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ANALYZING THE DISTRIBUTION OF HEALTH HUMAN RESOURCES IN TÜRKİYE

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ABSTRACT

The aim of this study is to explore health human resource distribution in Türkiye to understand inequalities and their strategic nature. By means of data obtained from the Turkish Statistical Institute (TurkStat), the number of general practitioners, nurses, dentists, pharmacists and midwives at the provincial level in 2021 is analysed. In the analysis, descriptive statistical metrics such as mean, standard deviation, coefficient of variation etc. and correlation analysis were utilized. In addition, the findings were supported by visualising them on the map. The study confirms the necessity to see disparity in the allocation of health personnel and to come up with viable health policies that will help increase access to health services. The research findings, with 2021 data, validate the fact that the health workforce is affected by geographical and demographic conditions. This provides insight into the effectiveness of policies to improve the distribution of health human resources that have been implemented from the past to the present. The findings also provide insights that have the potential to guide health human resource planning for the development of future policies. Based on the findings, the study also provides evaluations and recommendations from a human resource management perspective. In this respect, it constitutes an important step towards improving health services by contributing to informed decision-making processes in the field of health human resource management.

Keywords: Health human resource distribution, Health human resource management, Health personnel planning

JEL Codes: O15, C10, P36

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1. INTRODUCTION

Public human resource management (PHRM) is a discipline that enables the effective management of personnel within the state and public organisations (Gogalis, 2023). The main objectives in this field can be listed as effective delivery of public services, effective and efficient use of public resources, and increasing job satisfaction and performance of public personnel. PHRM includes various processes (Cho, Choi, & Choi, 2023). In employment planning and recruitment processes, public organisations identify the personnel they need and manage recruitment processes. Training and development programmes are organised to increase the skills and knowledge levels of staff. In the performance management process, targets are set, performance evaluations are made, and feedback is provided. Career management includes career planning and management processes to support the career development of personnel. In accordance with working conditions and occupational health and safety standards, staff are provided with healthy and safe working environments. PHRM ensures that personnel are managed effectively and transparently in accordance with the needs of society (Reina & Scarozza, 2021). This management model aims to contribute to the welfare of society by improving the quality of public services.

Health human resources are crucial for the sustainability of health systems, as there can be no health without human resources ('A Universal Truth: No Health Without A Workforce', 2014). Health human resource planning is about ensuring that the right number of people with the right skills are in the right place at the right time to provide the right services to those in need ('Commission Feasibility Study on EU Level Collaboration on Forecasting Health Workforce Needs, Workforce Planning and Health Workforce Trends - European Commission', 2012). Health human resource management in Türkiye's predominantly public health system has a critical importance in terms of effective delivery of health services and improving their quality (Cinaroglu, 2023). This management model ensures the effective utilisation of correctly placed and qualified health personnel in all areas of health services. Health human resource management starts with effective employment planning (Pribaković Brinovec & Stanimirović, 2023). The main objective of planning is to achieve an optimal balance in the supply and demand of health workers in both the short and long term (Ono, Lafortune, & Schoenstein, 2013). Taking into account the geographical and demographic structure of Türkiye, the distribution of health personnel is determined by evaluating factors such as population distribution, disease burden and access to health services (Tatar et al., 2011). In this way, service quality is improved and equal access to health services is ensured.

In general, three approaches can be used in health human resource planning models (Kroezen, Van Hoegaerden, & Batenburg, 2018):

- Supply-based approach, which focuses on balancing health workforce inflow (e.g. graduates, migrant health workers), outflow (e.g. health workers who migrate or

retire) and activity rates of currently active health workers (measured in headcount or full-time equivalent (FTE)).
- Demand-based approach, which focuses on the current and future demand for health services (estimated from population structure, demographics and health service utilisation) and the required health worker capacity.
- The needs-based approach, which extends the demand-based approach by taking epidemiological and social-cultural factors into account.

