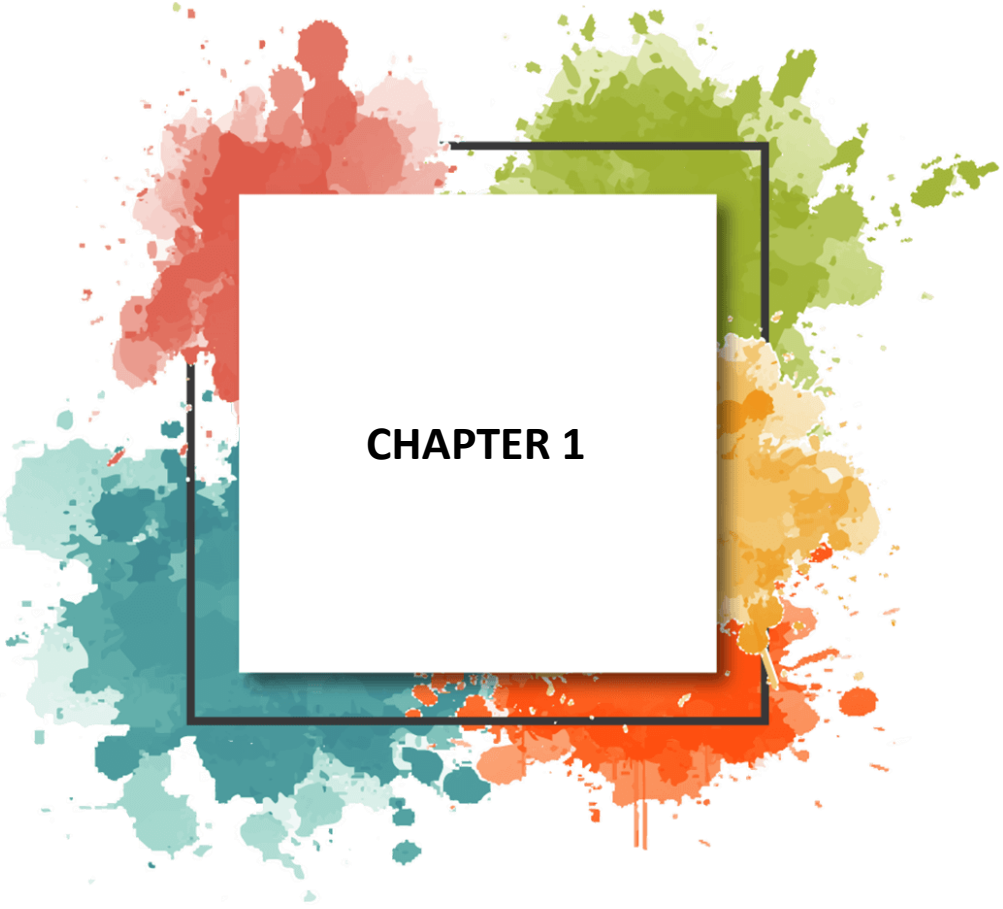
CHAPTER 1

# Investigation of DMF-T Index in Employees of Confectionery Factories in Istanbul

*Necmi Namal*[1]

## Introduction

It has been demonstrated that among food constituents, only carbohydrates possess cariogenic properties. The cariogenic effect of low molecular weight carbohydrates (sugar) has been known for many years (1,2,3). Numerous studies in the literature have explored the relationship between sugar and dental caries (4,5,6,7). For instance, Jamel et al. (1997) found in their study among urban and rural populations in Iraq that individuals consuming tea with sugarwere at a higher risk of dental caries compared to those consuming unsweetened tea (8). Ruxton (1999) reported a relationship between frequent sugar consumption and caries incidence in studies involving different European countries (9). Additionally, Gustaffson's study provided clear evidence of an increase in caries incidence with the consumption of sugary substances between meals (10).

Both the incidence and prevalence of dental caries are high. Therefore, addressing the issue solely from a treatment perspective is not a rational solution. Combining therapeutic and preventive measures can overcome the problem (11). The application of protective measures, especially to risk groups, becomes important in this context.

Studies have suggested that employees in sweet food-producing establishments, who have easy access to the products they produce without cost, tend to consume such products frequently, thereby increasing caries activity and posing a risk to oral health (12,13). Hence, employees in sweet food-producing establishments can be considered a high-risk group for dental caries.

Given the assumption that frequent carbohydrate consumption, which may affect the severity of dental caries, could increase depending on working conditions, epidemiological studies examining the oral hygiene and dental caries status of employees in sweet food production, compared to values in the general population, become significant.

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**Methods**

The study was conducted on workers employed in confectioneries who were members of the SUTHER (Sesame, Tahini, Halva, and Jam Producers Association) and members of the Istanbul Chamber of Confectioners and Sweetmakers, as well as on workers in small textile workshops. The study included 400 subjects working in confectioneries as the case group and 102 textile workers as the control group, totaling 502 individuals. The individuals included in the study were aged between 19 and 39 years, with mean ages of 30.27 for workers in sweet production and 29.43 for textile workers. Considering studies indicating a significant role of periodontal diseases in tooth loss in older individuals, individuals within these age ranges were included in the study.

The study employed an observational case-control descriptive and analytical design.

Workers in SUTHER member companies were selected through systematic sampling, while confectioneries belonging to the Istanbul Chamber of Confectioners and Sweetmakers were selected randomly due to their numerous, dispersed nature and small workforce.

Every subject was examined by a single examiner who used a plain mirror and ballpoint probe, under standard light with air drying when necessary. No radiographs were taken. Measurements in the study were conducted using a Safico brand 0.5 mm rounded-tip Williams periodontal probe. Examination tools included an examination form, questionnaire, educational brochure, mouth mirror, probe, tweezers, disposable gloves, disposable plastic cups, and eosin tablets. Ethical approval for the study was obtained from the Ethics Committee of the Cerrahpasa Medical School of Istanbul University, and consent was obtained from all participants.

The study was conducted in two separate sections:

Section I:

The DMF-T index of a total of 502 people was determined for 400 subjects in the case group (workers in sweet production) and 102 subjects in the control group (textile workers). Carious defects, fillings, and missing teeth were diagnosed, and the DMFT (teeth) scores were calculated according to WHO Guidelines (14).

The Quigley-Hein Plaque Index and Löe and Silness Gingival Index were evaluated for oral hygiene differences between the two groups.

Plaque Index-Quigley-Hein ( PI)(15)

Quigley-Hein plaque index was used instead of OHI (Oral Hygiene Index) as it was not sensitive enough to detect microbial dental plaque. This index is a frequently used index in many studies (16,17). The original 6-grade scores (0-5) of the Quigley-Hein plaque index were determined using buccal and lingual erythrosine tablets in 28 teeth.Teeth no. 8 were not evaluated.

