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Estimation of Petty Corruption in the Provision of Health Care Services
Evidence from Slum Areas of Karachi

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Abstract

This paper brings to light the detail analysis of the prevalence of corruption in the Health Care Services in the slum areas of Karachi. The empirical results provide significant evidence that the residences of slum areas of Karachi in all the five districts are forced to pay bribes in order to get the basic health care facilities. However, the people living in the District Malir and District East are more exposed to corruption as compared to the other districts. Health is one of the most essential basic needs of every individual living in any society. The result shows that people with better income and education understands the importance of good health and are thus ready to pay bribes to get the health services. Moreover, in the public health care units all staff including doctors, nurses and others are actively involved in corrupt activities.

KEYWORD: Petty Corruption, Health Care Services, Slum Areas

1.1 Introduction

In the literature there have been a series of research papers on the issue of governance and corruption in the Health Care Services particularly for developing countries. The result of these studies established that a key aspect contributing towards low impact of public investments in the social sectors particularly health is the presence of corruption and inefficient monitoring mechanism. However, consensus exists that corruption is spreading like cancer in the low-income economies and requires continuous political efforts to be treated. Sustainable economic growth requires persistent improvement in the human development indicators. For this good health of the people is the necessary condition. Therefore, in this study an attempt has been made to address the issue of petty corruption in the public health service delivery as perceived by the underprivileged class living in urban slums of Karachi. This study is unique as it identifies the problems of the deprived people of the urban slums in getting the basic health facilities. Empirical estimation of the incidence of corruption is also discussed. Furthermore it suggests policies that can be implemented to improve the health service delivery mechanism particularly for underprivileged class.

This rest of the paper is organized as follows: Section 1.2 and section 1.3 presents the details of health facilities existing in Pakistan and in Sindh respectively. Followed by the section 1.4 discussing accessible review of literature. Section 1.5 reviews the data and econometric methodology. Section 1.6 provides the detailed analysis of data characteristics and followed by the empirical results (section 1.7). Conclusion is presented in the last section 1.8

1.2 Health Infrastructure in Pakistan

This section presents an overview of the health infrastructure available in Pakistan. Although good health of the masses, improved standard of living, and better health facilities are the corner stone's of every national health policy but presence of corruption and poor governance at all levels of the health sector has made the task unachievable. If this situation goes uncheck further it can not only jeopardize the proper functioning of the health sector but also pose a threat to the society as whole. According to the World Development Report of 2011, performance of the Pakistan's Health Sector is the worse as compared to its counterparts in the region. The details are presented in the figure 1.1. Pakistan has the highest mortality rate (of both under five and infant) and population growth rate in the region.

