

Job Preferences of Doctors for Working in Rural Islamabad Capital Territory, Pakistan: a Discrete Choice Experiment

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Abstract

Background: Developing countries are facing acute shortage of human resource in rural/remote areas. Effective management and retention of human resource for health are related to efficient financing and lucrative incentives packages. This study focused on preferred incentives of doctors for working in rural and resource constrained areas of Pakistan.

Methods: This study was a Discrete Choice Experiment (DCE). Study population (N=107) included final year medical student and fresh graduated doctors in Islamabad. Questionnaire was computer based and data was collected through online database. Results were analyzed using conjoint analysis technique on Stata 11.0 to present the findings.

Results: The results showed that mostly young doctors do not prefer to work in rural areas. Preference to opt for rural job posting depended largely on high salary along with study assistance for further education. Other attributes identified as attracting and retaining young doctors for rural job posting included career advancement, improved quality of health facilities, provision of housing allowance and transportation.

Conclusion: Study results showed that salary is not the only deciding factor for attracting and retaining health workforce in rural areas. Further education for highly valued and the government should focus on efficient use of available budget to develop a bundle of cadre specific incentives package to attract and retain HR in rural and underserved areas.

Keywords: Doctors; DCE; Islamabad

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Introduction

An optimal health service for improving people's health is the prime objective of health systems [1] and health workforce is an identified building block for this purpose [2]. The World Health Report (WHO, 2006) estimated a global shortage of health workforce of approximately 4.3 million [3]. This shortage was particularly pronounced in 57 countries and Pakistan is one of them. Within the health care providers, doctors are considered key to effective supervision and management of health care services, particularly in rural areas [3]. Globally, about one-half of the population is living in rural areas. However, these areas are served by less than 25% of the total doctor workforce [4].

The unavailability of doctors in rural areas often leads to delay in seeking health care [5]. that is influenced by many factors like migration, lack of motivation and incentives. Different studies have been conducted on these factors however, in order to better address these issues there is a need to investigate the nature and determinants of job choices that health workers make when opting for employment [6-8]. In Pakistan insufficient data on the availability, distribution and trends in human resource for health (HRH) has been a blockade to effectual HRH planning. However, it has been established that there are 8 doctors per 10,000 populations and only 3.6% of them are working in rural settings where 63% of Pakistani population resides [9]. Majority of the doctors choose to practice in urban settings because neither they

are trained to work in a rural setup nor they are given proper facilities and services to work there [10]. This imbalance in the rural availability of doctors prevails everywhere within the country [11].

Islamabad Capital Territory (ICT) is the capital of Pakistan. ICT has a population of over 2 million with 34% urban population. Only 8% of the total doctors in ICT are working in its rural areas which has 66% of its population [12]. In order to meet this imbalance there is a need to determine the incentives, which will be most effective in the local context for attracting and retaining doctors to rural ICT. Discrete choice experiment (DCE) is one technique for assessing potential effectiveness of various incentive strategies for attracting and retaining health work force to a particular setting [13]. The information thus generated will be helpful in understanding how health workers may respond to financial and non-financial incentives for practicing at rural health facilities. DCE uses a hypothetical job description based on a number of attributes (e.g. housing facilities, professional development, salary, work location). Each attributes is assigned different levels. A combination of different job attributes at varying levels are then presented to each respondent in the form of numerous possible job sets. The respondents then choose the job sets they prefer. These job sets are termed as choice sets and in DCE, preferences of respondents is obtained for each choice sets. Thus DCE helps in exploring how respondents bargain various job characteristics, thus modelling their preferences and making the relative importance of each attribute to policy makers. DCE offers an opportunity to identify the job preferences of health workers, to assist decision makers in designing effective strategies to attract and retain them for working in rural areas. This method has been used by several countries to filter the most preferred attributes for deciding to work or keep working in a rural area [14]. To date, little evidence is documented about the preferences of doctors for working in rural areas of Pakistan, thus needing further exploration. The present study was done in Islamabad Capital Territory and is the first of its kind to be conducted in Pakistan. Using systematic analysis technique of DCE, it helped to investigate the preferences of doctors for working in rural and resource constrained setting of rural ICT.

The objectives of the study were to identify job preferences of young doctors for working in rural ICT and to develop incentive packages for attracting and retaining them within the system.