Gingival Index-Löe and Silness (GI) (18,19)

Numbers are appointed to the vestibule, lingual, mesial, and distal parts of the gingiva from 0 to 3 to evaluate the severity and localization of gingival disease.

Section II:

A questionnaire was applied in this section.. Participants were informed that they could choose not to reveal their identities to ensure the accuracy of the survey, which aimed to determine their sweet consumption frequency, oral and dental health habits and knowledge, and socio-economic status.

The frequency of sweet consumption and years of work were asked to the experimental and control groups and classified as very frequent, normal, and low.

The quantitative data obtained were entered into the SPSS for Windows 5.0 statistical package program and evaluated. The Mann-Whitney U test, a nonparametric test, was used for comparisons. $P<0.05$ was considered significant.

**Results**

Section I (Clinical findings):

1. Quigley-Hein Plaque Index Findings:

The mean plaque index scores of the case and control groups were 1.53 and 1.47, respectively (Table 1). The difference in the mean plaque index scores between the case and control groups was not statistically significant ($p>0.05$).

2. Löe and Silness Gingival Index Findings:

The mean gingival index scores of the case and control groups were 1.28 and 1.14, respectively (Table 1). The difference in the mean gingival index scores between the case and control groups was not statistically significant ($p>0.05$).

3- DMF-T Index Findings:

The mean DMF-T value for the case group was 8.54, while the value for the control group was 5.27 (Table 1). The difference in DMF-T index values between the case and control groups was statistically significant ($p<0.001$).

Table 1 shows the distribution of the DMF-T components for the case and control groups: There was no significant difference between the case and control groups in terms of D values ($p>0.05$). The M and F values were significantly higher in the case group ($p<0.001$).

Table 2 shows the DMF-T values of frequent sweet consumers in the case and control groups. While there was no difference between those who worked for up to 5 years ($p>0.05$), there was a significant difference between those who worked for 5 years or more ($p<0.001$).

Table 3 shows the DMF-T values according to working time and sweet consumption frequency in the case and control groups. There was a significant difference between the very frequent, normal, and low consumption values ($p<0.001$).

Section II (Survey Findings) :

The demographic characteristics and oral health habits of the individuals were determined from the responses to the survey questionnaire.

The mean age of the participants was 30.27 in the case group and 29.43 in the control group. The proportion of women was 25.43% and 26.14%, respectively.

The proportion of those who graduated from primary school was the highest in both the case and control groups (78.95%, 66.67%). This was followed by middle school (16.67%, 13.64%) and high school (1.75%, 10.61%).

The question "How often do you brush your teeth?" received the following responses in the case and control groups: once a day (40.52%, 35.60%), twice a day (5 23.28%, 23.73%), 3 times a day (4.31%, 13.56%), occasionally (22.41%). 25.42%), those who do not brush at all (9.48%, 1.69%).

To the question "What is your frequency of eating sweets?", the order of the case group that is constantly in direct contact with sweets is as follows: very often 42.86%, normal 27.73%, rarely 24.37%, not at all 5.04%, while in the group that does not have direct contact with sweets, it was 49.12% rarely, 19.30% normally, 15.79% very often, and 15.79% never. The difference between the case group and the control group in terms of frequent consumption of sweets is statistically significant ($p<0.001$).

**Discussion**

Numerous studies have established a link between frequent sugar consumption and dental caries (2, 20, 21). One notable study was conducted by Gustafsson between 1945 and 1953 at the Vipeholm Mental Hospital. This study, which began with 633 patients in 1945-46 and ended with 436 patients in 1951,

clearly demonstrated the relationship between snacks and frequent sugar intake and increased caries (10).

The mean plaque index scores for the case and control groups were 1.53 and 1.47, respectively. The mean gingival index scores for the case and control groups were 1.28 and 1.14, respectively. There was no statistically significant difference between the mean plaque or gingival index scores of the case and control groups. There was also no significant difference in toothbrushing frequency between the two groups. This indicated that there were no factors affecting the DMF-T index in terms of periodontal and oral health care.

The mean DMF-T value for the case group was 8.54, while the value for the control group was 5.27. The difference in DMF-T index values between the case and control groups was statistically significant. This result showed that confectionery workers had a worse dental status.

When we examined the DMF-T components of the case and control groups, there was no significant difference in terms of D values. The M and F values were significantly higher in the case group. This result suggests that confectionery workers get their teeth treated or extracted at the same rate as the control group.

There was a significant difference in DMF-T index, D, M, and F values between the case group individuals aged 18-29 and 30-39.This is a natural expectation. It is expected that the DMF-T value will be higher in the older group. Although there was no significant difference in DMF-T index values between the control group individuals aged 18-29 and 30-39, the difference in D and M components was noteworthy.

There was no difference in DMF-T values between those who consumed sweets frequently in the case and control groups for those who worked for up to 5 years, but there was a significant difference between those who worked for 5 years or more.based on this, it can be said that working in confectionery for a long time (5 years and above) affects the DMF-T value. Regardless of the duration of work in the case and control groups, the frequency of sweet consumption increased the DMF-T value.

It is interesting to note that the ranking of the case group, which had direct contact with sweets, was as follows: very often 42.86%, normal 27.73%, low 24.37%, and none 5.04%. On the other hand, the ranking of the group that had no direct contact with sweets was as follows: low 49.12%, normal 19.30%, very often 15.79%, and never 15.79%. From this, we can conclude that direct contact with sweets significantly increases sweet consumption.

It is a fact that oral health problems increase in those who are away from oral health education and services. The importance of oral health education in the

industry has also been reported (22).Studies have shown that there is no concrete effect on pastry workers, but that there is a prevailing danger (13).

**Conclusion**

In this context, our study shows that it is important to provide oral health education to workers in confectionery factories.

Table 1: Case and Control Group Parameter Averages and Statistical Evaluations (LÜTFEN TABLO İÇİNE YERLEŞTİRİNİZ)

| Group | | N | Average | Std Deviation | t value | p value |
|---|---|---|---|---|---|---|
| Case | D | 400 | 2.24 | 2.19 | 0.66 | p>0.05 |
| Control | D | 102 | 2.07 | 2.58 | | |
| Case | M | 400 | 4.68 | 6.03 | 3.12 | p<0.001 |
| Control | M | 102 | 2.60 | 3.69 | | |
| Case | F | 400 | 1.62 | 2.75 | 3.34 | p<0.001 |
| Control | F | 102 | 0.63 | 0.51 | | |
| Case | DMF-T | 400 | 8.54 | 6.17 | 4.73 | p<0.001 |
| Control | DMF-T | 102 | 5.27 | 0.66 | | |
| Case | PI | 400 | 1.53 | 0.83 | 0.21 | p>0.05 |
| Control | PI | 102 | 1.47 | 0.51 | | |
| Case | GI | 400 | 1.28 | 0.87 | 0.38 | p>0.05 |
| Control | GI | 102 | 1.14 | 0.66 | | |