Health human resource management also promotes continuous training and development of health personnel (Tulchinsky, Varavikova, & Cohen, 2023). Healthcare staff must be continuously trained to adapt to the rapidly changing healthcare environment and to have the latest medical knowledge and skills. Consequently, the quality-of-service delivery is enhanced, and health systems are improved because of these actions. Moreover, performance management and efficiency play a pivotal role in the management of health human resources. The performance of personnel is evaluated in a systematic manner, and options for improvement are provided. Staff performance is regularly assessed and opportunities for improvement are provided. Therefore, this boosts the capacity of the health sector to offer health care promptly and effectively through optimal utilization of available resources. Precisely in the crisis mode, health human resource management is of far-reaching significance (Newman, Ferrer, Andresen, & Zhang, 2023). A key factor for the sustenance and functionality of the health system is the creation and implementation of health human resource management strategies (Udekwe, Iwu, & De La Harpe, 2023). This management model improves access to health services and protects public health by increasing service quality. Well-staffed health units excel in the delivery of quality patient care, whereas low staffing levels in health units lead to decreased quality of patient care (Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002). Research has shown that it is the role of health planners to ensure that the right number of health workers with the right knowledge, skills, attitudes and qualifications fulfil the right tasks in the right place at the right time to achieve predetermined health goals (Al-Sawai & Al-Shishtawy, 2015).

The studies mentioned in Section 2 underline the importance of health human resource planning in Türkiye. Briefly, they emphasise the need to review current policies in this field and the impact of these processes on the quality and efficiency of health services. While there is often a shortage of health personnel in geographically less developed regions, this situation is different in more developed regions (Çınaroğlu, 2021; Şimşek, 2022). It is not surprising that the distribution of specialised physicians with high specialisation among health human resources in the public sector is unbalanced. However, it is expected that health personnel such as general practitioners, nurses, midwives, pharmacists, etc., where specialisation is relatively low or differences between branches can be tolerated, should be distributed evenly among provinces in proportion to the population. This expectation is based on the aim of providing health services in an equitable manner and improving the general health status of the society.

In this study, it is investigated to what extent the mentioned expectation is realised in the distribution of health human resources in Türkiye. For this purpose, statistical metrics related to the distribution of health human resources such as nurses, pharmacists, midwives, etc. across provinces in Türkiye are evaluated from a human resource management perspective. This evaluation provides insights for the effective provision of health services and improvement of the general health status of the society. It provides guidance in identifying gaps and guiding the recruitment plan. It also helps to address imbalances, increase access to health services and meet the health needs of the community.

The rest of the study is organised as follows. Section 2 reviews the studies on human resources for health in Türkiye. The methodology of the study is explained in Section 3, while the basic findings and their evaluation in terms of human resource management are presented in Section 4. Section 5 contains conclusions and recommendations.

2. LITERATURE REVIEW

The importance of the issue can be emphasised by referring to studies focusing on Türkiye's health human resources. Avcı and Ağaoğlu (2014) attempt to shed light on the issues related to health human resources planning in Türkiye that directly impact the quality and characteristics of the health system as well as the recurrent costs. Recognizing the link between quality and efficiency of the health services and the health workforce structure, they underline the importance of strategic planning that should meet the institutional needs with the right quantity and quality of health professionals. The research, correspondingly, highlights a few techniques and tools for human resource management planning, stressing the significance of adjusting for the current stock and future needs alongside supply and demand activities to repress the possibility of misalignments. Thus, the study is feeding into the debate on resourceful mission of health human resource for the sake of improved service quality and efficiency by discussing historical and present-day examples in the context of health sector in Türkiye. Çınaroğlu (2021) approached the problem of unequal distribution of health staff between provinces in Türkiye by examining the distribution of six different groups of health staff across provinces in Türkiye and thus the picture of country’s health resources, particularly physicians and nurses, as compared to developed countries and significant regional disparities. The study has been carried out by applying k-means clustering analysis, and this technique has identified three different groups of provinces across which a significant inequality in the distribution of health personnel exists. In fact, this finding corroborates the necessity of a revision of health human resources policymaking mainly focusing on both insufficiency and regional inequality. Such an analysis clearly indicates that geographical, demographic and sectoral multiplicity are the utmost prerequisites for a successful and effective health human resources planning, as well as for formulating solid policy in the healthcare sector in general for Türkiye. Şimşek (2022) applies multi-criteria