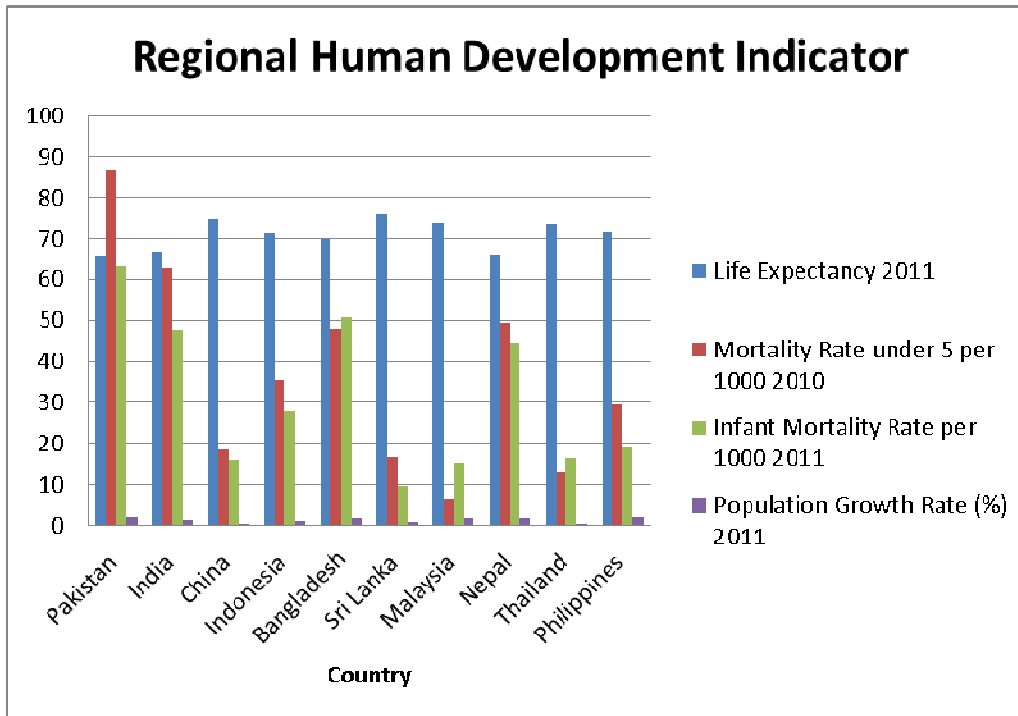


Figure 1.1

Source: World Development Report 2011.

The Economic Survey of Pakistan for the year 2011-12 specifies the salient features of the health sector of Pakistan. The data on health expenditures and human resources identifies the weaknesses in the health sector. The table 1.1 shows the total public expenditures as percentage of the gross domestic product (GDP**)** on health sector during the years 2000 till 2011. From the year 2001 to 2009, health expenditures as percentage of GDP remained around fifty five percent. However it was around seventy two percent in the year 2000, which is the highest value in this decade. The overall picture of the public expenditure constraint in the health sector requires the immediate attention of the politicians, bureaucrats and policy makers to introduce anticorruption reforms in the basic health policy to prevent the leakages of these scarce resources and to ensure the efficient allocation of financial and human resources. Improvement in the delivery of health services is the dire need to meet the challenges of the twenty first century.

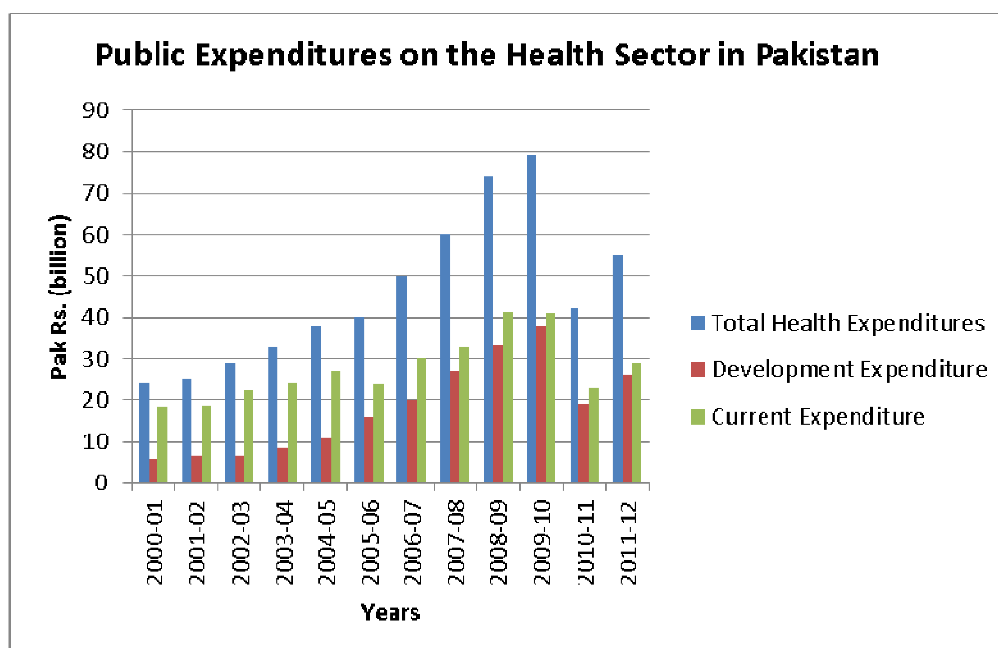
The figure 1.2 shows the total public expenditures and its distribution on the health sector during the years 2000 till 2011. The total health expenditures increased till 2009. In the year of 2010 the heavy rainfall followed by colossal amount of floods hit the country. As a result a considerable decrease in the health expenditures is observed for the year 2010.

