

## *Socioeconomic Inequalities in Digital Health in Türkiye: An OECD-Based Qualitative Analysis\**

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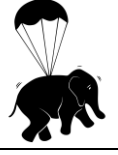
### Abstract

The aim of this study is to determine how socioeconomic inequalities affect digital health across different population groups in Türkiye. A qualitative research approach using document analysis was adopted in the study. The official report “OECD Economic Survey: Türkiye 2025” was selected as the main analysis source. Data analysis was conducted using content analysis using MAXQADA 2024 Analytics Pro and Microsoft Excel software programs. 5 themes, 15 categories and 24 codes were generated for the study regarding socioeconomic determinants that may affect digital health. Five main areas affecting digital health were identified, focusing on socioeconomic inequality: income inequality and limited redistribution, structural barriers to women's labor force participation, lifelong learning and skills, limited diffusion of technology adoption and innovation and key socioeconomic indicators. International comparisons indicate that similar barriers exist in other countries with high socioeconomic inequality. By evaluating the OECD Economic Survey: Türkiye 2025 with a qualitative approach, the study offers an original contribution to the literature on how socioeconomic inequalities affect the digital health transformation in Türkiye. The study's conclusions highlight the need to reform the tax and transfer system, develop gender-based social programs, expand access to digital skills training, foster innovation and increase public investment in healthcare. Implementing these strategies will increase the comprehensiveness of digital health services, narrow the digital divide and ensure a more equitable distribution of technological benefits across the population.

**Keywords:** digital health, socioeconomic inequality, OECD, Türkiye, qualitative research

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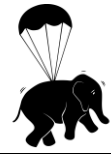


## ***Türkiye'de Dijital Sağlıkta Sosyoekonomik Eşitsizlikler: OECD Tabanlı Nitel Bir Analiz***

### **Öz**

Bu çalışmanın amacı Türkiye'de sosyoekonomik eşitsizliklerin farklı nüfus grupları için dijital sağlığı nasıl etkilediğini belirlemektir. Çalışmada, doküman incelemesi yönteminin kullanıldığı nitel bir araştırma yaklaşımı benimsenmiştir. "OECD Ekonomik Araştırmaları: Türkiye 2025" resmi raporu temel analiz kaynağı olarak seçilmiştir. İçerik analizi yöntemi ile gerçekleştirilen veri analizinde MAXQADA 2024 Analytics Pro ve Microsoft Excel yazılım programları kullanılmıştır. Çalışmada, dijital sağlığı etkileyebilecek sosyoekonomik belirleyicilere ilişkin 5 tema 15 kategori ve 24 kod oluşturulmuştur. Gelir eşitsizliği ve sınırlı yeniden dağıtım, kadınların işgücüne katılımında yapısal engeller, yaşam boyu öğrenme ve beceriler, teknoloji benimsemesi ve inovasyonun sınırlı yayılımı ve temel sosyoekonomik göstergeler sosyoekonomik eşitsizlik odağında dijital sağlığı etkileyen beş ana alan olarak belirlenmiştir. Uluslararası karşılaştırmalar benzer engellerin, yüksek sosyoekonomik eşitsizliğe sahip diğer ülkelerde de bulunduğunu göstermektedir. OECD Ekonomik Araştırması: Türkiye 2025'i nitel bir yaklaşımla değerlendiren çalışma, sosyoekonomik eşitsizliklerin Türkiye'de dijital sağlık dönüşümünü nasıl etkilediği konusunda literatüre özgün bir katkı sunmaktadır. Çalışma sonuçları, vergi ve transfer sistemi reformu, cinsiyete dayalı sosyal programların geliştirilmesi, dijital beceri eğitime erişimin genişletilmesi, inovasyonun teşvik edilmesi ve sağlık hizmetlerine kamu yatırımlarının artırılması gerektiğini vurgulamaktadır. Bu stratejilerin uygulanması, dijital sağlık hizmetlerinin kapsayıcılığını artıracak, dijital uçurumu azaltacak ve teknolojik faydaların nüfus arasında daha adil dağıtılmasını sağlayacaktır.

**Anahtar Kelimeler:** dijital sağlık, sosyoekonomik eşitsizlik, OECD, Türkiye, nitel araştırma



## 1. INTRODUCTION

Digital transformation in healthcare offers numerous opportunities to improve the efficiency, accessibility and quality of healthcare services. Conversely, there are also concerns that the rapid adoption of digital technologies could exacerbate existing socioeconomic inequalities (Agwenyi and Wabwoba, 2024; Deganis et al., 2021). This is particularly evident in countries like Türkiye, which experience significant regional and demographic inequalities (Karakuzu and Şengül, 2024; Carrera et al., 2021). In underdeveloped and developing countries, the digitalization of healthcare services faces obstacles related to income, education, infrastructure and the population's digital literacy (Nosike, 2024; Wang and Xu, 2023; Elantheraiyan et al., 2025). Governments, local governments, civil society organizations and national strategy-making institutions and organizations have numerous initiatives aimed at increasing access to digital health services (Fernandes et al., 2024; van de Vijver et al., 2023). While there are efforts to increase these initiatives, there is uncertainty about the extent to which these initiatives take into account differences between social groups. A lack of a strategic approach in this regard can lead to digital health becoming a privilege for a limited number of citizens and exacerbating existing social vulnerabilities (Ibrahim et al., 2021; Badr et al., 2024).