decision-making methods to determine variations and inequalities in the distribution of health human resources in 81 provinces in Türkiye for the years 2014 and 2019. It pinpoints unbalanced resource allocation at the provincial level and points out the policy deficiencies that can lead to differences in health service access across the country. The research results focus on finding the main goals of human resources in health and their relative position concerning the different provinces during different periods, thus providing both macro- and micro- view for policymaking from the research findings. Critical findings suggest that a strategic approach focusing on the prioritisation and effective allocation of health human resources is imperative to reduce inequalities. Furthermore, the study contributes to the field by providing a comprehensive evaluation framework that can monitor and interpret the impact of health policies over time, thus facilitating informed decision-making for health human resource management.

3. METHODOLOGY

Health human resources data published by the Turkish Statistical Institute (TurkStat) were used in this study. Since the data are publicly available, ethics committee permission is not required. In the study, the numbers of 5 personnel types, including general practitioners, nurses, dentists, pharmacists and midwives at the provincial level in 2021, shared in the TurkStat database, were used. The 2021 populations of the provinces were divided by the number of personnel and an assessment was made based on the population per personnel. Accordingly, the indicators considered in the study are as follows: G1: Population per General Practitioner, G2: Population per Dentist, G3: Population per Pharmacist, G4: Population per Nurse, G5: Population per Midwife. Descriptive statistical analyses were applied in the study.

To compare the findings of the research and classify the provinces, the following objective criteria were used:

Developed vs. Less Developed: The provinces were categorized as developed or less developed depending on their GDP per capita. The provinces with a GDP per capita greater than the median of the country were classified as developed provinces while those with GDP per capita less than the median were classified as less developed provinces.

Urban vs. Rural: The urban-rural division was based on the population density where the higher density was considered as urban. Any province with a population density of 60% and above was considered as an urban province while the rest were considered as rural provinces. This information was collected from the urbanization data of TurkStat.

3.1. Analysis Method

Descriptive statistical analysis and correlation analysis were conducted using Microsoft Excel to evaluate the distribution of health human resources. Descriptive statistics provided a summary of the data through measures such as mean, median, and standard

deviation. This helped in understanding the central tendency and variability of health personnel distribution across provinces. Correlation analysis was performed to examine the relationships between different types of health personnel distributions. This involved calculating the Pearson correlation coefficient to determine the strength and direction of the linear relationships between the indicators (G1, G2, G3, G4, G5). This analysis helped identify if provinces with higher numbers of one type of health personnel also tended to have higher numbers of another type.

As a limitation of the study, although the fact that the data used in the study were provided by the TurkStat shows that the data have a general level of reliability, there may be errors or deficiencies in the process of collecting and recording the data. This may affect the results of the analysis.