Table1.1 Health Expenditures in Pakistan

Health & Nutrition Expenditures (2000-01 to 2011-12) (Rs. Billion)					
Fiscal Years	Public Sector Expenditure (Federal and Provincial)			Percentage Change	Health Expenditure as % of GDP
	Total Health Expenditures	Development Expenditure	Current Expenditure		
2000-01	24.28	5.94	18.34	9.9	0.72
2001-02	25.41	6.69	18.72	4.7	0.59
2002-03	28.81	6.61	22.21	13.4	0.58
2003-04	32.81	8.50	24.31	13.8	0.57
2004-05	38.00	11.00	27.00	15.80	0.57
2005-06	40.00	16.00	24.00	5.30	0.51
2006-07	50.00	20.00	30.00	25.00	0.57
2007-08	60.00	27.22	32.67	20.00	0.57
2008-09	74.00	33.00	41.10	23.00	0.56
2009-10	79.00	38.00	41.00	7.00	0.54
2010-11	42.00	19.00	23.00	(-) 47	0.23
2011-12	55.12	26.25	28.87	31.24	0.27

Source: Planning & Development Division

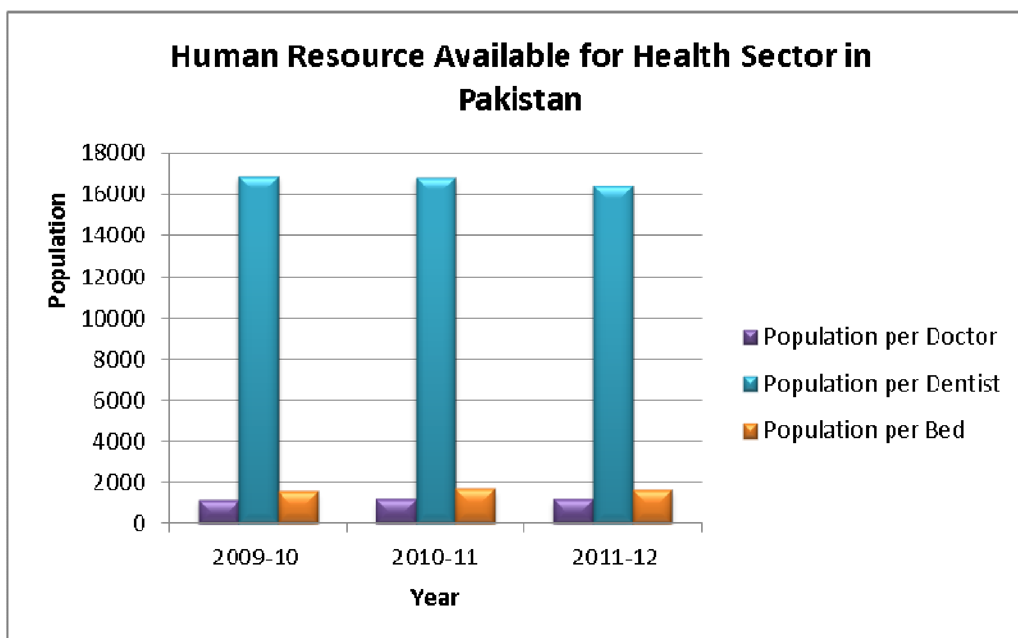
Figure 1.2



Source: Pakistan Economic Survey 2011

The human resource for the provision of health care has extensively increased over time. When the population is taken into consideration, population per doctor and per nurses has increased slightly over time. However population per dentist has reduced over the same period (figure1.3). The low level of public health expenditure and high population growth rate together has resulted in high population ratios related to the manpower. In Pakistan, the health sector has public as well as private health care units. Since June 18, 2011 with the devolution of ministry of health, the provinces are allowed to develop their own policies and regulations. Under the present statistics, scarcity of funds and inefficiency in the healthcare delivery mechanism both public and private sectors are required to work together for the benefit of the masses.

Figure 1.3



Source: Pakistan Economic Survey 2011

1.3 Health Infrastructure in Sind

In the province of Sind various opportunities are available to those who want to join the field of health services. There are two universities teaching particularly medicine in Karachi and Jamshoro. The colleges are also providing medical education these are located in Sukkar, Larkana and Nawabshah. Additionally large number of nursing schools (twelve), midwifery schools (ten) and public health schools (five) are also present. There are approximately fourteen thousand physicians and specialists, two thousand nurses and twelve thousand paramedics working and giving their services to the people living in the province of Sindh under the supervision of the Sind Department of Health. To provide the health facilities to the people there are eleven hospitals with teaching facilities. Nearly, twenty-seven hospitals in the main cities of Sind are present. Similarly there are almost seven hundred and thirty eight clinics and three hundred and eight dispensaries in the union councils. According to the report of Health policy for the province of Sind (2005) there are eleven district health care units, forty four other hospitals, thirty six maternity and child health centers, twelve other units providing maternity services and thirty nine other units of traditional medicine. In the rural areas, there are nearly ninety nine health centers and dispensaries offer basic and advanced health services and medicines to the patients. However, these amenities are actually facing the problems like, lack of hospital staff & equipment and where ever staff is available it is usually lack of proper training

