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Review Article

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Development of Child Health in the Republic of Türkiye: A Century, From Tradition to the Future

Alev Bakır Kayı [1], Gonca Keskindemirci [2], Öykü Özbörü Aşkan [1] & Emine Gülbin Gökçay [1]

[1] Istanbul University, Institute of Child Health, Department of Social Pediatrics, Istanbul, Türkiye
[2] Istanbul University, Istanbul Faculty of Medicine, Department of Pediatrics, Department of Social Pediatrics, Istanbul, Türkiye

Abstract In the 100th anniversary of our Republic, we have reviewed the developments in child health led by Gazi Mustafa Kemal Atatürk and his comrades and improved by esteemed professors. The impact of the topics in the National Turkish Medical Congresses held between 1925 and 1986 is reflected until today. We included information on social and education rights, nutritional problems, breastfeeding, and vaccination of children around the world and in Türkiye. With demographic data in the 100th Year of the Republic, we examined the crude birth rate, mortality, and dependency rates. We have endeavored to address the situations that await us in the future in terms of chronic diseases, media addiction, vaccine hesitancy/refusal, and the digital world and biotechnology, which now occupy a big place in our lives.

Keywords Child Health · 100th anniversary · Republic of Türkiye

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Corresponding author: Alev Bakır Kayı alefbakir@gmail.com

Introduction

Based on the philosophy of the Republic era, "Turk, Glory, Work, Trust Yourself" we aimed to compile the achievements in the field of child health attained over the past century of the Republic, with the invaluable contributions of all our esteemed scholars. As we commemorate with love, respect, and gratitude all our predecessors, foremost among them Gazi Mustafa Kemal Atatürk and his comrades who founded and advanced our Republic to this day, we also sought to address the necessities of the new century, enriched by the experiences and knowledge accumulated over the years.

Clinical and Research Consequences

Achievements in Child Health in the Republican Era

Approximately two years after the proclamation of the Republic of Türkiye, on September 1, 1925, the National Turkish Medical Congress was inaugurated with the participation of President Gazi Mustafa Kemal Atatürk and a speech by Prime Minister Ismet Inönü. In his opening speech, Ismet Inönü said, “If in a country, scholars, authorized scientists, transfer their knowledge to all classes of society and are effective and useful, that country will develop” (1).

One of the main topics of the First National Turkish Medical Congress was child mortality, with an emphasis on improving prenatal, birth, and postnatal mortality and care. Many issues were addressed, including the importance of breastfeeding, social assistance for school children, the reports of the institutions for the protection of children, the importance of having documents to identify child mortality, and the training of statistical experts (Table 1) (1).

The Geneva Declaration of the Rights of the Child, adopted by the League of Nations in 1924, was signed by Atatürk himself in 1931 and adopted by the Republic of Türkiye (2). Atatürk, who found love, life, and vitality in the word “child”, called his loved ones children, regardless of their age, and presented National Sovereignty and Children’s Day to children on April 23, 1929 (3). The Convention on the Rights of the Child adopted by the United Nations in 1989 was signed by Türkiye in 1990 and put into force (3). The importance of children’s rights, birth, death, disease, nutrition and housing data, and the social and sensory development of children is increasing day by day.

Social Rights and Education

Considering the declarations on the rights of the child, the rights of Turkish children were determined and presented to the public in order to address an issue that was of close

Table 1. Main topics of the National Turkish Medical Congresses (1923-1968)

Congresses	Year	Main Topic(s)*
1st National Medical Congress	1925	Child mortality, malaria, and surgical tuberculosis
2nd National Medical Congress	1927	Trachoma, tuberculosis
3rd National Medical Congress	1929	Syphilis, cancer, scarlet fever
4th National Medical Congress	1931	Rachitis, nutrition in the city and village
5th National Medical Congress	1933	Intestinal parasites, spa, mineral waters, drinking
6th National Medical Congress	1935	Toxicomania, rheumatism
7th National Medical Congress	1938	Eugenics, influenza
8th National Medical Congress	1943	Sports medicine, gallbladder diseases
9th National Medical Congress	1946	Village health, vitamins
10th National Medical Congress	1948	Occupational medicine, thyroid diseases
11th National Medical Congress	1950	Tuberculosis
12th National Medical Congress	1952	Child Health, rheumatism
13th National Medical Congress	1954	Allergy, physician-state, physician-community
14th National Medical Congress	1956	Atherosclerosis and the social status of Turkish physicians
15th National Medical Congress	1958	Lung cancer, Cardiac Surgery, Türkiye's health plan
16th National Medical Congress	1960	Water and electrolyte disorders, rehabilitation
17th National Medical Congress	1962	Psychosomatic medicine, Leprosy, Public health/Medical specialization
18th National Medical Congress	1964	Hypertension/poliomyelitis, medical residency/traffic accidents
19th National Medical Congress	1966	Cancer, population and family planning, geriatric
20th National Medical Congress	1968	Shock, fertility and sterility, and medical legislation in Türkiye

