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Distribution of doctors' workforce in Erbil Governorate

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Abstract

Background and objective: Imbalance in the distribution of health workforce might result in inequities in health services delivery. The aim of this study was to assess the distribution of doctors' workforce in Erbil governorate and identify the possible reasons for rapid turnover of doctors.

Methods: This descriptive cross-sectional study included all the 962 doctors working in the health facilities of Erbil governorate. A questionnaire was used to collect data that included 40 questions divided into four broad sections of identification information, socio-demographic characteristics, information on professional characteristics and factors influencing employment process in rural areas.

Results: There were 5.1 doctors per 10,000 populations. Most of the doctors were deployed in urban areas (83.6%). Most doctors were working in hospitals (74.2%) and 23.3% in primary health centers. Specialists constituted the largest categories of doctors (33.5%) and general practitioners the smallest (6.7%). Doctors' willingness to stay at the current workplace was significantly associated with being married, having opportunities to select workplace, working in private clinics and having the workplace inside Erbil.

Conclusion: The density of doctors per 10,000 populations in Erbil governorate is below the regional and international average, with a remarkable urban-rural imbalance in numerical, geographical and institutional terms.

Keywords: health workforce, Erbil.

Introduction

Many developing countries have devised health workforce policies and plans in order to address problems in the health workforce. However, substantial gaps exist between the policies and their implementation. As a result, many countries still face significant health workforce imbalances. A range of health workforce problems make it difficult to achieve other reforms in the health sector. The problems are rooted in political, economic, cultural and health systems. The solutions depend on numerous inputs including funds, education and training programs, data and working conditions, over which health workforce policy makers often lack direct control.[1] Virtually all countries suffer from a geographical uneven distribution of health workforce, and the primary area of concern is usually the doctors' workforce.[2] The distribution of health workforce has a big effect on health services delivery.[3] In both developed and developing countries, urban areas almost invariably have a substantial higher concentration of doctors than rural areas. Most health care professionals prefer to settle in urban areas, which offer opportunities for professional development as well as education and other amenities for themselves and their families.[4] In Kurdistan region, the health services are provided by both public and private sectors. The public sector includes a network of primary health care centers (PHCCs) and hospitals where services are provided at very low charges to the public. Doctors working in PHCCs are mainly

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general practitioners. The private health care sector mainly provides curative services and consists of a number of surgical hospitals and a high number of physicians' clinics. There is a poor separation of the public-private practice in Kurdistan as most health care professionals work in the public sector in the morning and in the private sector after official working hours.[5,6] In Erbil city, there is uneven distribution of health facilities. Most health facilities are located and concentrated in the center of the city. During the last decade, Erbil governorate faced tremendous health demand, due to annual increase in the number of population and internally displaced peoples (IDPs) from south and center of Iraq due to insecurity in addition to Syrian refugees. The health authorities have encountered difficulties in absorbing the considerable number of newly qualified specialists at hospitals inside Erbil city; as most of them instead of serving at secondary health care hospitals outside Erbil city, they put a pressure on the health authorities to work in hospitals and PHCCs inside Erbil city. As no research has assessed this important and newly emerging issue, this study aims to assess the distribution of doctors' workforce in Erbil governorate and identify the possible reasons for the rapid turnover of doctors.