Therefore, the study's question is “How does the OECD Economic Survey: Türkiye 2025 report reflect socioeconomic inequalities in access to and use of digital health in Türkiye?”

In this context, the concept of “digital health” encompasses the administrative integration of telemedicine services, electronic health record systems, mobile health applications, and digital health technologies, as defined by the World Health Organization (WHO), the Organization for Economic Co-operation and Development (OECD), and Türkiye's health policies (WHO, 2021; OECD, 2023; MH, 2023; Yılmaz, 2024). Therefore, this study evaluates the socioeconomic differences between the clinical, administrative, and technological dimensions of the digital health transformation.

This study aims to qualitatively analyze the content of the OECD Economic Survey: Türkiye 2025 report to determine how socioeconomic inequalities in Türkiye affect digital health across different population groups. The study focuses specifically on policies and strategies affecting different social groups, identifying policy gaps and developing recommendations to ensure a more equitable distribution of digital resources.

This study offers an original contribution to the literature by qualitatively analyzing the OECD Economic Survey: Türkiye 2025 from a health management perspective. While most previous studies rely on quantitative data or descriptive reviews of policy documents, this study systematically reveals how socioeconomic inequalities shape the digital health transformation using a theme, category, and code approach. Thus, it is one of the first qualitative assessments to explain the structural dynamics of digital health inequalities in the Türkiye context.



## 2. BACKGROUND

The conceptual framework of this study is based on the relationship between digital health and socioeconomic inequalities that lead to disparities in access, use and performance of digital health technologies across different social groups. Digital health applications such as telemedicine, electronic health records, mobile applications and remote monitoring platforms are strategically important in improving access to care and improving quality in healthcare (Shotarova, 2023; Mumtaz et al., 2023; Gedikli, 2024). However, in settings with high socioeconomic inequalities, groups with low income, low education, or limited digital skills face barriers to benefiting from technological innovations (Nosike, 2024; Wang and Xu, 2023; Elantheraiyan et al., 2025). Viewing digital health through the lens of socioeconomic context helps identify how structural and institutional factors facilitate or hinder the inclusiveness of digital transformation in healthcare.

There are basic theoretical approaches in digital health that contribute to the multidimensional understanding of socioeconomic inequalities. Social determinants of health, digital abyss theory and the behavioral model of Andersen's health services can be given as examples (Hahn, 2021; van Dijk, 2017; Babitsch et al., 2012). The framework of social determinants of health emphasizes the socioeconomic, environmental and cultural conditions that determine individuals' health status and access to health services (Holt-Lunstad, 2022). Digital gap theory explains that the differences in access to digital technologies are closely related to social characteristics such as income, education, age and gender of individuals (Zhang et al., 2022). Andersen's behavioral model focuses on the interaction of tendency, possibilities and need - based factors affecting health care use (Lederle et al., 2021). When these three theories are handled together, it allows the structural, technological and individual dimensions of socioeconomic inequalities in the field of digital health in a holistic way (Jahnel et al., 2022). The policy discourses and indicators in the OECD report in the study match the theoretical ground in the theme, category and code structure. For example, the redistribution power of the tax-transfer system refers to the framework of health determinants of health, women's participation in labor force, social determinants framework and the behavioral model of Andersen's behavioral model and lifelong learning digital gap theory. Thus, the discussion of the issue is strengthened not only descriptive, but in a descriptive and causal framework and strengthened the theoretical basis in the context of Türkiye.

Studies focusing on socioeconomic inequalities in access to digital health services reveal universal challenges in Türkiye and other countries. According to Karakuzu and Şengül (2024), income and education levels are identified as key determinants of access to healthcare services, including digital resources, in Türkiye. Similarly, studies across European countries have shown that low digital literacy and limited internet access hinder equal participation in digital health (Alvarez-Galvez et al., 2020). In the United Kingdom and Canada, despite the availability of international health insurance, significant differences in telemedicine use exist across socioeconomic groups (Oliveira and Hashiguchi, 2020). Such differences appear to be



even more pronounced in the context of developing countries. Jun (2020) found that in South Korea, the digital divide exacerbates health inequalities among older adults. In Türkiye, Konca et al. (2022) observed higher levels of online health activity among high-income individuals and those living in economically developed regions. These studies highlight the need for international strategies aimed at bridging the digital divide in healthcare, as recommended in recent OECD economic reviews.