Table 1. Data Set

		G1	G2	G3	G4	G5
İstanbul	D-U	1731	1571	2128	374	2523
Tekirdağ	D-U	1807	2577	2777	463	1687
Edirne	D-U	1392	2071	1890	250	1096
Kırklareli	D-U	1372	2755	2194	417	1134
Balıkesir	D-U	1510	2557	2186	376	958
Çanakkale	D-U	1447	2533	2332	333	896
İzmir	D-U	1898	1721	1964	351	1640
Aydın	L-U	1613	2202	2100	390	1135
Denizli	D-U	1693	2154	1880	381	1066
Muğla	D-U	1484	1877	1909	425	1147
Manisa	D-U	1610	3311	2265	392	1273
Afyonkarahisar	L-U	1439	2941	2385	350	1319
Kütahya	D-U	1312	2560	2516	290	911
Uşak	D-U	1555	1934	2362	367	725
Bursa	D-U	1921	2097	2397	401	1742
Eskişehir	D-U	1636	1974	1936	261	1278
Bilecik	D-U	1376	2965	2927	393	1202
Kocaeli	D-U	1845	2205	2922	397	1633
Sakarya	D-U	1615	2411	2672	447	1407
Düzce	D-U	1714	3260	2864	463	1699
Bolu	D-U	1306	1495	2119	276	1115
Yalova	D-U	1426	2079	2575	422	1599
Ankara	D-U	1984	1366	1889	279	1642
Konya	D-U	1611	2266	2215	317	1420
Karaman	D-U	1327	2876	2251	398	1078
Antalya	D-U	1776	1464	1758	410	1475
Isparta	D-U	1351	1603	2026	229	825
Burdur	D-U	1211	2851	2074	377	863
Adana	D-U	1753	2360	2094	373	1513
Mersin	D-U	1764	2453	2139	412	1168
Hatay	D-U	1296	2999	2298	439	1553
Kahramanmaraş	L-U	1676	3309	2668	395	1399
Osmaniye	L-U	1467	2851	2212	474	1223
Kırıkkale	D-U	1210	1693	2379	310	1041
Aksaray	D-U	1440	4126	2452	441	1345
Niğde	L-U	1449	3674	2474	465	1126
Nevşehir	L-U	1406	2962	2248	392	1128
Kırşehir	L-U	1292	3328	2531	389	960
Kayseri	D-U	1743	2144	1987	331	1323
Sivas	L-U	1265	2194	2419	272	945
Yozgat	L-U	1125	3704	2866	341	996
Zonguldak	D-U	1532	2359	2359	312	1293
Karabük	D-U	1187	2226	2518	341	1034
Bartın	L-R	1301	3362	2241	398	1166
Kastamonu	D-U	1070	3577	2683	396	1231
Çankırı	D-U	1244	2656	2848	454	1328
Sinop	L-U	1120	2992	2275	343	997
Samsun	L-U	1510	2047	2166	299	1259
Tokat	L-U	1484	2553	2420	316	1084
Çorum	L-U	1329	3229	2482	327	1030
Amasya	L-U	1369	2794	2313	393	1007
Trabzon	L-U	1363	2037	2047	267	1175
Ordu	L-U	1333	2767	2320	389	1160
Giresun	L-U	1197	3751	2074	287	900
Rize	L-U	1309	1879	2368	339	1248
Artvin	D-U	1034	4582	2974	384	800
Gümüşhane	L-U	1065	3336	3412	428	1146
Erzurum	L-U	1239	2523	2540	239	1100
Erzincan	D-U	1243	2525	2967	352	909
Bayburt	L-U	1025	3271	3866	327	1000
Ağrı	L-R	1543	5895	4131	638	1755
Kars	L-R	1295	5110	3959	402	750
Iğdır	L-R	1302	3762	3386	536	1373
Ardahan	L-R	1067	3164	3651	413	753
Malatya	L-U	1498	2210	2204	285	884
Elazığ	L-U	1346	2262	2579	245	977
Bingöl	L-U	1231	3254	2949	403	885
Tunceli	D-U	747	1859	3346	353	581
Van	L-U	1658	3868	3705	388	1649
Muş	L-R	1432	6332	4658	585	1595
Bitlis	L-U	1163	4761	3829	380	1240
Hakkari	L-R	997	5152	5350	602	1554

		G1	G2	G3	G4	G5
Gaziantep	D-U	1789	3097	2576	386	1789
Adıyaman	L-U	1374	2797	2612	405	1071
Kilis	L-U	729	3646	2391	288	801
Şanlıurfa	L-U	1626	5412	2744	555	2079
Diyarbakır	L-U	1665	3205	2918	396	1663
Mardin	L-U	1276	3904	2895	574	1532
Batman	L-U	1443	4290	2913	388	1417
Şırnak	L-U	1308	5061	4517	704	2070
Siirt	L-U	1355	4368	3162	482	1462

D: Developed, L: Less Developed, U: Urban, R: Rural

4. FINDINGS

The data set was analysed by descriptive statistical analysis and correlation analysis. Table 2 shows the descriptive statistics.

Table 2. Descriptive Statistics

	G1	G2	G3	G4	G5
Average	1415,4	2954,9	2637,4	386,0	1246,4
Standard Deviation	251,4	1049,6	679,9	89,5	344,3
Coefficient of Variation	0,2	0,4	0,3	0,2	0,3
Kurtosis	0,2	1,1	3,4	2,0	1,4
Skewness	-0,1	1,1	1,7	1,0	0,9
Minimum	729	1366	1758	229	581
Maximum	1984	6332	5350	704	2523

When the mean values of the indicators are analysed, it is seen that the population per dentist and pharmacist is high while the population per nurse is low. When the coefficient of variation is analysed to compare the variability of the indicators between provinces, it is seen that general practitioners and nurses are more evenly distributed than dentists, pharmacists and midwives according to the population of the provinces. Pharmacists are the most unevenly distributed health personnel group among provinces. The kurtosis and skewness values of the population per dentist are higher than the other groups, indicating that this distribution is more irregular and less conforms to the normal distribution.