2: DMF-T relationship with years of Frequent Sweet Consumption in the Case and Control Group

| | 5years | 5years+ |
|---|---|---|
| Case | 7.78 | 13.35 |
| Control | 8.35 | 8.37 |
| | p>0.05 | p<0.001 |

Table 3: DMF-T relationship between Working Time and Sweet Consumption Frequency in the Case Group

| | 5years | 5years+ |
|---|---|---|
| Frequently | | 7.78 |
| 13.35 | | |
| Normal | 6.23 | 10.61 |
| Rarely | 5.03 | 8.14 |
| | p<0.001 | |
| p<0.001 | | |

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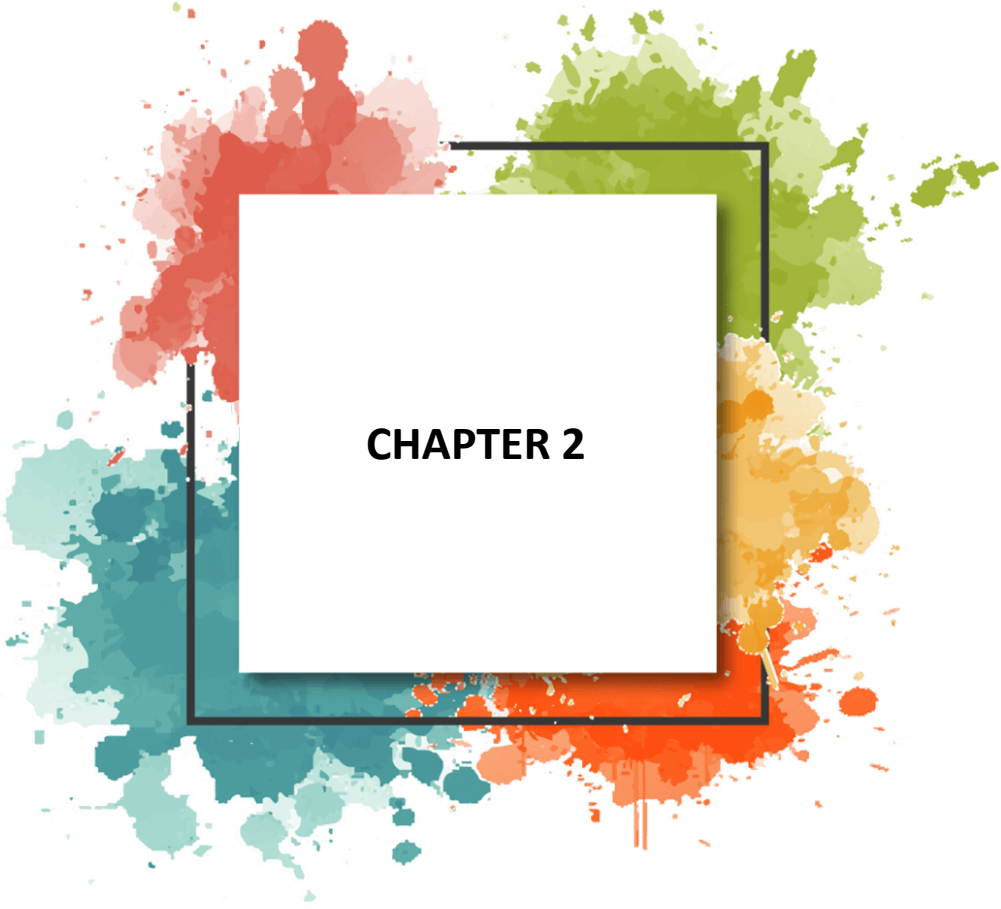
CHAPTER 2

# Elderly Care Servıces and Personnel Training in Turkey

***Ayşe Gülay Şahan***[1]

Old age refers to a period in which an individual experiences difficulty performing daily activities independently due to a decline in physical and cognitive functions. Physical and mental abilities decline over time, leading to the emergence of various problems such as the loss or decline of health, productivity, and social status (Kuzu et al., 2019; Tereci et al., 2016). Durgun and Tümerdem (1999) state that aging is a normal physiological process and is defined as a period in which individuals' physical and mental strength gradually and irreversibly decline.

According to the World Health Organization, old age is defined as the gradual decline in an individual's capacity to adapt to the environment. The organization classifies old age according to specific age ranges, defining the 18-65 age range as young, 65-74 as young-old, 74-84 as old, and 85 and over as very old (Altunay & Özkul, 2022). However, the aging process is not a period defined solely by negativity; It also provides the individual with experience and wisdom (Yıldırım, 2021). The perception of aging varies depending on individual experiences, cultural dynamics, and social conditions. Therefore, aging is a condition that must be evaluated from a multidimensional perspective (Nazlı, 2025).

The world is experiencing significant changes in demographic, cultural, social, and health areas, and the aging of the population is at the forefront of these changes (Research, Development and Health Technology Assessment Department, 2024). By 2024, approximately 10% of the world's population will be aged 65 and over; this corresponds to approximately 800 million people (United Nations, 2024; World Bank, 2024). The proportion of the elderly population is particularly high in developed countries, exceeding 20% in countries such as Canada, France, and Sweden. This demographic situation has significant impacts on healthcare services, retirement systems, and the labor market, and is considered a critical element for global socioeconomic planning (UN, 2024). According to United Nations data, the number of people aged 60 and over is expected to reach approximately 2.1 billion by 2050 (WHO, 2024). According to data from the Turkish Statistical Institute (TurkStat), the proportion of the population aged 65 and over will be 10.2% in 2023, with women comprising 55.5% and men 44.5% of the elderly population (TurkStat, 2024). By 2024, the population aged 65 and over will have reached 9,112,298, comprising

[1] Dr. Öğr. Üyesi, Balikesir University, Orcıd: 0000-0002-6665-4563

10.6% of the total population. This rate is projected to reach 12.9% in 2030, 16.3% in 2040, and 22.6% in 2060 (TurkStat, 2024).

Population aging is not only biological; It is a multidimensional phenomenon that profoundly affects the structure of societies with its economic, social, and cultural dimensions (General Directorate of Social Sectors and Coordination, 2007). Therefore, the increase in the elderly population necessitates strategic planning not only for health systems but also for social security, employment, and education policies. Furthermore, it makes care services that aim to provide a quality life until the end of life even more important (Şahan, 2023).

The change in the age structure of the population on a global scale necessitates the development of policies and services aimed at elderly care. Declining fertility rates and increasing life expectancy are leading to a rapid increase in the elderly population, necessitating comprehensive regulations in health, social services, and care systems (Bloom & Luca, 2016; Lutz, 2014; UNFPA, 2025).