The Organisation for Economic Co-operation and Development (OECD) has been preparing regular OECD Economic Surveys reports assessing economic policies, structural reforms and macroeconomic stability in its member and partner countries since 1961 (OECD, 2025a). As a result of these assessments, numerous reports on the socio-economic situation of Türkiye, an OECD member, have been published (OECD, 2025b). These reports are prepared on a regular biennial basis and provide a detailed analysis of the macroeconomic situation. They also include thematic sections focusing on current priorities, from employment and education to digitalization and sustainable development. The aim of these surveys is to provide governments with specific recommendations for improvement based on independent expert assessments of existing policies and an international comparative analysis. The latest OECD Economic Surveys: Türkiye 2025 report emphasizes the importance of inclusive development and sustainable healthcare services (OECD, 2025c). The report includes various assessments and policy recommendations regarding the digitalization of the healthcare sector in Türkiye. However, there is uncertainty about the extent to which the proposed measures will contribute to reducing the socioeconomic gap in access to digital health services.

Numerous studies have examined OECD Economic Surveys to examine the effectiveness of economic governance and the impact of OECD recommendations on national policies. For example, Azzopardi et al. (2019) used microdata to analyze labor market responses to economic shocks and household vulnerabilities for their OECD Economic Surveys: United States 2018 study, demonstrating the importance of OECD recommendations in the context of implemented policies. Similarly, Égert and Gal (2017) analyzed the impact of OECD-led structural reforms on productivity and macroeconomic growth in OECD countries, confirming the reports' role in supporting institutional reforms. Economic studies based on OECD data, such as Inoue et al. (2022), have examined the dynamics of technological change in the transition to sustainable development and demonstrated how technological trends differ across OECD countries in the context of economic growth. In this regard, these studies demonstrate the scientific importance and impact of OECD research as a fundamental platform for analyzing and improving policies at the international level.

In this regard, the study provides the basis for assessing how socioeconomic conditions, as addressed in the OECD Economic Survey: Türkiye 2025, shape the opportunities and barriers for inclusive digital health development.



### 3. RESEARCH METHOD

In this section, the methodological basis of the study is explained in detail, including the research design, the universe and sample of the study, data collection tools, data analysis, limitations of the study and the ethical aspect of the study.

#### 3.1. Research Design

This study adopted a qualitative research approach using document analysis. This approach allows for an in-depth examination of the content of policy and analytical documents to identify unexplored meanings, structures and policy implications (Bowen, 2009; Armstrong, 2021). The study focuses on document analysis, with an emphasis on the public policy sections on digital health and socioeconomic inequality in the official report “OECD Economic Surveys: Türkiye 2025.” Using document analysis as a method allows for the assessment of not only explicit provisions but also thematic gaps and the internal structure of the discourse (Cardno, 2018).

#### 3.2. Research Population and Sample

The official report “OECD Economic Surveys: Türkiye 2025” was selected as the sole target analysis source for this study (OECD, 2025c). This source was selected using a purposive sampling approach because it is a current official international analytical document that provides a systematic and periodic review of the country's macroeconomic, social, and sectoral policies (Campbell et al., 2020). This 132-page report was analyzed across four main sections directly related to digital transformation, health, employment, innovation, and social inequalities. The sections are: “Staying the course on macroeconomic stabilization”, “Removing the barriers to female labor market participation”, “Steps towards green transformation in Türkiye” and “Completing the transition to a competitive and innovative economy”. Subthemes related to digital health, social policy, and inclusive growth were extracted from these sections and evaluated within the thematic analysis. Technical sections focusing on macroeconomic projections, foreign trade, and fiscal policy details were excluded. This choice allows us to focus on the socioeconomic determinants of digital health inequalities in line with the purpose of the study.

#### 3.3. Data Collection Tools

In this study, the report titled “OECD Economic Survey: Türkiye 2025” was used within the framework of qualitative document analysis approach (OECD, 2025c). This report, which was selected as the primary data source in the study, is among the official policy documents published regularly by OECD and evaluating the economic, social and political structure of the countries in a holistic way. The reason for the election of the report is that Türkiye systematically addresses indicators of digital transformation, health care, employment and inequality. In the data collection process, the electronic version of the report was used and the



relevant sections were determined and analyzed by the sampling approach. In this respect, the OECD report is a qualitative data source in accordance with the objectives of the study.

### **3.4. Data Analysis**

Data analysis was conducted using the content analysis method used in qualitative research. Open coding was first conducted, then codes were compiled into semantic categories and finally, thematic synthesis was conducted (Yıldırım and Şimşek, 2021). Themes, categories and codes related to socioeconomic inequality in digital health were identified. The coding process was conducted independently by three healthcare management experts, and comparisons were then made. Intercoader agreement was assessed using Fleiss's Kappa coefficient ( $\kappa$ ), a frequently used measure in qualitative research. The analysis yielded a Kappa value of 0.84, which is considered a “high level of agreement” (Kılıç, 2015). This result demonstrates that theme, category, and code matches were evaluated consistently and reliably. The study was conducted manually using MAXQADA 2024 Analytics Pro, a qualitative analysis tool and Microsoft Excel software programs.