The analysis reveals that the distribution of health personnel, such as general practitioners, dentists, and pharmacists, varies significantly between developed and less developed provinces, as well as between urban and rural areas. For example, larger cities and developed regions have a higher concentration of dentists and pharmacists due to better economic opportunities and higher demand for private sector services, which aligns with their higher GDP per capita and urban population proportions.

The data visualization maps (Figures 1-5) provide a clear depiction of these disparities, highlighting the imbalance in health personnel distribution across different regions of Türkiye. The lowest value is shown in blue and the highest value in red. When the maps are evaluated as a whole, the imbalance in the distribution of health personnel in provinces can be observed on provincial and regional basis.

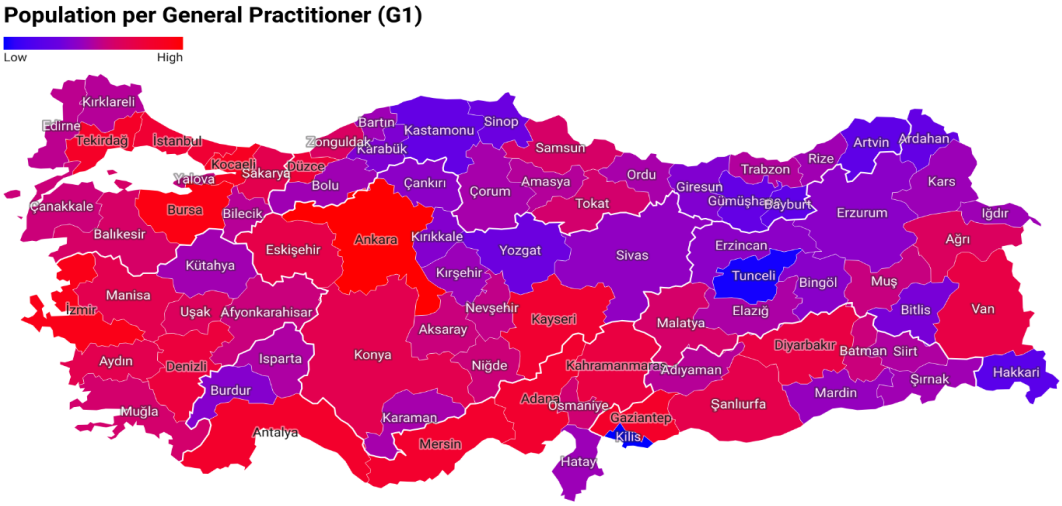

Figure 1. Population per General Practitioner

The provinces with the lowest population per general practitioner (See Figure 1), Kilis, Tunceli and Hakkari, are generally known as less socioeconomically developed regions. Limited health infrastructure and services in these provinces may lead to difficulties in meeting the health needs of the population. Border provinces and mountainous regions may face difficulties in recruitment of health personnel and delivery of health services. On the other hand, the provinces with the highest population per general practitioner, Ankara, Bursa and Izmir, are generally recognised as more developed and densely populated regions. The fact that health infrastructure and services are more developed in these provinces allows the health needs of the population to be met more effectively. Factors such as easier access to health services, availability of health personnel specialised in various branches and stronger technological infrastructure can improve the quality of health services.

Figure 2. Population per Dentist

The provinces with the lowest population per dentist include large and developed cities such as Ankara, Antalya and Izmir, while the provinces with the highest population per

dentist include smaller and rural areas such as Hakkari, Artvin and Kilis (See Figure 2). This is generally due to factors such as more intensive health infrastructure, more education and employment opportunities. In addition, the fact that dentists can be employed in the private sector and can open their own clinics directs dentists to cities with high economic levels and dense populations. While this finding shows that the level of socio-economic development positively affects access to health services, the high population per dentist in rural areas emphasises inequalities in access to health services.