The role of Provincial Health Ministry in any province is to provide medical education guidance, training and provide employment opportunities for the medically trained people. The mission statement of the provincial health policy for the province of Sind is based on "Health for all". The Health Department of Sind works under the supervision Minister. The secretary health assists the minister. There are additional secretaries, deputy secretaries and other staff who work under the secretary of health.

1.4 Review of Literature

All the international donor agencies, bilateral agencies and international banks investing in the social sector of the developing countries are concerned with performance of the social indicators of these countries. Several studies have been conducted and projects undertaken on the subject of corruption and accountability in the public service delivery in South Asian region. The report of Transparency International (2002) on corruption in South Asia established that a key aspect contributing towards low impact of public investments in the social sectors particularly health is the presence of corruption and inefficient monitoring mechanism. In the separate report published in 2004 by the Mahbul Haq Human Development Centre in Pakistan represents challenges faced by the health sector in the developing countries of South Asian region. The report pointed out that sustainable economic growth requires persistent improvement in the human development indicators. For this improvement in the health of the people is the necessary condition. Moreover, in the baseline survey 2002, presented the data on governance and public service delivery in Pakistan, which further stress the severity of problem. This report shows that "In Pakistan just 23% of households were satisfied overall with government health services, while 32% said they had effectively no access to a government health service. 'Very vulnerable' households were less likely to be satisfied or to report access and indeed were less likely than other households to be within 5km of a government health facility" (ibid pg. ix). Manongi, R (2009) studied the role of training in changing the behaviors of medical staff towards their work among seven economies. The author found the existence of positive impact of training on the health workers performance. Another common problem identified in numerous other researches is of staff absenteeism in the health sector. This issue of absenteeism is a serious concern requiring awareness and immediate action.

A research conducted by Agboatwalla, M. and Niazi T (2010) studies the consequences absenteeism on the healthcare service delivery in Pakistan. The data shows those nearly thirty eight percent male doctors and forty four percent female doctors are not performing their duties. The same is true for twenty eight percent nurses and twenty four percent other technical staff. The hospitals with lack of proper facilities and those in rural areas are more prone to the problem of absenteeism. This study highlights few other characteristics of the health workers. Female doctors usually avoid to work in rural areas and salary incentives are not enough to encourage them to work in those areas. In many cases the other staff is found working for doctors. The Health sector of Nigeria was suffering from similar ailments as that of Pakistan till 2002. That is the lack of existence of system facilitating the consumers to register their complaints regarding the public health service delivery mechanism. The implementation of the "Partnership in Transforming Health Systems Program" (PATHS) in Nigeria proved to be highly effective in facilitating the consumers by intensifying voice and accountability mechanism related to the health care services. This program introduced awareness of consumer rights, government intervention to improve service delivery and community involvement in the health sector. All these initiatives if properly announced and implemented can also be highly effective in the case of Pakistan. The importance of the responsiveness of the health employees to the consumers is highlighted in the study conducted by DFID in January 2006. This study proposes empowerment of the users by providing information, increased wages of the employees of health care units and decentralization of the management. There have been substantial investigations regarding corruption in the health sector. One such study conducted by Mamdani, B. and Lewis M. 2006 found that health sector is in the top four on the basis of corruption in eleven countries among the sample of 23 surveyed countries. This research categorizes major areas of the health sector most vulnerable to corruption. These include provision of medicines, medical staff absenteeism, availability of resources, salaries etc. Antonio, L. et al (2006) concluded that private sector particularly nongovernmental organizations (NGOs) can be more efficient in the healthcare as in the case of Bangladesh and Nepal. These NGOs can and have shown better performance in the health care with fair degree of independence and accountability to higher authority. Pappas, G. et al (2009) finds the political instability in Pakistan as contributing towards bad

governance in the health sector. Another case study on Pakistan revealed that good governance and society involvement is very important for the continuation of donor-funded health ventures of the public sector. Mumtaz, Z., et al. (2003) illustrates how gender discrimination can affect the performance of health workers in the health care units in Pakistan.