### **3.5. Research Limitations**

This study has several limitations. The most significant limitation is the use of a single document as the primary source of analysis. The study was conducted solely based on the OECD Economic Survey: Türkiye 2025 report, and the findings are limited to the policy discourses and socioeconomic indicators in this report. This approach aims to focus the study's scope through an in-depth document analysis. The OECD report was selected as a reliable and official source because it provides internationally comparable data and addresses Türkiye's economic and social context in a multidimensional manner. The report may not fully reflect the national discourse and local perceptions regarding socioeconomic inequality related to digital health. Furthermore, due to the scope of the study, different stakeholder views or national data sets are not included in this analysis. The report represents an external and institutional perspective. Generalizability of the study results is not possible. Due to the nature of the qualitative method, the subjectivity of the researcher should not be overlooked throughout the study. Future studies could be expanded to include national documents such as the Ministry of Health Strategic Plan, the National Development Plan, and Türkiye Statistical Institute data, as well as qualitative stakeholder opinions.

### **3.6. Ethical Aspects of the Research**

Ethical approval was not required because the study did not involve the collection of personal data, interaction with individuals, or violation of privacy. The study was conducted in accordance with all scientific ethical principles and rules.



#### 4. FINDINGS

This section presents the findings from the qualitative content analysis of the OECD Economic Surveys: Türkiye 2025 report, which aims to identify how socioeconomic inequalities across different population groups affect digital health. The findings are structured according to themes and categories established during the data coding process. These themes are supported by quotes and evidence from the original report.

**Table 1.** Theme, category and code structure

| Theme                                                    | Category                                            | Code                                                                                                          |
|----------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Income Inequality and Limited Redistribution             | The redistributive power of the tax-transfer system | "Inequality in the tax-transfer system",<br>"Low impact of taxes and social benefits"                         |
|                                                          | Social assistance coverage                          | "Social aids other than retirement are very low", "Social aids have limited effectiveness"                    |
|                                                          | Fiscal redistribution effect                        | "The inequality-reducing effect of public finance is limited",<br>"The share of transfer expenditures is low" |
|                                                          | Income distribution indicator                       | "High Gini coefficient"                                                                                       |
|                                                          | Poverty rate                                        | "Relative poverty rate"                                                                                       |
| Structural Barriers to Women's Labor Force Participation | ECEC supply/financing                               | "Inadequate financing of early childhood care services", "Regional differences"                               |
|                                                          | Parental leave design                               | "Lack of special parental leave for the father"                                                               |
|                                                          | Tax-family policies                                 | "Lack of tax advantages for families with children", "Lack of family-friendly tax policies"                   |
|                                                          | Tax burden on households                            | "High tax burden on households with children", "Negative impact on women's employment"                        |
| Lifelong Learning and Skills                             | Adult learning participation                        | "Low participation of adults in lifelong learning", "Low educational level",<br>"Limited access"              |
|                                                          | Workforce skill level                               | "Labor force skill levels lag behind the OECD average"                                                        |
| Limited Diffusion of Technology Adoption and Innovation  | Firm innovation diffusion                           | "Limited diffusion of new technologies in Turkish companies"                                                  |
|                                                          | Level of innovative activity                        | "Low innovation rate of companies",<br>"Limited R&D investment"                                               |
| Basic Socioeconomic Indicators                           | Income and poverty                                  | "High income inequality and poverty rate"                                                                     |
|                                                          | Health expenditure                                  | "Healthcare spending below the OECD average"                                                                  |

Table 1 lists the themes (n:5), categories (n:15) and codes (n:24) related to socioeconomic determinants that may affect access to digital health services in the OECD Economic Surveys: Türkiye 2025 report.





**Table 2.** Theme, description, category, code and supporting quote regarding the assessment in terms of income inequality and redistribution

| Theme                                        | Description                                                                                                                                 | Category                                            | Code                                                          | Supporting Quote                                                                                                                                                                                                                                                            |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Income Inequality and Limited Redistribution | It is a situation where existing fiscal and social mechanisms only marginally reduce the income gap between different socioeconomic groups. | The redistributive power of the tax-transfer system | "Inequality in the tax-transfer system"                       | "The tax and benefit system barely reduces inequalities in market incomes."                                                                                                                                                                                                 |
|                                              |                                                                                                                                             |                                                     | "Low impact of taxes and social benefits"                     | "The low level of income taxation in parallel with the small size of the social protection system explains the weak redistributive power of public finances in Türkiye compared to other countries despite high inequalities in market income, i.e. before redistribution." |
|                                              |                                                                                                                                             | Social assistance coverage                          | "Social aids other than retirement are very low"              | "...Non-pension social benefits are relatively low."                                                                                                                                                                                                                        |
|                                              |                                                                                                                                             |                                                     | "Social aids have limited effectiveness"                      | "Other social benefits are relatively well targeted, but their scope is too narrow to effectively address inequalities and poverty."                                                                                                                                        |
|                                              |                                                                                                                                             | Fiscal redistribution effect                        | "The inequality-reducing effect of public finance is limited" | "Public finances do not redistribute much."                                                                                                                                                                                                                                 |
|                                              |                                                                                                                                             |                                                     | "The share of transfer expenditures is low"                   | "...Spending on incapacity-related, family, unemployment, and housing benefits, and other social policy areas... amounted to 1.4% of GDP against 5.6% in the median OECD country. This was the lowest level in the OECD."                                                   |
|                                              |                                                                                                                                             | Income distribution indicator                       | "High Gini coefficient"                                       | "Gini coefficient: 0.427 (OECD average: 0.316)"                                                                                                                                                                                                                             |
|                                              |                                                                                                                                             | Poverty rate                                        | "Relative poverty rate"                                       | "Relative poverty rate: 13.2% (OECD average: 11.7%)"                                                                                                                                                                                                                        |