Methods

This descriptive cross-sectional study was carried out in Erbil governorate from 1st September, 2008 through 31st May, 2010. Erbil is the capital of Iraqi Kurdistan Region and administratively comprises of nine districts, 35 sub-districts[7,8] and 1375 villages.[9,10] The total projected population of Erbil governorate for 2008 was estimated to be 2,151,858 million (including Makhmour and Koisinjaq districts). Around half of the population lives in the city center (50.9%), while 30.7% and 18.4% of the population live in districts and sub-districts centers and villages, respectively. The annual population growth rate has been around 3.2%.[9] The study included all doctors working in the health facilities in Erbil governorate. The number and locations of health facilities and list of doctors which included the job title and location of selected doctors were obtained from the Planning Department of the Directorate of Health (DoH)-Erbil. Population data per districts was obtained from Kurdistan Regional Statistical Office (KRSO); where the number of population adopted in this study after exclusion of Makhmour and Koysinjaq districts was 1,862,994.The study excluded doctors not working in public health facilities, e.g. retired doctors, doctors working for Hawler Medical University but not seconded to work in DoH health facilities, doctors working for employers other than DoH-Erbil or Hawler Medical University and those doctors on leave for more than 72 days. Postgraduate students were also excluded because they were in transitional period and a considerable number of them were affiliated to training centers outside Erbil governorate. Especially designed closed-ended questionnaire was designed by the researchers in Kurdish and Arabic languages. The Kurdish version was used in the interview. The questionnaire was designed after review of relevant literature and similar studies in the region. Then each variable and answer in the questionnaire was given a code number. To shorten the time needed for the interview, some data were filled prior to the interview in the desk work, including coding, name and location of health facility, specialty degree, job title, working for DoH or university. The questionnaire consisted of three pages (Kurdish version), including 40 questions, divided into four broad sections; identification information, socio-demographic characteristics, information on professional characteristics, factors influencing employment process in rural areas. A verbal consent was obtained from each participant and the study was approved by the Research Ethics Committee of the College of Medicine of

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Hawler Medical University. The doctors were interviewed in their place of work. During the interview, the researcher explained various aspects of the study to each doctor and answered any related question(s) posed by them. All doctors were informed that their participation in the study was voluntary and the data collected would only be used for research purposes and that their identities will not be disclosed to a third party. Each researcher has directly interviewed an average of 12 doctors per day. The average time for each interview was 11 minutes (ranged between 10 and 25 minutes). The completed questionnaire forms were checked, reviewed and edited for inconsistency. Statistical analysis was done using the statistical package for the social sciences (version 11.5). Two approaches were used; descriptive and analytic approaches. The descriptive approach used frequencies and percentages for selected variables. While in the second approach, Chi–Square test was used for testing association between different variables. *P* value ≤0.05 was considered statistically significant.

Results

Around three quarter of doctors (74.2%) were working in hospitals, 23.3% in PHCCs and very low percentage (2.5%) at the DoH and specialized medical centers (SMCs). Doctors assigned to the DOH as a workplace were holding administrative posts in health-related fields. The highest percentage of hospital doctors were found in Nawandi Hawler and Shaqlawa districts (80% and 77.8%, respectively), the lowest was in Mergasor district (36.4%). Only 17% of doctors inside Erbil city were working at PHCCs (Table 1).

Table 1: Distribution of doctors by type of health facility per district.

District	Type of health facility						Total No.
	Hospital		PHCC		SMC & DOH		
	No.	(%)	No.	(%)	No.	(%)	
NawandiHawler	643	(80.0	137	(17.0)	24	(3.0)	804
Choman	8	(50.0	8	(50.0)	0	(0.0)	16
Mergasor	8	(36.4	14	(63.6)	0	(0.0)	22
Shaqlawa	35	(77.8	10	(22.2)	0	(0.0)	45
DashtiHawler	0	(0.0	30	(100)	0	(0.0)	30
Khabat	0	(0.0	10	(100)	0	(0.0)	10
Soran	20	(57.1	15	(42.9)	0	(0.0)	35
Total	**714**	**(74.2)**	**224**	**(23.3)**	**24**	**(2.5)**	**962**

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The largest and smallest categories of doctors were specialists (33.5%) and general practitioners (6.7%); they constituted the highest and lowest proportion of doctors working at hospitals (40.1% and 1%, respectively). Rural practitioners and specialty practitioners had constituted the highest proportion of doctors working at PHCCs (35.3% and 33.5%, respectively). Around 7% of specialists were working in PHCCs. All the seven general practitioners and the 28 rural practitioners working at hospitals were working outside Erbil city. Most of doctors working at DoH and SMCs were specialists (83.3%). These findings are presented in Table 2.