* Original papers on different topics were also presented and discussed at each congress.

interest to Atatürk. Among the articles, the right to education stands out and was summarized as the right to good care, to receive attention, love and help everywhere, to rescue a child in distress, that no child should be prevented from formal education before the age of sixteen, that no child should be made to work, that administrative authorities, mayors, mukhtars and national education administrations should be held responsible along with parents, and that the treatment of sick children should not be interrupted (2).

In addition, children's social rights are universally protected through global action plans. The World Health Organization (WHO) has achieved significant progress with the Framework Convention on Tobacco Control (2005) as a global action plan. Furthermore, since 2008, it has provided guidance, agreements, and policy reports on mental health; since 2010, on physical activity; and since 2014, on sugar intake and childhood obesity (4). In Türkiye, numerous studies have been conducted on school-aged children in line with these policies.

Demographic Data in the 100th Year of the Republic

The age structure of Türkiye's population is changing

In 2023, the population pyramid of 1935 has turned into a cylindrical structure; it can be said that the population is getting older with a decrease in the child population and an increase in the elderly population (Figure 1). The proportion of the elderly (65+) population, which was 3.9% in 1935, was 10.2% in 2023, and according to population projections, this proportion is projected to be 25.6% in 2080. The ratio of the elderly population to the total population exceeding 10% is an indicator of population aging (5).

The child population, including the 0-17 age group, constituted 48.5% of the population in 1970, 41.8% in 1990 and 26% in 2023. Türkiye has a rate of 26%, which was above the average child population of the European Union (EU) member countries (18%) (6).

In 2023, while the total dependency ratio was 46.3%, the dependency ratio for children (0-14) was 31.4% and the dependency ratio for the elderly (65+) was 15%. For 2080,

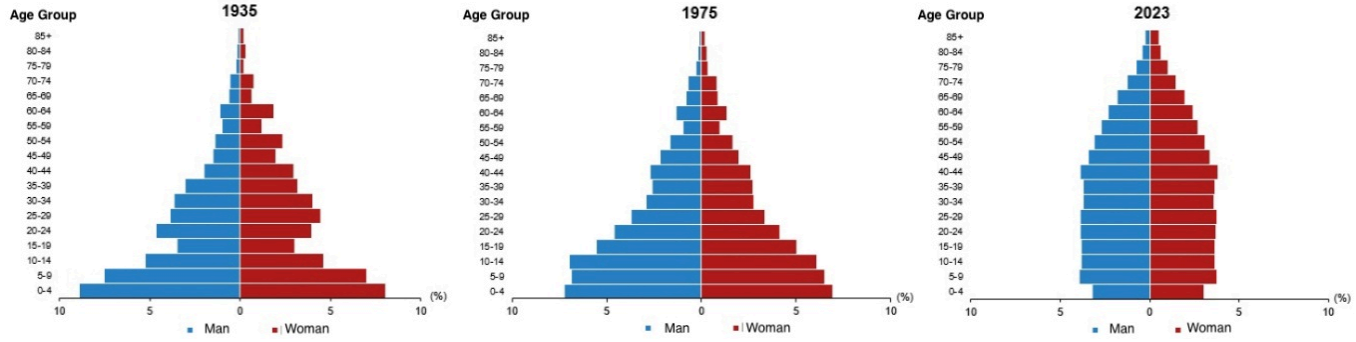

Figure 1. Türkiye population pyramid 1935, 1975 and 2023 (5)