Table 2 shows that one of the main themes emerging from the report's content is income inequality and limited redistribution. According to the OECD Economic Survey: Türkiye 2025 report, income inequality in Türkiye is high and the tax and transfer system has a limited impact on reducing these inequalities. Non-pension social benefits are low. Public finances remain weak in redistribution.



**Table 3.** Theme, description, category, code and supporting quote regarding the assessment of structural barriers to women's labor force participation

| Theme                                                    | Description                                                                                                                 | Category                 | Code                                                    | Supporting Quote                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Structural Barriers to Women's Labor Force Participation | Persistent institutional, cultural and economic factors that limit women's employment and career advancement opportunities. | ECEC supply/financing    | "Inadequate financing of early childhood care services" | "Public funding for ECEC, at 0.3% of GDP, is significantly below the OECD average of 0.8%."                                                                                                                                                                                        |
|                                                          |                                                                                                                             |                          | "Regional differences"                                  | "ECEC enrolment rates are low."                                                                                                                                                                                                                                                    |
|                                                          |                                                                                                                             | Parental leave design    | "Lack of special parental leave for the father"         | "Türkiye does not currently offer non-transferable parental leave reserved for fathers."                                                                                                                                                                                           |
|                                                          |                                                                                                                             | Tax-family policies      | "Lack of tax advantages for families with children"     | "Türkiye does not provide child-related fiscal benefits in contrast to most OECD countries."                                                                                                                                                                                       |
|                                                          |                                                                                                                             |                          | "Lack of family-friendly tax policies"                  | "Türkiye's tax and benefits policies do not favour the labour force participation of households with children. Türkiye does not provide significant fiscal benefits to such households' members through advantageous tax treatments or cash benefits, relative to OECD countries." |
|                                                          |                                                                                                                             |                          | "High tax burden on households with children"           | "Türkiye does not provide adequate cash benefits for families with children, leading to one of the highest tax wedges for families in the OECD."                                                                                                                                   |
|                                                          |                                                                                                                             | Tax burden on households | "Negative impact on women's employment"                 | "Female labour force participation is the lowest in the OECD, mostly due to a disproportionate share of unpaid care and domestic work."                                                                                                                                            |

According to Table 3, one of the main themes emerging from the report's content is structural barriers to women's labor force participation. Türkiye has one of the lowest female labor force participation rates among OECD countries. Public financing for early childhood education and care services is insufficient. There is no special parental leave for fathers. There are no tax advantages for households with children. This situation limits women's participation in the labor market.



**Table 4.** Theme, description, category, code and supporting quote regarding the assessment in terms of lifelong learning and skills

| Theme                        | Description                                                                                                                                                             | Category                     | Code                                                   | Supporting Quote                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Lifelong Learning and Skills | It is the process of systematic development and renewal of a person's competencies throughout life in response to changing labor market and technological requirements. | Adult learning participation | "Low participation of adults in lifelong learning"     | "Participation in lifelong learning is low."                                                                                     |
|                              |                                                                                                                                                                         |                              | "Low educational level"                                | "Türkiye's share of STEM graduates is low."                                                                                      |
|                              |                                                                                                                                                                         |                              | "Limited Access"                                       | "Participation in lifelong learning in Türkiye has increased significantly but remains much lower than in other OECD countries." |
|                              |                                                                                                                                                                         | Workforce skill level        | "Labor force skill levels lag behind the OECD average" | "Türkiye's workforce skills lag those of other OECD countries, exacerbated by the emigration of high-skilled individuals."       |

Table 4 presents lifelong learning and skills, one of the key themes emerging from the report's content. Accordingly, adult participation in lifelong learning in Türkiye is low. The skill level of the workforce lags behind the OECD average. This limits individuals' capacity to adapt to changing workforce demands and technological transformation.