Table 2: Doctors distribution by job title and type of health facility.

	Type of health facility							
Job title	**Hospital**		**PHCC**		**SMC & DOH**		**Total**	
	No.	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
House officer	205	(28.6)	0	(0.0)	0	(0.0)	205	(21.2)
Rural practitioner	28	(3.9)	79	(35.3)	0	(0.0)	107	(11.1)
General practitioner	7	(1.0)	54	(24.1)	3	(12.5)	64	(6.7)
Senior house officer	146	(20.5)	0	(0.0)	0	(0.0)	146	(15.2)
Specialty practitioner	42	(5.9)	75	(33.5)	1	(4.2)	118	(12.3)
Specialist*	286	(40.1)	16	(7.1)	20	(83.3)	322	(33.5)
Total	**714**	**(100)**	**224**	**(100)**	**24**	**(100)**	**962**	**(100)**

* Including consultants

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Of 617 married doctors, 84.4% including 84.8% of those with employed spouse were willing to stay in their current workplace in comparison to 52.5% of single doctors and 82.9% for those with unemployed spouses. The proportion of those who have to select their workplace and willing to stay in current workplace was higher (90.2%) than those who did not have such opportunity (42.9%). Around half of doctors were working in the private sector (52.7%), particularly for private clinics (61.5%) or both private clinics and/or hospitals (33.8%) with only fifteen doctors (4.7%) were working for private hospitals. Most of aforementioned doctors were satisfied with their current workplace and around 95% of those responded reported that their financial income was better inside than outside Erbil city. The proportion of doctors willing to stay at the current workplace was higher among those working in the private sector (93.2%) than those not working in the private sector (67.8%). A statistically significant association was demonstrated between most variables and doctors willingness to stay in their current workplace (P <0.001); with the exception of those working for private hospitals (P = 0.856) and spouse employment (P = 0.611). Details of doctors' willing to stay in current workplace by working for private sector and other variables are shown in Table 3.

Table 3: Doctors' willingness to stay in current workplace by working for private sector and other variables.

Variable	Doctors' willingness to stay in current workplace				Total		*P* value
	Yes		No				
	No.	(%)	No.	(%)	No.	(%)*	
Marital status							
Married	521	(84.4)	96	(15.6)	617	(64.1)	< 0.001
Single	181	(52.5)	164	(47.5)	345	(35.9)	
Spouse employment							
Employed	424	(84.8)	76	(15.2)	500	(81.0)	0.611
Unemployed	97	(82.9)	20	(17.1)	117	(19.0)	
Opportunities to select workplace							
Yes	552	(90.2)	60	(9.8)	612	(63.6)	< 0.001
No	150	(42.9)	200	(57.1)	350	(36.4)	
Working for private sector							
Yes	300	(93.2)	22	(6.8)	322	(52.7)	< 0.001
No	196	(67.8)	93	(32.2)	289	(47.3	
Type of private work							
Private clinic	184	(92.9)	14	(7.1)	198	(61.5)	< 0.001
Private hospital	12	(80.0)	3	(20.0)	15	(4.7)	0.856
Both clinic & hospital	104	(95.4)	5	(4.6)	109	(33.8)	< 0.001
Place of better financial income for those working in private sector							
Inside Erbil city	289	(95.1)	15	(4.9)	304	(94.4)	< 0.001
Outside Erbil city	11	(61.1)	7	(38.9)	18	(5.6)	

* Column analysis

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There were 5.1 doctors per 10,000 population, 1.7 for specialists and 3.4 for non-specialists. The density of doctors was low outside Erbil city; Khabat and Soran districts had the lowest ratio of doctors (1.6 and 1.5, respectively). Of 322 specialists, 24 (7.5%) were working outside Erbil city. No specialist was deployed to Choman and Khabat districts; while their ratio was very low in Dashti Hawler and Soran districts (0.2 and 0.3, respectively). The density of non-specialists was 1.6 in Khabat and 1.2 in Soran districts. The total ratio of doctors inside Erbil city was 6.7 doctors per 10,000 population; 2.5 specialists and 4.2 non-specialists; while outside Erbil city; overall, there were 2.4 doctors per 10,000 population, 0.4 for specialists and 2 for non -specialists. These findings are shown in Table 4.