Methodology

Design of DCE

The study was conducted on medical students of Islamabad. Based on literature review, 3 In-depth interviews and 6 focus group discussions with senior health managers, medical officers and medical students [15], a list of preferred list of job attributes and their levels was developed (given in Box 1). For each of the attributes, two to three levels were determined. Each level represented a privilege which the government could potentially offer the doctors for working in rural areas.

Box 1:	Job Attributes	Levels
1	<i>Quality of the Facility</i>	<ul style="list-style-type: none"> Basic (unreliable electricity, equipment; drugs/supplies not available; lack of supportive management) Advanced (reliable electricity, equipment; drugs/supplies available and supportive management, ambulance availability)
2	<i>Salary</i>	<ul style="list-style-type: none"> 10% addition to basic salary 30% addition to basic salary, 15% annual increment 50% addition to basic salary, 10% annual increment
3	<i>Living Condition</i>	<ul style="list-style-type: none"> No housing facility Housing and security allowance Housing availability with basic amenities
4	<i>Transportation</i>	<ul style="list-style-type: none"> Availability of transport Transport allowances
5	<i>Career Promotion</i>	<ul style="list-style-type: none"> Commitment for two years Commitment for 3 years and then upgrading Commitment for 5 years and then upgrading
6	<i>Study Assistance</i>	<ul style="list-style-type: none"> No support Partial Financial support by government for further study after completion on contract Full Financial support by government for further study after completion on contract

DCE was designed using Sawtooth Software [16]. DCE, an analytical method used to quantify respondent's preferences for various attributes of a service or a good. This study used DCE for eliciting preferences of medical students to work in rural areas of ICT. In the survey, respondents were presented with 12 paired job scenarios on 6 most important attributes identified.

Selection criteria

Final year students from colleges with at least one graduated batch were included in the study. Similarly, house officers from one private and one public sector hospital were included.

Data collection techniques

Questionnaire was designed using Sawtooth Software and was computer based. Data was collected through online database. . The survey was sent to all participants through an email to their personal email addresses. A reminder email was daily sent during the data collection period. Universal sampling technique was used for collection of data. However, the minimum sample size

required for each cohort for statistically significant results of DCE was 50.

Data Analysis

Simple frequencies and percentages of background information were calculated. Choice data was analyzed using mixed logit model, which allowed modeling of repeated choices. Mixlogit regression analysis was undertaken in Stata on job pairs to identify the job preferences of medical students. This comparative analysis within and across different individuals in DCE survey, generated the significance of each attribute through p values and coefficients. P values were then used to compare the relative importance of attributes. Finally, the result of the mixed logit models was used to predict the effect of different attributes on the proportion of medical students for pursuing a rural job.

Results

The DCE survey included 107 medical students. Majority of participants were between 23 to 25 years of age, unmarried and financially supported by parents. A major chunk had no experience of living or working in rural areas and they preferred not to work in rural areas (**Table 1**). A small percentage of those who preferred working in rural areas over urban areas was further analyzed. A significant relation of $p < 0.05$ was found between preference of working in rural areas and a previous experience of living in a rural vicinity for at least a year.

Inferential analysis of choice data

The data generated in DCE job scenario pair section were analyzed using the mixed logit regression function of STATA program. This modeling technique was used to determine the statistical significance of each job attribute.

Analysis of job pair data from doctors was carried out. All the attributes yielded statistical significance as factors influencing the choice of a rural job (at the $p < 0.05$ level), except for housing availability with facilities and security, transportation and job commitment of 3 years leading to promotion (**Table 2**).

The raw output from STATA includes the p-values as well as coefficients of each of the sub levels within the job attributes. This output was then used to determine the weighted preference ranking of each job attribute by the doctors. Weighted preference ranking provided a priority ranking order of respondents' preferences for the job attributes or factors surveyed, and showed how much more respondents favor the most preferred attribute to all the others—i.e., the “weight” or value they placed on an attribute as compared to the other factors/attributes.

This ranking was determined by comparing the mean coefficients resulting from the mixed logit regression analysis of the 12 job scenario pairs and listing them from the most (highest mean coefficient) to least preferred (lowest mean coefficient) attribute (**Table 3**).