**Table 5.** Theme, description, category, code and supporting quote regarding the assessment of technology adoption and limited diffusion of innovation

| Theme                                                   | Description                                                                                                                                                      | Category                     | Code                                                         | Supporting Quote                                                                                                                                                                     |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Limited Diffusion of Technology Adoption and Innovation | It is the process of integrating new technological solutions into the economy and society that are constrained by low adoption rates and inequalities in access. | Firm innovation diffusion    | "Limited diffusion of new technologies in Turkish companies" | "More needs to be done to promote links between research activities and broader technology adoption, as today there is limited diffusion of new technology among Turkish companies." |
|                                                         |                                                                                                                                                                  | Level of innovative activity | "Low innovation rate of companies"                           | "One third of Turkish companies reported introducing an innovation in 2018-2020, compared to around half on average in the OECD."                                                    |
|                                                         |                                                                                                                                                                  |                              | "Limited R&D investment"                                     | "Although public and private investment in R&D activities in Türkiye has increased significantly over the last decade, it remains at almost half of the OECD average."               |

According to Table 5, the limited diffusion of technology adoption and innovation is one of the key themes emerging from the report's content. The diffusion of new technologies among firms in Türkiye is limited. The level of innovative activity is below the OECD average. This could negatively impact the overall pace and comprehensiveness of digitalization.



**Table 6.** Theme, description, category, code and supporting quote regarding the assessment in terms of basic socioeconomic indicators

| Theme                          | Description                                                                                                                     | Category           | Code                                         | Supporting Quote                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Socioeconomic Indicators | They are basic statistical parameters that reflect the level of economic development, social welfare and inequality in society. | Income and poverty | "High income inequality and poverty rate"    | "Income inequality (Gini coefficient, 2022, OECD: latest available): 0.427 (OECD average: 0.316)."<br>"Relative poverty rate (% , 2022): 13.2% (OECD average: 11.7%)." |
|                                |                                                                                                                                 | Health expenditure | "Healthcare spending below the OECD average" | "Public and private spending (% of GDP)- Health care: 4.2% (OECD average: 9.2%)"                                                                                       |

Table 6 presents key socioeconomic indicators, one of the key themes emerging from the report's content. Türkiye's income inequality is above the OECD average. The relative poverty rate is high. Healthcare spending as a share of GDP is well below the OECD average. These indicators provide context for potential structural limitations in access to digital health services.

## 5. DISCUSSION and CONCLUSION

This section discusses the findings obtained to determine how socioeconomic inequalities affect digital health, drawing on existing literature and international studies and presents the study's findings. The discussion is based on the themes identified in the qualitative content analysis of the OECD Economic Survey: Türkiye 2025 report: income inequality and limited redistribution, structural barriers to women's labor force participation, lifelong learning and skills, technology adoption and limited diffusion of innovation and key socioeconomic indicators. For each theme, not only the identified trends were confirmed, but also comparisons were made regarding areas where national policies need to be adapted to increase digital health coverage.

The high levels of income inequality identified in the OECD Economic Survey: Türkiye 2025 report and the limited redistributive role of the tax and transfer system, examined within the scope of the study, create significant barriers to equal access to digital health services. Low-income groups face various challenges in purchasing smart devices, paying for consistent internet connections and subscribing to telemedicine platforms. This leads to socioeconomic stratification in digital health use. Studies on the subject reveal that the availability and use of digital technologies in health are closely linked to income levels. High-income regions demonstrate greater use and impact compared to middle- and low-income regions ([Ashwini et al., 2024](#)). For example, in Canada, only 58% of families in the bottom 5th of income bracket have access to high-speed internet, while this figure reaches 97.7% in the top 5th ([Haight et al., 2014](#)). A meta-review by Estrela et al. ([2023](#)) found similar findings, emphasizing that digital inequality encompasses not only physical access to devices but also the ability to use them and benefit from digital services. Garcia et al. ([2023](#)) also argue that digital health innovations can exacerbate existing inequalities if they are not supported by policies targeting inclusiveness.



Accordingly, limited redistribution mechanisms in Türkiye not only cause high levels of socioeconomic inequality but also complicate the outcomes on digital transformation in health, which requires comprehensive measures to ensure accessibility, digital literacy and effectiveness of technology use.

Türkiye's female labor force participation rate is among the lowest among OECD countries. This is significant because it directly impacts access to digital health services for households with high childcare burdens. Economic dependency and limited income reduce the ability to purchase necessary devices and pay for a consistent internet connection, which in turn limits the use of telemedicine services. Studies show that low female economic participation is closely linked to the digital divide. In countries with high gender inequality, women are less likely to use online health platforms for various reasons, including lack of time and resources ([Inayah and Maghfiroh, 2025](#); [Tunçsiper, 2025](#)). For example, a study from Pakistan suggests that mobile phone ownership increases women's labor force participation ([Amber and Chichaibelu, 2023](#)). Furthermore, childcare responsibilities and a lack of affordable early childhood education services reduce women's opportunities to develop the digital literacy skills needed to effectively use digital technologies in healthcare ([Canton, 2021](#)). Countries implementing paid paternity leave programs and family tax incentives have higher female labor force participation rates, which is associated with more equitable use of digital health services ([World Health Organization and United Nations Children's Fund, 2022](#)). Recent legislative changes in Türkiye have improved parental leave rights and introduced explicitly gender-neutral regulations for part-time work after the birth or adoption of a child until they reach school age. These regulations reflect a commitment to family-focused policies and greater involvement of both parents in childcare ([Resmi Gazate, 2025](#)). Consequently, structural barriers to women's economic participation in Türkiye not only limit their economic independence but also exacerbate the socioeconomic gap in access to digital health.