Demographic studies conducted specifically in Turkey indicate that the global trend is also strongly felt at the national level. Demographic changes create various challenges in health services; The increasing need for health and care, especially upon reaching retirement age, increases the importance of services provided to the elderly (Büken & Büken, 2003; Gürer, Küdür Çırpan, & Atalan Özlen, 2019). The rapid increase in the population aged 65 and over in some regions significantly increases the demand for care services (Yakar & Özgür, 2022; TÜİK, 2020).

Elderly care systems not only help individuals maintain their health, well-being, and quality of life, but also shape the social and economic structure of societies (Smith & Andersen, 2020). The decline in the young population and the prevalence of the nuclear family model have transformed elder care from a solely family responsibility into a professional and social service area (Kalaycı & Özkul, 2017).

The increasing need for care also increases the importance of qualified elder care personnel. In Turkey, the training of elder care personnel, the establishment of professional standards, and the development of strategic planning; The effectiveness of the system, its sustainability and service quality are of critical importance (Danış & Genç, 2011).

Training qualified personnel is crucial for both improving the quality of life of elderly individuals and ensuring the sustainability of care services. It is a fundamental necessity for the well-being of elderly people.

This study comprehensively examines the legal regulations and institutional structure of elderly care services in Turkey, as well as vocational training programs, their content, and practices.

**Elderly Care Services in Turkey: Legal Regulations and Institutional Structure**

The elderly care system in Turkey has a complex structure and is implemented with the contribution of numerous stakeholders. Within this scope, elderly care services are provided through the coordinated efforts of the Ministry of Family and Social Services and the Ministry of Health (Üçok, 2023; Ministry of Family and Social Services, 2024). These services are shaped by the contributions of public institutions, the private sector, local governments, and civil society organizations, and different service models are developed to meet the health, care, and social needs of older individuals (Ministry of Family and Social Services, 2024).

While the public sector stands out with large-scale institutions serving a wide range of populations, the private sector has been increasingly gaining ground in recent years. Because the system is not limited to government institutions but is also driven by the active participation of the private sector, local governments, and civil society organizations, it creates a highly multi-stakeholder and complex structure (Ministry of Family and Social Services, 2024; Başol & Yalçın Sağlam, 2024). In this context, multidimensional planning is being implemented within the framework of both legal regulations and standards to ensure the effective and high-quality provision of elderly care services (Yalçın, 2023).

The coordination of elderly care services is provided by the General Directorate of Disabled and Elderly Services (EYHGM) within the Ministry of Family and Social Services (ASHB). This unit is responsible for the planning, implementation, and supervision of social services for elderly individuals (Ministry of Family and Social Services, 2024). The Ministry of Health provides home health and care services and plays a significant role in their implementation (Ankara University, 2020).

Services are provided by public and private sector institutions. In the public sector, nursing homes and care centers affiliated with the Ministry of Family and Social Services (ASHB) provide housing, healthcare, psychosocial support, and other social services to elderly individuals, while private sector nursing homes and care centers provide similar services (Ankara University, 2020).

Various legal regulations pertain to elderly care services in Turkey. These regulations are designed to improve the provision, supervision, and quality of services. For example, the Regulation on the Provision of Home Care Services (Official Gazette, 2005) and the Regulation on the Provision of Home Health

Services (Official Gazette, 2015) establish the procedures and principles for the provision of home care services.

Services are generally provided in two models: institutional care and home care. Institutional care refers to the housing and care of elderly individuals in nursing homes and care centers, while home care involves elderly individuals receiving care in their own homes. Both models are tailored to the needs of the individual, and service quality is continuously improved (Yalçın, 2019).

Quality in elderly care services is crucial for the effectiveness and efficiency of service delivery. In this context, the Ministry of Family and Social Services (ASHB) is implementing projects such as the Project to Improve Day and Home Care Services for the Elderly (YAGEP). YAGEP aims to improve the quality and ensure the sustainability of elderly care services (Ministry of Family and Social Services, 2024).

Legal regulations and service models regarding elderly care services, provided through collaboration between public and private sector organizations in Turkey, aim to provide services tailored to the needs of elderly individuals. Furthermore, ongoing projects and practices also increase the effectiveness and sustainability of services (Ministry of Family and Social Services, 2024; Yalçın, 2019).

Despite the existence of standards and guidelines guiding elderly care services, resources for training personnel for elderly care are diversified, leading to differences in the quality of service delivery.

**Vocational Training Programs, Content, and Practices**

Vocational training programs for elderly care personnel in Turkey are offered by various institutions at the secondary, higher education, and certification levels.

***Secondary Education Level Curriculum***

The "Patient and Elderly Services" field, offered by the Ministry of National Education (MEB), is designed as a four-year program (MEB, 2025; Birinci, 2021). For example, the program at Erzincan Atatürk Vocational and Technical Anatolian High School (2023) states that the program aims to provide medical and social care services to older adults to contribute to reducing the physical, mental, and social disabilities that arise with the aging process.

The program includes courses such as a professional development workshop, anatomy and physiology, personal care for the sick and elderly, first aid, general nutrition, infectious disease prevention, rehabilitation, patient and elderly psychology, infectious disease prevention, health communication, hydrotherapy, disaster management, disability care, disability services, and disease and medication information (MEB, 2025; Birinci, 2021).

According to data from the Ministry of National Education (MEB) for the 2025–2026 academic year, the "Patient and Elderly Care" branch of the Patient and Elderly Services field is offered in 37 schools (MEB, 2025). The program aims to equip students not only with technical knowledge and skills but also with professional competencies such as effective communication with older adults, developing empathy, and making ethical decisions (Birinci, 2021).

In addition to theoretical courses, students have the opportunity to consolidate the knowledge they acquire through practical internship programs in real-life work environments. These internships are held in healthcare institutions, nursing homes, and care centers, and contribute to the development of both individual and group care skills (Birinci, 2021).

Vocational and Technical Anatolian High School graduates have the opportunity to become semi-qualified personnel with basic health and care knowledge. However, they cannot be directly appointed to public institutions. These individuals mostly work as support staff in private nursing homes and care centers, and have limited employment in home care.

***Higher Education Level Education Program***

In addition to programs offered at secondary school, associate degree programs in Elderly Care, conducted at vocational schools under the supervision of the Council of Higher Education (YÖK), play a critical role in training elderly care personnel with their two-year training.

According to the regulation published in the Official Gazette dated May 2, 2014 and numbered 29007, elderly care technicians assess the physical, mental, and social care needs of elderly individuals and patients requiring home care. They support the maintenance of daily living activities, implement nutrition programs, and monitor weight. They assess the living space for safety, monitor medical care procedures, and inform the healthcare team when necessary. They provide support with personal care and hygiene practices, guide family members, and encourage participation in social activities. They also assume responsibilities for protecting against abuse and communicating with relevant institutions when necessary (Bayburt University, n.d.).