Salary was the most important motivation factor for the young doctors. The degree to which this influenced the doctors' preferences depended on amount of the salary. Considering

present salary of house officers to be PRs 24,000, highest preference was for 50% addition to basic salary with 10% annual increment followed by 30% addition to basic salary, 15% annual increment and 10% addition of basic salary. Financial support for higher education, quality of facilities and long term job commitment leading to promotion and availability of housing allowance were valued higher than availability of housing facilities and transport.

Table 1: Background characteristics of participants.

	f	(%)
Gender		
Male	44	(41.1%)
Female	63	(58.9%)
Age		
20-22	5	(4.7%)
23-25	94	(87.9%)
26-28	8	(7.5%)
Domicile		
Punjab	55	(51.4%)
Federal	25	(23.4%)
KPK	22	(20.6%)
Baluchistan	1	(0.9%)
Sindh	4	(3.7%)
Marital Status		
Single	98	(91.6%)
Married	9	(8.4%)
Work Experience in rural setting		
Yes	12	(11.2%)
No	95	(88.8%)
Who pays for tuition		
Parents	96	(89.7%)
Others	11	(10.3%)
Lived in rural areas for more than 1 year		
Yes	33	(30.8%)
No	74	(69.2%)
Prefer working in rural areas		
Yes	12	(11.2%)
No	95	(88.8%)

Table 2: Job attributes and their significance level.

	P-value
Salary	0.000*
Quality of facilities	0.000*
Housing and security allowance	0.000*
Housing with facilities and Security	0.215
Transport	0.497
Commitment of 3 years and promotion	0.349
Commitment of 5 years and promotion	0.000*
Partial financial support in further education after completion of commitment	0.000*
Full financial support in further education after completion of commitment	0.009*

*Statistically significant at $p < 0.05$

Retention packages

In order to develop job packages' options, the coefficient values of the job attributes were used. Different potential packages of retention incentives were developed to estimate predicted preference impact. For this purpose, a 'Preference Calculation Worksheet' developed in MS Excel by Capacity Plus [17] was used. Attributes for developing packages were selected based on their weighted ranking, and discussions with policy makers, senior medical officers and junior doctors.

The preference impact measure estimates what percentage of the doctors would prefer a job posting that offers the presented package of incentives to other available jobs that do not have those benefits. In other words, the preference impact measure looks at how the probability of selecting a given post changes as the attributes and levels of those attributes change [18]. The preference impact measure can assist stakeholders in determining which incentives and in what specific combination will be the most attractive to health workers and more likely to motivate and retain them to work in rural and remote areas.

Only those packages are presented which showed a preference impact of 80% and above (**Table 4**).

Packages 1 proposed Availability of transport and a Job commitment of 3years leading to promotion with current basic salary will improve salary up to 54%. Package 2 proposed that if just quality of health facility is improved the retention of doctors would jump to 66%. In Package 3, partial financial support for further education and a job commitment of 5years leading to promotion further increased retention rate to 72%. Package 4 included financial support for further education and a job commitment of 5 years leading to promotion which proposed increase in retention up to 86%. Incentive package 5 proposed provision of improved quality of health facility, a job commitment of 5 years leading to promotion and complete financial support for further education. This combination gave the highest value of retention i.e. 93% with the current salary basic salary.

Table 3: Illustrates the weighted ranking of job attributes in order of highest to least mean coefficient value.

S. No.	Job Attribute	Coefficient
1	50% addition to basic salary, 10% annual increment	4.23375
2	30% addition to basic salary, 15% annual increment	3.66925
3	10% addition to basic salary	3.10475
4	Full financial support in further education after completion of commitment	1.2047
5	Quality of facilities	0.7651
6	Commitment of 5 years and promotion	0.7322
7	Housing and security allowance	-0.5272
8	Partial financial support in further education after completion of commitment	0.3326
9	Commitment of 3 years and promotion	0.1778
10	Housing with facilities and Security	0.1582
11	Transport	-0.0610

Table 4: Proposed incentive packages.