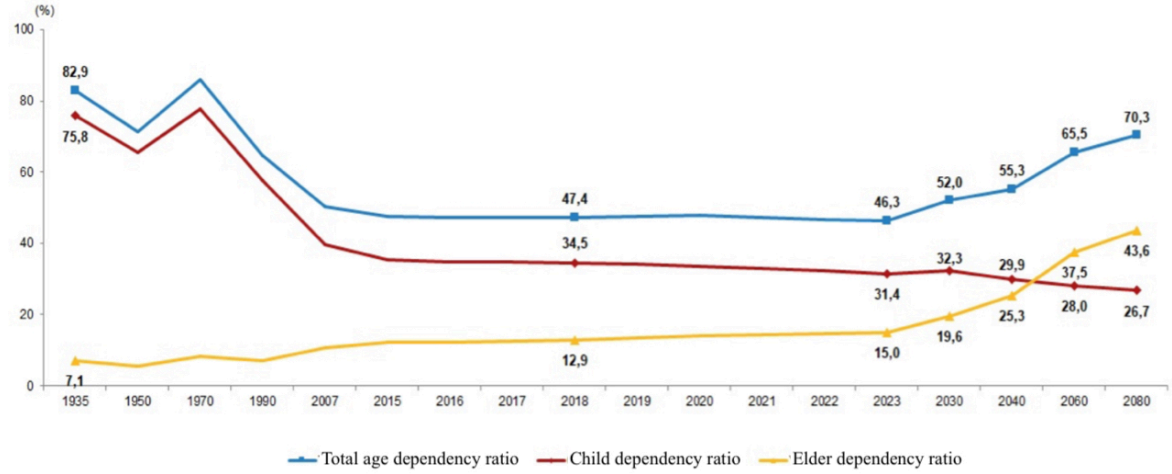

Figure 2. Total, child, and elderly dependency rates in Türkiye between 1935 and 2080 (6)

these rates were estimated to be 70.3%, 26.7%, and 43.6%, respectively (Figure 2) (6).

It was observed that the total fertility rate for Türkiye decreased from 2.38 in 2001 to 1.51 in 2023. With a total fertility rate of 1.63 per thousand in 2022, Türkiye ranked 5th among the European Union member countries (7).

When the crude birth rates of 27 European Union member countries were analyzed, it was observed that the average for 2022 was 8.7, and the highest crude birth rate was 12.0 per thousand in 2021 (7, 8). The World Health Organization estimated the crude birth rate for Türkiye to be 50.01 in 1950, 14.79 in 2023 and 8.49 in 2099 (Figure 3) (9).

According to population projections, the child population ratio in Türkiye was projected to be 25.6% in 2030, 23.3% in 2040, 20.4% in 2060 and 19.0% in 2080 (Figure 4) (6).

A measure of health: mortality

As understood from the results and action plans of the First National Turkish Medical Congress, the recording of deaths is an important tool for the assessment of Turkish public health. In terms of child health and development, the infant mortality rate and the under-five mortality rate are valuable child health indicators. In 2022, the number of live-born babies was 1,035,795, and the number of infant deaths was 9,522 (8, 10).

In 1953, around 200 infants per 1000 live births died before reaching the age of one, while 74 infants died in 1990, 38 in