While these programs vary by school, they aim to provide students with basic health sciences knowledge while also acquiring professional competence through courses specific to elder care. The program content includes: Courses include physiology, anatomy, pharmacology, first aid, public health, disease information, basic gerontology, wound care, home care and home healthcare services, exercise

physiology, gymnastics for the elderly, active aging, and professional knowledge such as nutrition for the elderly.

In addition, students take common courses such as university life culture, scientists and their discoveries, research methods and techniques, occupational health and safety, personal success methods, Atatürk's Principles and the History of the Revolution, English and Turkish Language, as well as non-departmental electives within the scope of general knowledge courses. This structure supports students not only in acquiring technical knowledge and skills but also in developing competencies such as critical thinking, communication, and ethical decision-making (YÖK, 2025; Birinci, 2021).

In this program, students also specialize in areas such as nutrition, medication management, rehabilitation practices, and chronic disease management, and have the opportunity to reinforce their theoretical knowledge with field experience through internships. Internships are crucial for students to develop their skills in assuming responsibility in professional care processes and improving the quality of care (YÖK, 2025; Birinci, 2021). Graduates of associate's degree programs in elderly care can be employed in the public sector with the title of "Elderly Care Technician" through the Public Personnel Selection Examination (KPSS).

Graduates can be employed in healthcare and social services, finding professional work opportunities in hospitals, nursing homes, care centers, home care services and social service organizations, the private sector, rehabilitation centers, and home care services. They also acquire the skills to assume responsibility in care processes and improve the quality of care. This is critical for meeting the increasing care needs of the aging population (Başol & Yalçın Sağlam, 2024; Birinci, 2021). According to YÖK data, by 2025, a total of 87 universities in Turkey have Elderly Care Programs. Of these universities, 74 are state universities and 13 are foundation universities (YÖK, 2025).

A summary comparison of elder care training programs in Turkey is illustrated in Table 1.

**Table 1.** Comparison of Elderly Care Training Programs in Turkey

| Dimension | Türkiye (Vocational and Technical Anatolian High School) | Türkiye (Associate Degree Program) |
|---|---|---|
| **Duration of Education** | 4 yıl | 2 yıl |
| **Theoretical Education** | Basic health information, patient and elderly care, hygiene, nutrition, first aid, rehabilitation, medical ethics | Basic health sciences, aging and social services courses |
| **Applied Training** | Internship practices (hospitals, nursing homes, care homes) | Compulsory internship practices (hospitals, nursing homes, care homes) |
| **Fee/Finance** | Students do not receive any fees during their studies. | Students do not receive any fees during their studies. |
| **Authorization and Certification** | After graduation, you can work with a certificate in the field of "Patient and Elderly Care". | After graduation, you can work as an "Elderly Care Technician" |
| **Systematic Structure** | It is carried out under the supervision of the Ministry of National Education. | It is carried out under the supervision of the Council of Higher Education (YÖK). |
| **Professional Orientation** | Graduates can work in entry-level positions in the healthcare industry. | Graduates can work in health and social services institutions |

A general comparison of elderly care training programs in Turkey, as seen in Table 1, demonstrates that elderly care personnel training programs aim to provide multidimensional knowledge and skills to meet the physiological, psychological, and social needs of older individuals. Core components of the training program include basic aging knowledge, common health problems in older adults (dementia, Alzheimer's disease, osteoporosis, and cardiovascular disease), patient rights, ethical principles, first aid, and nutrition and hygiene practices.

The programs also aim to teach effective communication with older adults, providing psychosocial support, and rehabilitation techniques. During the training process, students are required to complete a mandatory internship in real-life care settings, which supports the practical application of theoretical knowledge and the improvement of care quality (Karaca & Özcan, 2022).

***Elderly Care Certificate Training Program***

Elderly care certification training programs are short-term, practical vocational training programs developed to meet the increasing need for care arising from the increasing aging population. These programs are offered through distance learning or in-person training by the Ministry of National Education, universities, İŞKUR (Turkish Employment Agency), and qualified private

educational institutions. Training typically lasts between 50 and 500 hours and combines theoretical knowledge with practical experience.

For example, Bakırçay University Continuing Education Center (n.d.) states that the goal of the adult patient and elderly care certification program is to equip society with individuals who can provide quality care to adult patients and elderly individuals, identify these individuals, and provide appropriate care for illness-related or aging-related health problems. Courses include in-home elderly care services, principles and practices of elderly care, and conflict and stress management in the elderly. Furthermore, practical training aims to provide participants with experience in the care environment.

Following the certification training, participants can be employed in nursing homes, elderly care centers, home care services, and private healthcare institutions. However, the level of competence provided by this program is more limited compared to associate's or undergraduate degree programs. Certificate training aims to equip individuals with professional skills at the support staff level; it does not provide a professional title, academic advancement opportunities, or an advantage in entering the public sector.

Certified graduates are widely employed as support staff in private nursing homes and care centers, as well as in home care. Graduates of high schools and certificate programs are more likely to have support staff positions. Those with associate's degrees have broader career opportunities, including professional development and public sector appointments.

Vocational training programs in Turkey adopt a both theory- and practice-oriented approach, developing the professional knowledge, skills, and competencies of elderly care personnel, directly contributing to the improvement of service quality and care standards for elderly individuals (Başol & Yalçın Sağlam, 2024; MEB, 2025; YÖK, 2025; Birinci, 2021).

**Conclusion and Recommendations**

This study aimed to comprehensively examine elderly care services in Turkey within the context of legal regulations, institutional structures, vocational training programs, and personnel training processes. Findings from a review of relevant literature indicate that elderly care services are provided through a multi-stakeholder structure, with collaboration among the public, private sectors, local governments, and civil society organizations (Ministry of Family and Social Services, 2024; Ankara University, 2020).

Legal regulations and standards support improving service quality and providing care tailored to the needs of older individuals (Yalçın, 2019). However,

it is also known that quality differences arise depending on personnel training in service delivery (Birinci, 2021; Başol & Yalçın Sağlam, 2024).

Educational programs for elderly care personnel in Turkey adopt an approach that integrates theory and practice at both secondary and higher education levels, while certification training aims to equip individuals with professional skills at the support staff level. Programs enable students to acquire the knowledge and skills to meet the physiological, psychological, and social needs of older adults (MEB, 2025; YÖK, 2025; Birinci, 2021).

Internships allow students to consolidate their theoretical knowledge in real-life care settings and develop their professional competencies (Birinci, 2021). However, the increasing demand and diverse service models in the field of elder care increase the importance of standardization in training qualified personnel.

In this context, it is recommended to strengthen training programs, increase internship and practice periods, standardize the qualifications and certification processes of elder care personnel, and strengthen coordination between the public, private sectors, and civil society organizations (Başol & Yalçın Sağlam, 2024; Birinci, 2021; MEB, 2025). These measures will ensure the sustainability and effectiveness of elder care services, while also supporting graduates and existing staff with up-to-date information through continuous training and improving service quality (YÖK, 2025; Birinci, 2021).