The available literature fails to provide evidence for the existence of incidence of corruption in the public service delivery mechanism in the Katchi Abadies of Karachi and its impact on the deprived users of these poor areas. This study fills this gap in the literature. In addition to this an attempt has been made to quantify the extra burden of bribe payment on the poor consumers impose by the petty corruption in the health care units.

1.5 Data & Research Methodology

In this research, the survey on perception on corruption was undertaken in the slum areas of Karachi. According to the progress report of Katchi Abadies there are nearly five hundred and thirty nine Katchi Abadies in Karachi. A sample of 500 respondents was collected from Katchi Abadies located in the five districts. In every district nearly 80 to 100 respondents were contacted and all the relevant information was documented. To the best of my knowledge this is the first corruption survey covering the slum areas of Karachi. The survey only targets on the data collected on the perception of the poor people regarding their personal experience of corruption on interaction with the officials in the Health Care Services. The main objective of this study to highlight the determinants of petty corruption in provision of the services provided by the Health Department particularly with references to the slum areas of Karachi. For this purpose, the following form of the relationship between corruption and the explanatory variables for corruption is used.

$$\text{Log (HBribe)} = \eta_1\,DKCENT + \eta_2\,DKEAST + \eta_3\,DKMLIR + \eta_4\,DKSOUT + \eta_5\,DKWEST + \eta_6\,DMAT + \eta_7\,DINT + \eta_8\,DGRAD + \eta_9\,DJRSTF + \eta_{10}\,DSRSTF + \eta_{11}\,DSELOWN + \eta_{12}\,DFEML + \eta_{13}\,DHIGH + \eta_{14}\,WMEM$$

Where HBribe is a measure of corruption that is equal to the amount of bribe paid by the respondent to obtain the services in the Health Care Units. Here corruption is defined as irregular payments (bribes) made by the respondents to the officials in the Health Care Units. The greater the amount paid, the greater is the corruption and vice versa. Here five dummies (DKCENT, DKEAST, DKMLIR, DKSOUT and DKWEST) represent the Central District, East District, Malir District, South District and West District. In view of the education system in Pakistan, the three major levels of education considered here are; matriculate, intermediate and graduate (DMAT, DINT and DGRAD) in above equation. To identify the officials involved in the corrupt practices two dummy variables are used here. The entire staff at the Health Care Unit is divided in to two main groups the high-grade officials and the low-grade officials. The junior staff is represented by the dummy variable DJRSTF. All the high-grade officials are represented by the dummy variable DSRSTF. To encompass the influence of wealth of the respondents in the payment of bribes to the health officers the dummy for the proprietorship of the house has been used. It is represented by the DSELOWN. DFEML has been used for the female head of the family. The dummy DHIGH is equal to one if the respondent has relatively high income otherwise is equal to zero and wmem is the quantitative variable measuring the total working family members. The procedure ordinary least square is used to estimate the above equation for the cross-section data covering twenty-five Katchi Abadies of Karachi from the five districts. Here semi log regressions are used to estimate this equation.

1.6 Result and Discussion on Corruption in the Health Care Services

The following section presents the detail discussion on the incidence of corruption faced by the people in the Health care units of urban slums. 68.1per cent of the respondents out of those who have gone to the government hospitals claimed that corruption is higher in the government hospital as compare to the private hospitals. Three hundred and forty two respondents claim that either they or their family members have visited the government health facilities as patients. These patients belong to different age groups i.e. from infant to older persons and seeking treatment for different diseases like fever, diarrhea, stroke, blood pressure, and heart diseases etc. Some of them are treated as indoors patients while others are treated as outdoor patients.

1.6.1 Admission Process in the Hospitals

Three hundred and forty two of our respondents have informed that they have interacted with the hospital staff in seeking health services. 17.8per cent patients out of the total three hundred and forty two persons who went to the hospitals faced corruption in order to get the patient admitted to these hospitals. Some of them paid bribe to the doctor (26.2per cent), some of them admitted through influential relatives (44.3per cent) or hospital staff (21.3per cent) and others through political influence (4.9per cent). For reference see table#1.2. Moreover, Patients also faced different types of corruption in the hospitals. Out of Three hundred and forty two respondents who have visited hospitals almost one hundred and one patients claim that they have faced corruption in the hospital for getting medicines, bed, blood, operation, x-ray etc.