Salary Amount	Current Basic Salary
Incentive Package 1	
Availability of transport	54%
Job commitment of 3years leading to promotion	
Incentive Package 2	
Improved quality of health facility	66%
Incentive Package 3	
Partial financial support for further education	72%
Job commitment of 5years leading to promotion	
Incentive Package 4	
Full financial support for further education	86%
Job commitment of 5years leading to promotion	
Incentive Package 5	
Improved quality of health facility	93%
Full financial support for further education	
Job commitment of 5years leading to promotion	

Discussion

Shortage of doctors in rural areas is not just an issue of Islamabad but is common across Pakistan. The WHO policy guidelines on rural retention explain that decision makers have vast options available for policies. However, the appropriateness of these alternative policy options relies mainly on adapting these policies to country context [19]. It is recommended to carry out context focused analytical work, such as Discrete Choice Experiment so that the incentive packages are better calibrated and customized. It is evident from other studies that preferences of health workforce varies significantly through countries and within countries, depending on the characteristics of individuals of that cadre [20-22]. The results of this study provided an important insight into the priority job attributes that can be utilized for rural recruitment and retention policies for doctors in Islamabad Capital Territory, as well as for the design of future Discrete Choice Experiments in Pakistan.

The list of attributes that were used for the design of DCE were in line with WHO list of incentives [19] as well as other studies on DCE like in Tanzania [14], Uganda [20] and Cameroon [21] where similar attributes were given priority by medical students and fresh doctors [20].

In DCE majority of the participants were females, unmarried and between ages 23 to 25 years. A very small percentage of doctors were willing to work in rural settings. Respondents with experience of living in rural areas showed more willingness to serve in rural settings. WHO suggested that in order to formulate rural retention strategies it is important to have an in-depth understanding of health workforce, evidence showed that health workers prefer to work at a place from where they belong [3]. In Pakistan private medical education is very expensive and majority of the students that couldn't admit to public medical schools pursue their education in private medical colleges. After

5 years of tedious tenure, newly graduated doctors seek for post graduate medical examination and start training in seek of career advancement [23]. Majority prefer pursuing private practice later [24]. Islamabad is a city with many private medical colleges and students from all provinces come to continue their medical education there. Also, job packages offered by Federal health ministry are lucrative and environment is more conducive to learning and personal growth as compared to provincial jobs for doctors in Pakistan [25].

Weighted ranking of attributes and proposed retention packages

In this study a prime importance was given to salary, with increasing importance to high salary. Studies also suggests that monetary incentives should be of substantial value so that doctors can be attracted to work in remote areas [26-28].

Support for further education after completion of job commitment was the second most valued attribute. Financial support for continuing education after certain period of service is one of the most important incentive for medical professionals that authorities can utilize for their recruitment [4]. Literature of Pakistan also showed that majority of the doctors want to pursue their career abroad [1] and consider higher education essential for career growth [2]. Quality of facilities which included drugs, equipment and other facilities was the third. Studies from India (28), Laos [29] and Uganda [30] also showed health facility infrastructure was greatly valued by doctors, especially new graduates, who are often disappointed by the gap that exists between tertiary hospital environment where they have been trained and the lack of availability of proper equipment's, drug and supplies at rural health facilities [22]. Also evident in this study, Housing and security allowance was preferred over

availability of housing with advanced facilities considering short distances and good infrastructure of roads for daily commuting to rural job place.

Young doctors showed significant results for job commitment for 5years leading to promotion. Job and financial security are major concerns behind job satisfaction [31,32]. Transportation did not show significant results. Medical students in ICT mostly belong from high economic class, possessing their own transport.

Different incentive packages were made with the current basic salary offered to doctors. Salary amount was kept constant in all packages to better understand the value of attributes, otherwise the high preference for salary would have skewed the percentages. Assuming the current rate of retention and attraction of doctors to work in rural settings to be 50%, financial support for further education and long term job commitment leading to promotion brought a substantial increase in retention to 93% in the proposed incentive packages. DCE in countries like Peru showed similar results that molded their policies accordingly for improved retention [33,34]. This study recommends to utilize initial years of fresh gradates for rural services as obligatory with lucrative investment in education as an incentive.

Conclusion

This study using discrete choice experimental technique identified that other than salary young doctors give high priority to funding for further education and quality of facilities in a rural area. Thus, salary is not the only deciding factor for attracting and retaining health workforce in rural areas. The government should focus on efficient use of available budget to develop a bundle of cadre specific incentives package to attract and retain HR in rural and underserved areas.

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