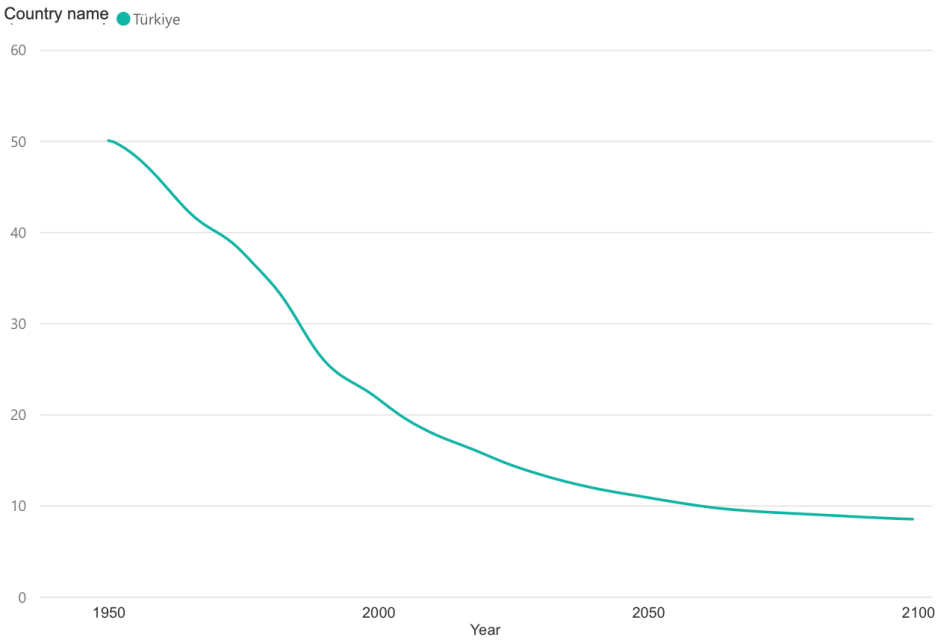

Figure 3. Crude birth rate in Türkiye between 1950 and 2099 (9)

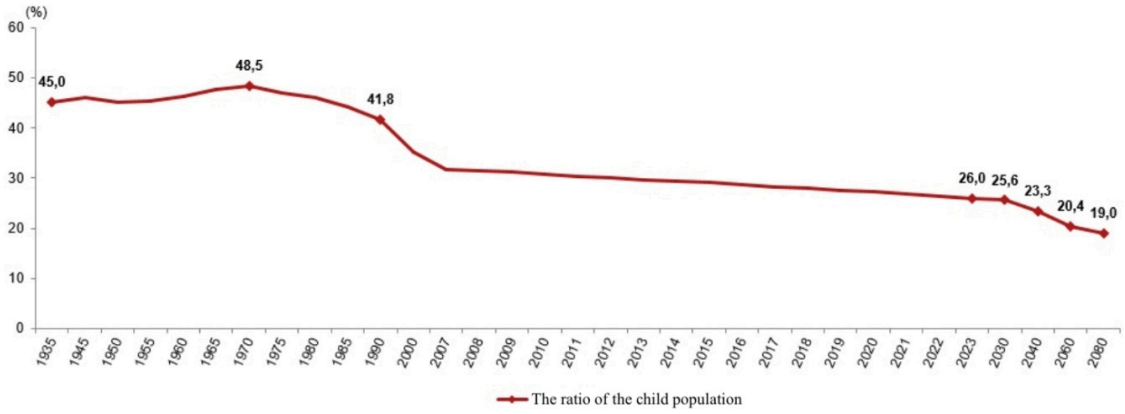

Figure 4. The ratio of the child population to the total population, 1935-2080 (6)

2000 and 9.1 in 2022. This rate was calculated as 28.4% in the world, 4.9% in high-income countries and 3.1% in the EU (11, 12, 13). The most important factors affecting the infant mortality rate have been determined as prenatal care, childbirth care and maternal education level (14).

While the under-five mortality rate was around 300 per 1000 live births in 1953, it changed positively to 11.1 in 2022. This rate was calculated as 38.1% in the world, 5.7% for high-income group countries and 3.7% for the EU (11, 12, 13).

Nutritional problems in children and developments over the years

Stunting prevalence (height-for-age <–2 SD) among children 0-5 years of age, which was given as 23.6% in 1993, decreased over the years and was calculated as 6% in 2018. According to UNICEF's world report for 2023, Türkiye's stunting prevalence for 2022 was reported to be at a low level (2.5% - <10) with 5.5% (15, 16).

The underweight (weight-for-height<–2SD) rate for children aged 0-5 years, which was 3.9% in 1993, was 1.7% in 2018 and was reported to be at a very low level (<2.5%) with 1.7% according to the UNICEF's world report for 2023 (15, 16).

The rate of overweight (weight for height > +2SD), which was given as 4.9% in 1993 for children aged 0-5 years, was given as 8.1% for 2018 and it was reported to be at an intermediate level (5% - <10%) with 8.1% in Türkiye according to UNICEF's world report for 2023 (15, 16).