The low participation of adults in lifelong learning in Türkiye and the skill level of the workforce, which lags behind the OECD average, have a direct impact on developing the digital literacy necessary for the effective use of digital health services. Limited digital skills make it difficult to navigate online platforms, use telemedicine consultations and access electronic health records. Studies indicate that insufficient digital competence is a key driver of the digital divide in healthcare, particularly among the elderly and those with low education levels ([Heponiemi et al., 2024](#); [Longhini et al., 2024](#); [Erfani et al., 2025](#)). Countries actively developing lifelong learning and retraining programs have higher access to digital health services. This is linked to the strategic improvement of digital skills ([Gabriel et al., 2022](#)). Consequently, the lack of adult participation in educational initiatives in Türkiye not only reduces the competitiveness of the workforce but also increases the barriers to the inclusive implementation of digital health.

In Türkiye, limited adoption of new technologies and the low level of innovation activity among companies compared to the OECD average slow down the development and implementation of



digital health solutions. Inadequate technological infrastructure and weak connections between businesses, research institutions and the public sector make it difficult to scale telemedicine platforms, mobile health monitoring applications and electronic health record systems. Studies show that countries with high levels of innovation activity adopt and integrate digital health technologies more rapidly, directly related to the development of the digital health ecosystem (Iyawa et al., 2017; Hudes, 2017; Bonomi et al., 2023). Limited technological capacity reduces the effectiveness of existing digital health applications in both the public and private sectors, leading to limited access to services and increased digital inequality (Carrilho et al., 2023). Therefore, comprehensive policies aimed at encouraging innovation, expanding technological infrastructure and strengthening intersectoral collaboration are needed to accelerate the digital transformation of healthcare in Türkiye. In Türkiye, high levels of income inequality and relative poverty, coupled with low healthcare spending relative to GDP compared to the OECD average, create systemic barriers to developing digital health infrastructure and promoting its use at the individual level. Limited public investment in healthcare reduces the capacity to deploy telemedicine platforms, upgrade IT infrastructure in healthcare facilities and provide digital equipment to vulnerable groups. Studies show that countries with higher public spending on healthcare and smaller socioeconomic gaps have higher access to and adoption of digital health technologies (Badr et al., 2024; Azzopardi-Muscat and Sørensen, 2019). Furthermore, underinvestment in healthcare exacerbates regional inequalities in access to digital services, hindering the implementation of national digital transformation strategies (Ubalaeze, 2025). Consequently, the combination of high-income inequality and relative poverty with low healthcare spending in Türkiye not only limits the effectiveness of existing investments in digital health but also increases the risk of widening the digital divide between different socioeconomic groups.

This study can be used to systematically evaluate digital health and socioeconomic indicators across OECD countries using indicators such as income inequality (Gini coefficient), relative poverty rate, public health expenditures as a share of GDP, female labor force participation rate, and adult lifelong learning participation rate. Compared to OECD averages, Türkiye appears to rank lower in terms of these five indicators. For example, Türkiye's Gini coefficient of 0.43 is significantly higher than the OECD average of 0.31; this difference exacerbates income-based inequalities in access to digital health services (OECD, 2025c). While the share of public health expenditures in GDP is 4.2% in Türkiye, the OECD average is 9.2%; this difference limits the sustainability of digital infrastructure investments. While the female labor force participation rate in Türkiye is 36%, it is 80% in Sweden, 75% in Germany, and 53% in Chile (OECD, 2023). This creates a significant difference in women's utilization of digital health technologies and their participation in production processes. Furthermore, while the lifelong learning rate is only around 6% in Türkiye, it is 60% in Finland and 50% in South Korea, indicating a significant gap in digital health literacy. Therefore, it appears that the socioeconomic barriers Türkiye faces in digital health are not only national but also systematically disadvantageous compared to OECD averages.



When the findings of the study are considered as holistic; It is seen that socioeconomic inequalities in digital health have a multi-layered structure that feeds each other. The injustices in income distribution and the limited redisting capacity of the tax-transfer system constitute economic barriers to individuals' access to digital health services (Giebel et al., 2023). This situation adversely affects women's digital health literacy and digital service usage rates, especially when combined with low rates of women's participation in labor and inadequacy of family-friendly social policies (do Nascimento et al., 2025). On the other hand, the low lifelong learning participation and the limited expansion of innovation limit the potential of effective use of digital health technologies by reducing individuals' digital skill levels (Yao et al., 2022). The interaction of these factors creates a multiple digital inequality structure based on gender and regional differences as well as income-based digital abyss. Therefore, digital health transformation in Türkiye should be considered not only as technological, but also as a social and structural transformation.