Table 4: Distribution of doctors by specialty and ratio of doctors per 10,000 population per district.

District	Total population	Specialist			Non-Specialist			Total		
		No.	(%)	Ratio*	No.	(%)	Ratio*	No.	(%)**	Ratio*
Nawandi Hawler	1192459	298	(37.1)	2.5	506	(62.9)	4.2	804	(83.6)	6.7
Choman	35922	0	(0.0)	0	16	(100.0)	4.5	16	(1.7)	4.5
Mergasor	62139	3	(13.6)	0.5	19	(86.4)	3.1	22	(2.3)	3.6
Shaqlawa	147682	13	(28.9)	0.9	32	(71.1)	2.2	45	(4.7)	3.1
DashtiHawler	128287	2	(6.7)	0.2	28	(93.3)	2.2	30	(3.1)	2.4
Khabat	63566	0	(0.0)	0	10	(100.0)	1.6	10	(1.0)	1.6
Soran	232938	6	(17.1)	0.3	29	(82.9)	1.2	35	(3.6)	1.5
Total	**1862993**	**322**	(**33.5**)	**1.7**	**640**	(**66.5**)	**3.4**	**962**	**(100)**	**5.1**

* Ratio of doctors / 10,000 population
** Column %

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Discussion

Institutional imbalances occur when some health care facilities have too many staff while others are understaffed because of prestige, working conditions, income opportunities or other situation-specific factors. Imbalance between types of health services provided might also arise, in particular, one can consider the issue of curative versus preventive care.[11] Perfect equality of health workforce within countries is not feasible.[12] A survey implemented by Iraq Health System Strengthening Project, revealed that Erbil governorate was understaffed with PHC doctors.[13] Another study done on doctors working inside Erbil city in 2009, revealed that most of doctors (80.6%) were working at hospitals and 19.4 % in PHCCs.[14] A study by Bilbas[15] on doctors working in Erbil governorate in 2004, showed that 72.4% of doctors were working at hospitals and 27.6% in PHCCs. The findings of the current study are in line with that of aforementioned studies, where around three quarter of doctors (74.2%) were working at hospitals and 23.3% in PHCCs in Erbil governorate. Less than one fifth (17%) and 80% of those based inside Erbil city were working at PHCCs and hospitals, respectively. The largest categories of doctors in the current study were specialists (33.5%). They constituted the largest proportion of doctors working at hospitals (40.1%) in comparison to only 7.1% in PHCCs. These findings are almost close to the figures of the Ministry of Health (MOH)-Baghdad in 2008,[16] where specialists formed 34.6% of overall doctors in Iraq and 37.1% in Nineveh governorate, but lower than those reported by Khafaji and Dawood,[17] where in 2003, one fifth of overall doctors (21.3%) in Erbil were specialists. Increase in the proportion of specialists during the period of 2003 and 2009 is due to increased doctors' opportunities to enroll in postgraduate studies after 2003, besides lifting of economic sanctions and the huge socio-economic and political transformation in Iraq and Kurdistan Region. General and specialty practitioners made 19% of doctors in the present study, which is far behind the figures reported by the MOH of Iraq,[16] where the proportion of general practitioners in 2008 was 31.7% of overall doctors in Iraq and 36.9% of those in Nineveh governorate. On the other hand, the current study revealed that general practitioners alone formed the smallest category of doctors in Erbil governorate (6.7%); this might be attributed to the enrollment of considerable proportion of general practitioners in postgraduate studies and retirement of others. Other causes behind the low proportion of general practitioners and specialty practitioners might be similar to the causes disclosed by studies conducted by Al-Eisa et al[18] on doctors working in PHCCs in Kuwait city, where general practitioners are often perceived as second rank doctors by medical students, administrators and specialists. Hence, many general practitioners feel both geographically and professionally isolated, with a less demanding job and unsatisfactory status. Dussault and Franceschini[3] reported that value placed by society and family on a profession can affect an individual's choice of a career; in many countries, nurses, primary care providers and general physicians enjoy lower prestige and are less socially valued than other specialists and those working at hospitals, yet they are the most likely to accept to working in remote areas. Furthermore, a report prepared by WHO-EMRO; indicated that doctors in Iraq are basically hospital oriented with lack of emphasis on cost effective public health interventions.[19] Ultimately, Alwan[5] stated that there is an overall excess of specialists and insufficient doctors focusing on primary health care. Rural practitioners constituted 11.1% of all doctors in current study. They were the largest proportion of doctors deployed to work in PHCCs of rural areas (35.3%) to complete at least one year mandatory services. This finding is