Figure 3. Population per Pharmacist

The provinces with the lowest population per pharmacist are generally more developed and densely populated provinces such as Antalya, Denizli and Ankara, while the provinces with the highest population per pharmacist are generally less developed and less populated provinces such as Şırnak, Muş and Hakkari (See Figure 3). Different in terms of development and density, provinces in the more inner regions tend to generally have more health care services and pharmacists. This, as a result, decreases the population per pharmacist rate. Moreover, a good infrastructure and well-developed economic conditions favour the work and service provision of pharmacists in these provinces. On the contrasting side, provinces with low population and development characteristics seems to have the lowest level of health services and pharmacy services. In those areas, a pharmacy workforce and economic resources are, on the average, less developed, therefore, there are more people per pharmacist. Fewer healthcare workers, particularly pharmacists, than the population is an issue and patients' access to healthcare services is becoming a problem in these provinces.

Figure 4. Population per Nurse

It is observed that the provinces with the lowest population per nurse are located in developed and urban areas such as Isparta, Erzurum and Elazığ, while the provinces with the highest population per nurse such as Hakkari, Ağrı and Şırnak are generally located in less developed and rural areas (See Figure 4). This gives evidence on the fact that the population per nurse in more developed and urban areas is lower as compared to other less developed and rural areas which means that health services are better organized and accessible in these regions. It means that in this area, health infrastructure is more developed than in others, the number of hospitals and health centres is higher, and the density of health personnel is correspondingly higher. However, the number of people per nurse in poor and rural regions is on the high side, meaning that the health infrastructure in these regions is inadequate and access to health services is not easy. Shortage of health professionals and insufficient health facilities worsens the standard of and accessibility to health services in these areas.

Figure 5. Population per Midwife

The provinces with the lowest population per midwife are Tunceli, Uşak and Kars, while the provinces with the highest population per midwife are Şırnak, Şanlıurfa and İstanbul (See Figure 5). It is noteworthy that Istanbul has a high population per midwife. Istanbul is the most populous city in Türkiye and is an area of intensive migration. Migration generally increases the demand for more health services. In addition, fertility rates in İstanbul are generally higher than in other provinces, and the overall composition of the population is young and of reproductive age. These factors may increase the need for maternity and postnatal care services.

These imbalances in health personnel are an important issue to be considered in terms of human resources policies. Special incentives and programmes may need to be developed to meet the need for health personnel in less developed and rural areas. Training and employment opportunities should be directed to these regions and incentives should be provided for the retention of health personnel in these regions. In addition, technological solutions such as telehealth can be utilised to improve the quality and accessibility of health services. In this way, especially people living in rural areas can access health services more easily.

The results of correlation analyses that help us understand the nature of the relationships between indicators are shown in Table 3.

Table 3. Correlation of Indicators

	G1	G2	G3	G4	G5
G1	1				
G2	-0,29	1			
G3	-0,36	0,74	1		
G4	0,04	0,67	0,61	1	
G5	0,58	0,18	0,17	0,50	1

Mostly positive medium level relationships were found between the indicators. It is noteworthy that there are no strong relationships and weak relationships. The general appearance of the relationship between indicators points to the formation of potential bottlenecks in the provision of health services. As an extreme example, there is a weak negative relationship between population per general practitioner, population per dentist and population per pharmacist. This shows that citizens cannot access general practitioners and dentists with the same ease. A similar situation is also valid between general practitioners and pharmacists.

When the findings are considered as a whole, it can be concluded that the distribution of health personnel in Türkiye shows regional imbalances. These imbalances are affected by factors such as socioeconomic development level and population density. While access to health services is easier and of better quality in more developed provinces, the situation is the opposite in less developed provinces. Provinces that are more socioeconomically

developed and densely populated have more health infrastructure and personnel. This makes access to health services easier and more effective. However, in less developed provinces, there is a lack of health personnel and difficulties in accessing health services. This situation may prevent inequitable regional health services and citizens' access to equal health services.

4.1. Evaluation of the Findings from a Human Resources Perspective

This study shed light on the distribution of health workers and allowed outlining the practical concepts that could be useful for human resource management theories in Türkiye. Based on these findings, the steps of the functioning and of the perfecting of the health system are given below.