In conclusion, the efficient and sustainable operation of elder care services in Turkey depends on the training of qualified personnel, which in turn depends on the design and implementation of standardized training programs and the establishment of collaboration among various stakeholders. Developing these elements will improve the quality of life of older individuals and enable them to benefit from care services in an accessible and more effective manner.

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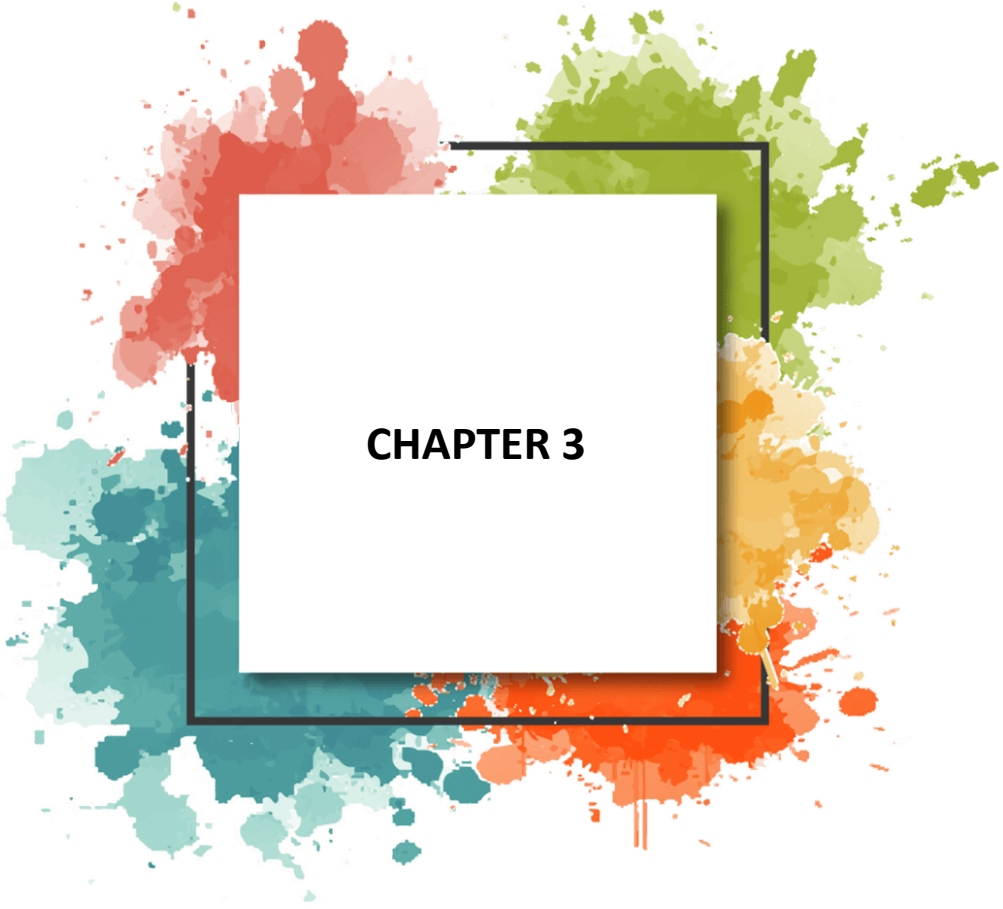
CHAPTER 3

# A Comparative Study of Elderly Care Personnel Training

*Ayşe Gülay Şahan*[1]

## 1. Introduction

The world's population is aging rapidly. While this number was approximately 200 million in 1950, the number of individuals aged 65 and over is estimated to reach approximately 760 million by 2023. According to United Nations (UN) data, the rate of increase in the elderly population has increased significantly, especially since the 2000s, necessitating the restructuring of health, economic, and social policies. According to UN projections, the elderly population is expected to account for approximately 16-17% of the total global population by 2050 (United Nations, 2023). Table 1 presents the growth rate of the global elderly population between 1950 and 2050.

**Table 1:** Growth of the World's Elderly Population Between 1950 and 2050

| Year | Population 65+ (Million) | Total Population (Million) | 65+ Share (%) |
|---|---|---|---|
| 1950 | 200 | 2,5 billion | 8% |
| 2000 | 420 | 6,1 billion | 6,9% |
| 2023 | 760 | 8 billion | 9,5% |
| 2050 | 1,600 | 9,7 billion | 16,5% |

As seen in Table 1, this increase in the elderly population demonstrates that the aging process is not just a demographic shift, but also one that requires a comprehensive transformation of social, economic, and healthcare systems. The growth of the elderly population has made it particularly important to maintain the quality of elderly care services and establish a sustainable care model (Li, Lee, & Smith, 2022).

Elderly care refers to professional or family-based care services designed to provide the support individuals need to maintain their daily activities due to declines in physical, cognitive, emotional, and social functions that occur with the aging process (Karataş & Başer, 2018). This care encompasses not only meeting medical and physical needs but also maintaining the elderly's psychosocial well-being, improving their quality of life, and supporting their social participation (WHO, 2015).

[1] Assist. Prof., : Balıkesir University,. Orcıd: 0000-0002-6665-4563

Elderly care, whose primary goal is to provide holistic physical, psychological, and social support while preserving the individual's independence as much as possible (WHO, 2015), can be addressed in formal (institutional or professional) and informal (provided by family members or volunteers) forms. Formal care is provided through institutional structures such as nursing homes, elderly care centers, and professional home care services, while informal care is generally provided by family members (Özdemir & Bilgili, 2014).

Demographic, socioeconomic, and cultural transformations underlie the increasing formalization of elder care (institutional or professional). This has strained the capacity of traditional family-based care systems (United Nations, 2019). While the rise in chronic diseases and care dependency among older individuals has increased the need for professional and continuous care services (WHO, 2015), the time and space available for family members to provide continuous care to the elderly has also decreased with industrialization, urbanization, and rising female labor force participation rates (Özmete, 2016). In this context, the traditional "family care" model has been replaced in modern societies by institutional care centers and professional care services (Duyan & Sevin, 2018).

The shift towards formalized forms of elder care stems from structural factors such as the aging population, changes in family structure, the increasing role of women in the workforce, urbanization, and the need for professionalization in care. This situation has led to the development of professionals in elder care, which is considered an inevitable trend in contemporary societies to protect the quality of life of older adults and ensure sustainable care services (WHO, 2015; Özmete, 2016). Training professional elder care personnel has become a global necessity to improve the quality of life of older adults, reduce the burden on healthcare systems, and ensure sustainable social welfare (WHO, 2015; United Nations, 2019; Akgün & Buz, 2020).

Today's complex care needs highlight the need for a multidisciplinary approach, highlighting the inadequacy of family-based or experiential care. Furthermore, the professionalization of elder care is not only a necessity but also a trend toward improving the quality of care. Because today's approach to care requires addressing the physical, psychological, and social needs of older adults in a holistic manner, it is crucial that these services be provided by trained caregivers (Akgün & Buz, 2020).