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higher than those revealed by MOH in 2008,[16] where their proportion was 8.1% for overall doctors in Iraq and 5.5% for those working in Nineveh governorate. In this study, the association between doctors' willingness to stay in current workplace and factors like marital status, having private clinical practice and better financial income for those having private clinical practice was significant. A similar result was reported by Dussault and Franceschini.[3] However, the current study disclosed no association between willingness to stay in current workplace with that of spouse employment and working for private hospital. This finding is in contrast to a study from Pakistan on doctors working in rural areas, which revealed significant association between willingness to work in rural areas and the spouse job.[20] Another study conducted in the United States revealed that 58% of women and 26% of men doctors considered having employment opportunities for spouse an important factor in choosing rural practice location.[21] The willingness to stay in the present work location was higher among single doctors (47.5%) in comparison to married doctors (15.6%). This could be because most of young single doctors are in transitional period of their career, and they have been deployed to their current workplace as a request for serving at hospitals as house officers for a period of two years (mainly inside Erbil city); and as rural practitioner in rural health facilities for one year, to fulfill three years mandatory training after graduation which is prerequisite for application to a postgraduate study. This finding is comparable to that of a study from Pakistan on doctors working in rural facilities, which showed significant association between willingness to work in rural areas and marital status, and showed that the main reason behind their stay in rural areas was to complete compulsory periphery services;[20] a system which is applied in Iraq. The doctor to population ratio in Erbil and districts reported in this study was below the country and regional average taking into consideration those excluded from the current study which included postgraduate students, retired doctors and doctors on long leave. Overall, there were 5.1 doctors per 10,000 population, 1.7 specialists and 3.4 non-specialists. The total ratio of doctors inside Erbil city was 6.7 doctors per 10,000 population, 2.5 specialists and 4.2 non-specialists; while outside Erbil city there were 2.4 doctors per 10,000 population, 0.4 specialists and 2 non-specialists. The doctor per 10,000 population ratios for Iraq and some governorates in 2008 including overall doctors, specialists and non-specialists ratio were as follow: in Iraq 6.1, 1.9 and 4.2, respectively; Nineveh governorate 7.5, 2.5 and 5, respectively and Sulaimania governorate 10.5, 3.1 and 7.4, respectively.[16] The shortage of doctors in Erbil governorate indicates that there is a need to increase the number of doctors by 2, 3 and 6 times to reach to that of Middle East, neighboring, and developed European countries level, respectively.[16,22-25] It is critical to make a distinction between the adequacy of health professional supply in rural areas and the disparity between the supply in rural and urban areas. Crude comparisons of the physician- to-population ratio in rural versus urban areas can be very misleading and provide almost no information about whether shortages or oversupplies exist in either location.

Conclusion

The density of doctors per 10,000 populations in Erbil governorate is below the regional and international average, with remarkable urban-rural imbalance in doctors' workforce in terms of number, geographical distribution, specialty and institutional terms. Having a private clinical work and the opportunity to choose workplace were the most influential factors to determine the workplace.

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Conflicts of interest

The authors report no conflicts of interest.

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