1. Equality and Access: The unequal distribution of the population per general practitioner, dentist, pharmacist, and nurse demonstrates a lack of equitable access to health services. While access to health services is more readily available in large cities and developed regions, it is limited in small, rural, and underdeveloped regions. This situation illustrates a failure to implement the principles of equality and accessibility in human resources management.

2. Employment and Migration: Large cities where health personnel are concentrated appear to be more attractive in terms of the labour market. Higher salaries, better working conditions and more career opportunities make these cities more attractive for health personnel. This leads to a shortage of health personnel in rural areas and problems such as migration. Migration, employment and recruitment policies in human resources management should be reorganised to take this situation into consideration.

3. Incentives and Development: For the issue of a sheer lack of healthcare staff in remote and less developed areas, dual-played incentive policies are a vital element. The framework of the policies must cover financial awards, career growth platforms, a better quality of life, and integration into society. In addition to that, health care facilities should be paid more attention in regional plans, likewise, human resource recruitment, and retention should be given an emphasis too.

4. Training and Capacity Planning: The need to substantially increase the capabilities of healthcare education system to meet the demands for health personnel and to thoroughly review the training of health personnel has been prioritized. It is especially important that the programmes for the personnel being qualified to provide health services, especially in rural areas, be highly prioritized. Therefore, human resource planning can prepare the health care systems in advance by anticipating the future health workers needs and taking the necessary steps towards it.

5. Motivation and Performance Management: It is imperative to enhance the motivation and job satisfaction of health personnel. Implementing a performance-based

reward system and fostering a fair working environment will facilitate more efficient and enthusiastic work among health personnel.

The distribution of health personnel in Türkiye shows that there is a significant discrepancy between the theoretical principles of human resource management and its practical application. Current incentive schemes in Türkiye may be effective in providing additional incentives to health personnel, especially in less developed regions. However, more research should be conducted on the scope and applicability of these incentives. In this context, it is necessary to analyse the effects of the existing incentive policies and to strengthen these policies when necessary, in order to attract and retain health workers in rural areas.

5. DISCUSSION AND CONCLUSION

This study enriches the theories of human resource management and health services planning by analysing the distribution inequities of health human resources in Türkiye. The findings show how the imbalances in the distribution of health human resources affect the accessibility and quality of health care. This goes a long way in supporting the need for human resource planning in the provision of health care services. Besides, this research contributes to the existing literature that advocates for the consideration of regional differences in the delivery of health services.

The policy implications of the study are policy implications for increasing the distribution of health human resources. In this regard, it is recommended to use incentives, especially for the rural areas, to increase the distribution of health personnel. Such strategies as continuing education of health personnel, performance related incentives and working conditions are important in improving the quality of health services. Moreover, the formulation of health policies that are relevant to the regions may assist in enhancing the distribution of health services.

This research is based on secondary data, and this may pose some limitations to the study. The time at which the data sets were collected, and the precision of the data may influence the validity of the findings. However, the study is confined to the case of Türkiye only, which may restrict the generalisation of the findings to other countries. Future studies may try to avoid these limitations by employing more recent and detailed data sources. However, further research can be done using qualitative research methods to get more detailed findings.

Suggestions for future studies are as follows:

- More detailed regional analyses of imbalances in the distribution of health human resources could be conducted. This could provide a better understanding of the specific needs and problems in particular regions.

- Long-term follow-up studies can be conducted to assess the long-term impact of health policies. This will allow us to better understand the effects of policy changes over time.
- Qualitative research with health personnel and managers can contribute to a deeper understanding of current problems and potential solutions.

By analysing in detail, the current situation regarding the distribution of health human resources in Türkiye, this study makes important contributions in both theoretical and practical terms. The proposed policies and future research recommendations to improve the quality and accessibility of health services provide a valuable roadmap for studies in this field.

COMPLIANCE WITH ETHICAL STANDARD

Conflict of Interests: There is no conflict of interest between the authors or any third-party individuals or institutions.

Ethics Committee Approval: This study uses publicly available data. Ethics committee approval is not required.

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