Professional elder care personnel should be trained to meet the holistic (biopsychosocial) needs of the elderly (Phillipson & Jones, 2020). Educational systems should be structured to meet these multidimensional needs and should be adequate in terms of both theoretical knowledge and practical experience (Sanjuán, Navarro, & Calero, 2022). In this regard, many countries are

developing policies to develop a qualified workforce by offering associate, undergraduate, and postgraduate programs in elder care (European Commission, 2021). However, significant differences are observed between countries in educational content, duration of practical experience, teaching methods, and certification processes. For example, while some countries require longer internships and emphasize clinical practice, others prioritize classroom-based theoretical education. Therefore, training qualified human resources to improve the quality and ensure sustainability of elder care services has become a global priority. In this context, revealing the differences and similarities between the elderly care personnel training systems in the countries examined in this research will contribute to the development of policy and training recommendations that will increase the quality of elderly care services.

## 2. Aim of the Research

The primary objective of this research is to compare the structural and practical aspects of elder care staff training processes in different countries. As such, the research is a comparative education study. Comparative education is a scientific discipline that examines the education systems, policies, institutions, and practices of different countries from a comparative perspective. The research approaches used in this field aim to reveal similarities and differences across countries, understand the social contexts of educational phenomena, and shed light on educational policies (Bray, Adamson, & Mason, 2014). Within this framework, the study aims to comparatively examine the elder care staff training processes in Turkey, Germany, and Japan and evaluate their educational experiences.

This comparative study examines the processes of training elderly care personnel in Turkey, Germany, and Japan, which all have different educational models. Turkey has a developing education system, prioritizing theoretical knowledge while offering limited practical experience. Germany stands out with its institutional and well-established educational programs, which include both school and workplace experience. Japan, on the other hand, stands out with its technology-focused and culturally sensitive educational practices (Altındiş, 2023).

## 3. Method

This research is a qualitative study that allows for an in-depth examination of facts and situations (Creswell & Poth, 2018). Furthermore, this research focuses on examining the current state of the educational processes for training elderly care personnel in the countries studied, and utilizes a combination of descriptive, horizontal, and case study methods within the scope of a comparative education methodology.

The horizontal approach, descriptive approach, and case study approach used in the field of comparative education have formed the fundamental methodological framework of comparative education research, particularly since the mid-20th century (Noah & Eckstein, 1969; Bereday, 1964). The horizontal approach aims to compare the educational systems of different countries by placing them side by side over a specific period. In this approach, simultaneous comparisons are made between countries; therefore, current structures and practices are prioritized rather than historical processes (Bereday, 1964). The horizontal approach is generally used to identify similarities and differences among the structural features of education systems (e.g., formal education levels, teacher training, curriculum structure, examination systems) (Bray et al., 2014). Another approach, the descriptive approach, aims to describe countries' education systems in a comprehensive and detailed manner. In this approach, rather than analysis, a qualitative data-based description of the structure, functioning, and goals of the systems is provided (Altbach, 1991). This approach, widely used in the early stages of comparative education studies, aims to produce general information about countries' education systems and to guide decision-makers (Phillips & Schweisfurth, 2014). The case study approach, on the other hand, is a qualitative method based on an in-depth examination of a country or a specific educational practice. This approach aims to understand the phenomenon of education within its cultural, economic, and political context (Bray et al., 2014).

These three approaches used in comparative education research, while based on different epistemological and methodological foundations, are complementary. The horizontal approach contributes significantly to identifying structural differences across countries, the descriptive approach to describing education systems, and the case study approach to understanding contextual depth. Today, researchers use these approaches in conjunction with mixed-method strategies to conduct more holistic analyses (Bray et al., 2014).

This study conducted a comprehensive document review to assess the current state of knowledge regarding the training of elderly care personnel. The countries studied were systematically evaluated in terms of the duration, content, implementation, and certification of elderly care personnel training (Saruhan, Kaya, & Demir, 2013). This aimed to obtain data on the similarities and differences in the training processes of elderly care personnel across the countries studied.

The data obtained were compared in terms of similarities and differences across countries. This process enabled a detailed examination of the duration, content, implementation, and certification aspects of elderly care personnel training in each country. Comparative analysis was used as a powerful method for understanding both the overall structure of training and the uniqueness of local

practices. Thus, the study's findings can be interpreted and evaluated within a more holistic framework (Hendekci & Gök Uğur, 2020).

## 4. Findings and Comments on Comparison of Elderly Care Personnel Training in Türkiye, Germany, and Japan

### 4.1. Comparison of Training Processes

Training for elderly care personnel in Turkey, Germany, and Japan exhibits significant differences in terms of program duration, practice intensity, certification systems, and professional qualification standards. These differences stem from the specific regulations and educational policy structures of each country's health and social services system (Bundesministerium für Bildung und Forschung [BMBF], 2021; MEB, 2020; Wienecke, 2025; YÖK, 2024; Ministry of Health, Labor, and Welfare [MHLW], 2024).

Vocational training programs in Turkey are offered by various institutions at the secondary, higher, and certification levels and include theoretical and practical courses. However, the system is still under development compared to European countries.

In Turkey, elder care education is conducted through vocational and technical high schools, higher education associate degree programs, and short-term certificate programs. The Patient and Elderly Services field in vocational and technical high schools aims to equip students with basic professional knowledge and skills; during their education, students take both theoretical courses in a classroom environment and gain limited practical experience (MEB, 2020; TYC, 2024). Elder care technician programs offered at the higher education level last two years and offer a combination of theoretical and practical training components with a total of 120 ECTS credits. Approximately 60% of the courses are theoretical and 40% practice-based. Within the scope of the program, students gain practical experience through compulsory internships in hospitals, nursing homes, and care centers. Short-term certificate programs, on the other hand, focus on acquiring specific skills, have limited training time, and have a more limited impact in terms of gaining professional competence (Anadolu University, 2024; YÖK, 2024; TYC, 2024).

In Germany, the process of training elderly care personnel takes three years (approximately 4,600 hours) under the Pflegefachfrau/Pflegefachmann program, combining theoretical and practical training within a "dual system" model (Dietrich, 2023). Students receive theoretical training at vocational schools on certain days of the week and gain practical experience in hospitals and care institutions on other days. This structure facilitates graduates' direct integration into the workforce and strengthens their professional skills. The diploma received after graduation is defined as level 4-5 within the European Qualifications

Framework (EQF) and offers individuals employment opportunities in areas such as elderly care, hospital services, and home care (Dietrich, 2023; Wienecke, 2025).