It was reported that obesity in school children in Türkiye was 10.2 times higher in 2011-2015 compared to 1990-1995, and this rate was 26.3 for boys and 6.2 for girls (17). According to the data from the Childhood Obesity Survey of Türkiye - COSI-TUR 2016, the BMI z-score groups of the anthropometrically measured children (primary school 2nd grade students) are distributed as underweight (z-score<–2) 1.5%, normal (-2<z-score<1) 74%, overweight (1.01<z-score<2) 14.6% and obese (z-score>2) 9.9% (18).

Breastfeeding

In our country, improvements in maternity leave for white-collar workers in 2011 ensured the protection and dissemination of breastfeeding. Regulations are felt more effectively with the breastfeeding advocacy of female physicians who benefit from breastfeeding rights (19). According to the results of the Türkiye Demographic and Health Surveys, the rate of breastfed children was 95.2% in 1993, 95.2% in 1998, 96.8% in 2003, 96.7% in 2008, 96.4% in 2013 and 97.8% in 2018. The proportion of infants younger than 6 months receiving exclusively breastfed was calculated as 10.4%, 10.7%, 20.8%, 41.6%, 30.1% and 40.7%, respectively. This steady and rapid increase was considered to be a successful outcome of the initiatives aimed at protecting and promoting breastfeeding (20).

With the right information, education, and support, there are mothers who can breastfeed their adopted child in a period suitable for breastfeeding (21). The World Health Organization supports the miraculous way of feeding, which is the gold standard in every aspect (22).

Vaccine developments

The Expanded Programme on Immunization (EPI), which was initiated by the World Health Organization to prevent deaths from vaccine-preventable diseases, was put into practice in our country and vaccination rates showed a significant increase from 1980 to 2022 (23, 24). According to the WHO's 2023 report, the number of zero-dose/never vaccinated and incomplete DTP vaccinated children globally was 14.3 million in 2022, 18.1 million in 2021 and 12.9 million in 2019 (25). Vaccination rates in Turkey in 2022; Bacillus Calmette–Guérin (BCG) 98%, Diphtheria-Tetanus-Pertussis (DTP)1 99%, DTP3 99%, Hepatitis B (HEPB)3 99%, HEPBB 99%, Haemophilus influenzae type B (HIB)3 99%, Inactivated polio vaccine (IPV)1 99%, Pneumococcal conjugate vaccine (PVC)3 95%, and Rubella-containing vaccine (RCV)1 95% (23).

What are the future expectations?

On the 100th anniversary of our Republic, new health-related problems in children are emerging in our country as in the world. The most prominent of these are:

Chronic diseases

Chronic diseases are among the reasons leading to disability in children (26). Chronic diseases and disability can both interrupt the child's education and social life and turn him/her into an adult who cannot reach his/her potential and leave him/her behind from the society. The level of importance of chronic diseases has increased with health and biotechnological advances and the prolongation of life span. The reintegration of children with chronic diseases into society by providing the necessary conditions is being addressed globally.

The World Health Organization (WHO) revised the "International Classification of Functioning (ICF)" in 2007 and published it as the "International Classification of Functioning, Disability and Health for Children and Young People (ICF-CY)" (27). In Türkiye, a regulation was issued for evaluating child-specific special needs (ÇÖZGER-Çocuklar için Özel Gereksinim Raporu) (26).

According to WHO data, the leading chronic (non-communicable) diseases as a cause of Disability-Adjusted Life Years (DALY) between 2000-2019 in Türkiye are; Congenital anomalies since 2000 for 0-1 and 1-4 years, leukemia and congenital anomalies were replaced by asthma for 5-9 years, anxiety disorders for 10-14 years, and depressive disorders for 15-19 years (28, 29). Regional differences, regular data collection, and the adaptation of adult metrics to the pediatric group are among the future topics for synergistic measures like DALY and their management (29, 30).

Media addiction, digital parents

In the 2021 report of the Turkish Statistical Institute, it was stated that the rate of daily and regular internet use increased, the time spent on social media was approximately 3 hours, and 82% of children aged 6-15 years used the internet (31). It has been shown that media use in preschool children goes back to infancy and that the factors affecting media use are the child, parents, and environment (32).