This study's assessment goes beyond the OECD report to holistically reveal the structural socioeconomic inequalities shaping digital health access in Türkiye. Thus, the study fills a significant gap in the existing literature: a qualitative approach to examining socioeconomic inequalities in digital health within a national context.

In conclusion, the qualitative content analysis of the OECD Economic Survey: Türkiye 2025 report reveals that socioeconomic inequalities in Türkiye have a significant and systematic impact on the accessibility and effectiveness of digital health. High income inequality, the limited redistributive capacity of the tax and transfer system, low female labor force participation, insufficient adult engagement in lifelong learning programs, low innovation activity and limited healthcare spending constitute major structural obstacles to the inclusive digital transformation of the health sector.

These interrelated factors exacerbate the digital divide, particularly among socially vulnerable groups, and hinder the equitable distribution of technological benefits within society. To address these challenges, coordinated socioeconomic reforms must be integrated with sustained investments in digital infrastructure, education and innovation. Such reforms will:

- Expand digital health access across all population groups,
- Strengthen equity in healthcare delivery,
- Reduce the digital divide, and
- Support the long-term sustainability of digital health ecosystems.

Implementing these strategies will enhance both social equity and technological progress, enabling Türkiye to align more closely with OECD standards for inclusive and sustainable digital health development.



## 6. RECOMMENDATIONS

In line with the findings of this study, the following recommendations are offered to reduce socioeconomic inequalities in the field of digital health in Türkiye and to increase the inclusiveness of digital transformation:

1) Digital health literacy programs for women and the elderly should be implemented in collaboration with the Ministry of Health and universities.

- The programs should be aligned with the goals of “increasing digital health literacy” and “developing digitalization capacity in healthcare” in Türkiye's 12th Development Plan (2024-2028) and the Strategic Plan of the Ministry of Health of the Republic of Türkiye (2024-2028).
- Regional training programs should be established through universities and Public Education Centers affiliated with the Ministry of National Education of the Republic of Türkiye, with particular priority given to women, the elderly, and low-income groups.

2) Public investments in regional digital health infrastructure should be integrated with the Development Plan and local government strategies.

- Joint projects should be developed between the Ministry of Health of the Republic of Türkiye, the Ministry of Industry and Technology, the Scientific and Technological Research Council of Türkiye (TÜBİTAK), and municipalities to strengthen health informatics infrastructure, especially in rural and socioeconomically disadvantaged regions. These infrastructure investments should be implemented in alignment with the “Smart Cities and Digital Transformation Program” and the “Digital Health Action Plan.”

3) Digital skills and health technology modules should be added to lifelong learning and vocational training programs.

- Educational programs focused on digital health technologies should be developed in collaboration with the Ministry of National Education, the Council of Higher Education (YÖK), and universities. This process should contribute to the “development of digital skills” goal included in the 12th Development Plan.

4) Public-private-university collaboration mechanisms should be strengthened to increase innovation and R&D investments in healthcare.

- “Health Technologies Innovation Consortia” should be established between TÜBİTAK, the Turkish Health Institutes Presidency (TÜSEB), university R&D centers, and the private sector.
- In line with the goal of “increasing R&D and innovation capacity in healthcare” stated in the Ministry of Health Strategic Plan (2024-2028), joint funding programs should be developed, and tax advantages should be provided to digital health initiatives.





- The “entrepreneurial hospital” model should be adopted in hospitals, particularly city hospitals, to ensure and strengthen the technology transfer function for patients.
- 5) A dedicated budgetary allocation should be allocated to digital transformation within healthcare expenditures.
- A “Digital Health Investment Fund” should be established within the national health budget in collaboration with the Ministry of Treasury and Finance and the Ministry of Health. This fund should be used to strengthen e-health infrastructure, telemedicine platforms, and hospital information systems.
- 6) Family-friendly tax policies and parental leave policies should be implemented to increase women's employment.
- A “family-friendly digital health strategy” should be developed in coordination with the Ministry of Labor and Social Security and the Ministry of Health to facilitate women's access to both the workforce and digital health services. This strategy should be aligned with Türkiye's 12th Development Plan goals, which support gender equality.
  - Digital health should be integrated into the strategies and practices developed as part of the “2025 Year of Family”, declared by the Presidency of the Republic of Türkiye.
- 7) An inter-institutional coordination mechanism should be established.
- To ensure the sustainable implementation of digital health policies, a “National Digital Health Coordination Board” should be established, representing the Ministry of Health of the Republic of Türkiye, the Presidency's Digital Transformation Office, TÜBİTAK, YÖK, and local governments. This board will strengthen inter-institutional synergy by ensuring policy monitoring, data sharing, and resource optimization.

These recommendations will contribute to reducing existing socioeconomic inequalities in digital health, disseminating technological innovations to all segments of society, and achieving a sustainable level of inclusiveness in Türkiye's digital health transformation.

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