In Japan, elder care education is nationally standardized as three-year vocational programs. The training period varies between two and four years depending on the institution, and students take both theoretical courses and approximately 1,800 hours of practical training. At the end of the program, students are required to pass a national proficiency exam, and in-service training is provided to support continuing professional development after graduation. Successful graduates receive the title of "Kaigo Fukushi-shi," defined as level 5 of Japan's National Qualifications Framework (MHLW, 2024; Saito & Yamamoto, 2025).

It can be argued that the systems in Germany and Japan are more advanced than Turkey in terms of practice-based learning and professional certification. Türkiye, with its higher education-based model, has made significant progress in training a qualified workforce for elder care.

### 4.2. Comparison in Terms of Educational Content

In terms of educational content, elderly care training in Turkey encompasses the Patient and Elderly Services field in vocational and technical high schools, basic care, elderly psychology, first aid, health services, and ethics (Hendekci & Gök Uğur, 2020). Higher education elder care technician programs include courses in anatomy, physiology, elderly psychology, palliative care, communication, ethics, and rehabilitation, and aim to develop students' care skills to address the biological, psychological, and social needs of older individuals. Short-term certificate programs, on the other hand, focus on acquiring specific skills and have limited impact on professional qualifications.

In Germany, educational programs are implemented using a model known as the "dual system." Students receive both theoretical education at school and practical experience in care institutions (Kuske, 2007; BMBF, 2021). The program covers basic medicine, geriatric psychology, palliative care, communication, ethics, and rehabilitation. Practical training allows students to gain experience in care institutions, helping them put their theoretical knowledge into practice. This system facilitates graduates' integration directly into the workforce and develops their practical skills.

In Japan, programs in elder care education prioritize cultural sensitivity and technology integration. These programs include courses in basic health information, elder physiology, ethics, rehabilitation, communication, and palliative care. Students interact with older adults through hands-on training and learn about technology-supported care systems (Goto & Miura, 2023; Ministry

of Health, Labor, and Welfare [MHLW], 2024; Saito & Yamamoto, 2025). This structure encourages both skill acquisition and the adoption of innovative care practices.

### 4.3. Comparison in Terms of Practical Training

Practical training is a critical learning area for elderly care personnel. Research shows that practical training is effective in acquiring skills, developing empathy, and enhancing communication skills (Sanjuán, 2022). For example, a vocational school student in Turkey interacts with a limited number of elderly individuals during an internship and observes their care processes (YÖK [Council of Higher Education], 2024; Türkiye Qualifications Framework [TYC], 2024). In Germany, a dual-system student implements daily care routines, meets the physical and psychological needs of elderly individuals, and collaborates with colleagues (Kuske, 2007; Bundesministerium für Bildung und Forschung [BMBF], 2021). In Japan, students interact with elderly individuals using robotic-assisted care tools and gain experience in technology-based care (Goto & Miura, 2023; Ministry of Health, Labor and Welfare [MHLW], 2024; Saito & Yamamoto, 2025).

The limited availability of practical training in Turkey prevents graduates from gaining field experience, negatively impacting their adaptation to the workforce (World Bank, 2020). In Germany, the "dual system" model, where school education and workplace practices are conducted simultaneously, allows students to adapt to the profession more quickly by directly applying their theoretical knowledge to practice in the field (Deutschland.de, 2022).

In Japan, elder care education is supported by components focused on technology and cultural sensitivity. The integration of innovative methods such as robotic care applications and digital monitoring systems facilitates graduates' development of more effective solutions in service delivery (Goto & Miura, 2023). Furthermore, systematic reviews reveal that the intensity of practice, ethical dimensions, and continuous professional development in elder care educational interventions are determinants of care quality (Kuske, 2007). In this context, to improve elder care education in Turkey, it is necessary to increase internships and field practices, strengthen workplace-education integration, and incorporate technological content into programs.

### 4.4. Comparison in Terms of Certification

Certification processes are an important mechanism for ensuring educational quality. While state-approved certificates are issued in Turkey, official occupational certification is implemented in Germany. In Japan, a national certification system and continuing professional development programs ensure that graduates follow current care approaches (Li et al., 2022).

**Table 2.** Comparison of Education Systems

| Criterion | Türkiye | Germany | Japan |
|---|---|---|---|
| Education Level and Duration | High school level: 4 years (Vocational and Technical Anatolian High School)<br>Associate degree: 2 years (Vocational School)<br>Certificate program: Short-term (3-6 months) at universities' Continuing Education Centers (SEM), public education institutions, or private institutions | 3 years (Dual system: school + workplace training) | 3 years (Vocational school + practice) |
| Educational Content | Basic care, elderly psychology, communication skills, first aid, ethics, professional practice courses | Elderly care, nursing fundamentals, rehabilitation, ethics and cultural competence | Elderly care, cultural sensitivity, technology and robot-assisted care, ethical practices |
| Applied Training | High school: limited internship<br>Associate degree: mandatory internship in hospitals, nursing homes, or care centers (approximately 30–45 work days)<br>Certificate: short-term internship or observation | High level of practice (institutional practice 2–3 days a week, theoretical training on the remaining days) | Advanced practice and technology integration; extended internships in clinical and community care settings |
| Certification and Professional Competence | High school graduates: Diploma approved by the Ministry of National Education<br>Associate degree graduates: "Elderly Care Technician" title approved by the Council of Higher Education (YÖK)<br>Certificate programs: Certificate approved by the SEM, Ministry of National Education, or private institution | Official professional certificate (Pflegefachfrau/Pflegefachmann) | National certification system (Kaigo Fukushi-shi) and government approval |

Data from Table 2 reveal that elder care training in Turkey, Germany, and Japan differs in terms of level and duration, content, practice, certification, and professional qualifications. In Turkey, the training period is shorter and focuses on basic care, elderly psychology, and first aid, while practical opportunities remain limited. In contrast, Germany's dual-system integrates theory and practice throughout the three-year training period, emphasizing rehabilitation and ethical dimensions. Japan, on the other hand, supports the three-year training period with advanced practices, cultural sensitivity, and technology integration, ensuring professional standards through a national certification system. In this context, while the programs in Germany and Japan are more comprehensive and practice-

oriented, the training in Turkey requires improvement in terms of duration and content.

## 5. Conclusion and Recommendations

Research findings point to several strategic needs for improving the quality of elderly care personnel training. Increasing the duration of practical training and expanding field experience in Turkey will facilitate graduates' integration into the profession. Furthermore, strengthening national and international certification mechanisms will contribute to the standardization of professional qualifications. Furthermore, incorporating modules focused on technology integration and cultural sensitivity into training programs will enable the development of innovative solutions in care services that are responsive to community needs. Expanding continuous professional development programs will ensure the sustainability of service quality by equipping graduates with up-to-date knowledge and skills.

Considering Germany's extensive field experience with its dual-system implementation and Japan's approach that integrates technology and cultural sensitivity, the implementation of these recommendations will not only improve the quality of elderly care services in Turkey but also contribute to the creation of an internationally competitive education and care system.

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