The advancement of technology, the increase in media addiction due to easily accessible media tools and the internet, the more sedentary lifestyles of children, and the accompanying health problems are among today's issues. Along with their physical and mental development, the fact that the child's safety is at risk in an uncontrolled virtual environment is seen as a major problem.

This technological progress has also brought parents to take on the role of "digital parenting". The concept of digital parenting has the sub-dimensions of digital literacy, awareness, control, ethics, and innovation. A parent who acts according to the requirements of the digital age, has a basic command of digital tools, can protect their child in the virtual environment, and can educate their child about technology (33).

Vaccine hesitancy and vaccine refusal

The WHO defines vaccine hesitancy as reluctance or refusal to be vaccinated despite the availability of vaccination (34, 35). The history of vaccine hesitancy dates back to the late 18th century, when Jenner discovered the smallpox vaccine in 1796 (35). When religious beliefs, distrust in medicine, and negative experiences from the environment combine, vaccine hesitancy turns into vaccine refusal.

With the efficacy of the smallpox vaccine, some western countries enacted compulsory vaccination laws toward the end of the 19th century to protect public health, imposing strict penalties in case of non-vaccination (35). Compulsory vaccination policies are perceived as a violation of personal freedoms and lead to legal struggles (36). These struggles also occurred during the COVID-19 period. Because of misinformation, the measles vaccine was associated with autism and vaccination rates decreased, leading to measles outbreaks again. Furthermore, once again, the damaging effect of misinformation on public health has been clearly revealed (37).

In 2019, the WHO listed vaccine hesitancy among the ten threats to global health. It also underlined that the causes of vaccine hesitancy are complex and that healthcare professionals are the most reliable advisors and influencers in the fight against it and should be supported (34).

The WHO Strategic Advisory Group of Experts on Immunization (SAGE) continues to work in this field, and with the increase in vaccine hesitancy and refusal in our country, a vaccine portal (https://asi.saglik.gov.tr/asi/) was established by the Ministry of Health and aimed to provide exact information about vaccines and to expand awareness (38).

Health Digitalization and Biotechnology

With the rapid advancement of technology, the data generated through the devices and applications we frequently use in our daily lives is increasing. With the increase and storage of data in the health sector, digitalization, data analysis, and decision support algorithms that help physicians are being developed. Radiographic images, MRI, CT, ultrasound, nuclear imaging, pathological reports, bedside devices, wearable technology, services applicable at home, online health services, electronic health records, and telemedicine produce the most remarkable scientific studies in the field of health (39).

Three-dimensional (3D) bioprinting and artificial organ studies, which are seen as a great advantage since the rate of tissue and organ donation is low compared to the rate of transplantation, are among the leading research topics in the field of health (40). It is believed that the integration of bioengineering, biomedicine, and clinical medicine will support the development of personalized medicine with artificial organs that can replace existing organs (41). In addition to scientific research and pharmaceutical studies in the field of health, medical device studies and the supervision of the field, where health and biotechnology are intertwined, are among the shining topics.

Healthcare professionals will benefit public health if their awareness and knowledge of biotechnological development increases. Machine learning algorithms, which have started to make significant contributions to decision-making processes in healthcare, are seen as an important support to healthcare professionals as data sets and application areas are developed.

Conclusion

As in the world, we must struggle with the problems that arise in our country by taking public health as a basis, improving preventive child health and primary child health services, intensifying the field of preventive child health in medical education, and informing the society with epidemiological data. The knowledge, experience, and capability we gained in the first 100 years of our Republic will enable us to overcome all problems and design the new century.

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Author Details

Alev Bakır Kayı

[1] Istanbul University, Institute of Child Health, Department of Social Pediatrics, Istanbul, Türkiye

0000-0003-0664-5822 alefbakir@gmail.com

Gonca Keskindemirci

[2] Istanbul University, Istanbul Faculty of Medicine, Department of Pediatrics, Department of Social Pediatrics, Istanbul, Türkiye

0000-0003-1797-2802

Öykü Özbörü Aşkan

[1] Istanbul University, Institute of Child Health, Department of Social Pediatrics, Istanbul, Türkiye

0000-0002-4139-5497

Emine Gülbin Gökçay

[1] Istanbul University, Institute of Child Health, Department of Social Pediatrics, Istanbul, Türkiye

0000-0003-1042-0407

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