Table 1.2 Admission Process in the Hospitals

Admission Process in the Hospitals	Number of cases	Percentage of respondents
Admitted through influential relatives	27	44%
Admitted through paying bribe to the doctor	16	26%
Admitted through hospital staff	13	21%
Admitted through political influence	3	5%
Admitted through direct payment of money	2	3%

Source: Author's own calculations based on the survey of Katchi Abadies of Karachi

46.5per cent patients paid bribe for getting allocated medicine. 22.8per cent patients paid bribe for getting bed. 8.9per cent patients paid bribe for X-ray. 9.9per cent patients out of the total 101 patients who faced corruption in the hospital paid bribe for getting blood for the patient. 4.0per cent patients paid bribe for Operation.

1.6.2 Officials Involved In Corrupt Practices in Public Hospitals

In the slum areas of Karachi, data indicates that hospital staff including, administrative staff, particularly the staff dealing with admission of patients in the hospitals, laboratory staff dealing with the provision of blood to the patients and pharmacy staff are the most corrupt. Seventy percent respondents claim that they have paid money as bribe to them (please see figure 1.4). Almost twenty four percent respondents claim that they have paid money as bribe to the doctors. Roughly about four percent respondents claim that they have bribed the nursing staff of the hospitals. Therefore, nursing staff seems to be the least corrupt in the public health sectors.

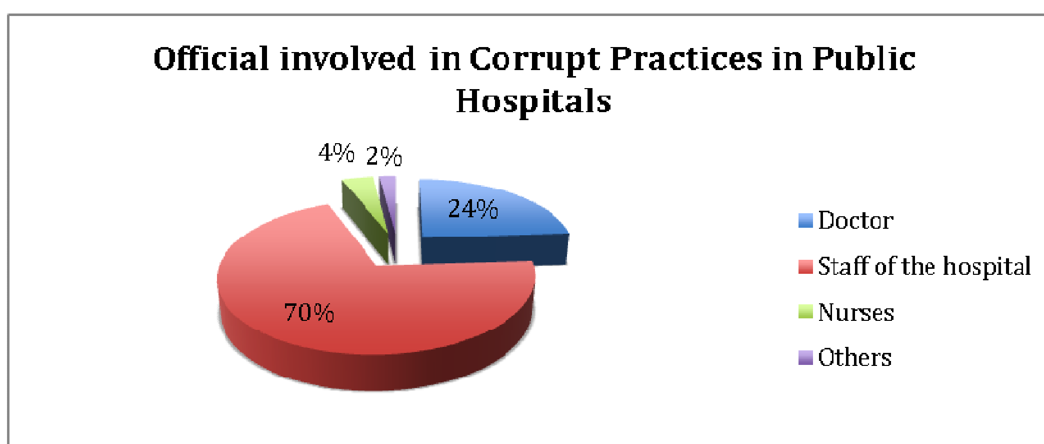


Figure 1.4

1.6.3 Demand of Bribe in the Provision of Health Services

In order to identify the mechanism of corruption involve in the process of service delivery we ask the respondents who demanded the bribe. In fifty two per cent cases, it is evident that bribe is demanded directly by the concerned officer (please see table 1.3). In seventeen percent cases, the concerned health officer through some other person demanded bribe indirectly. Moreover, nearly twenty three percent cases, respondents offered bribes by themselves to the concerned officers to get the much-needed required medical service.

Table 1.3 Demand of Bribe in the Provision of Health Services

Bribe demanded by	Percentage of respondents
Bribe demanded directly by the concerned officers	52%
Bribe demanded by the concerned officers through indirectly	17%
Bribe offered directly by the service recipient	23%
Bribe offered through 3rd party	8%

Source: Author's own calculations based on the survey of Katchi Abadies of Karachi

1.6.4 Amount of Bribe Paid To Get Health Services

Moreover, in all of these one hundred and seven cases who paid bribe to the health officers it is anticipated that nearly thirty nine thousand and four hundred rupees were involved (refer table 1.4).

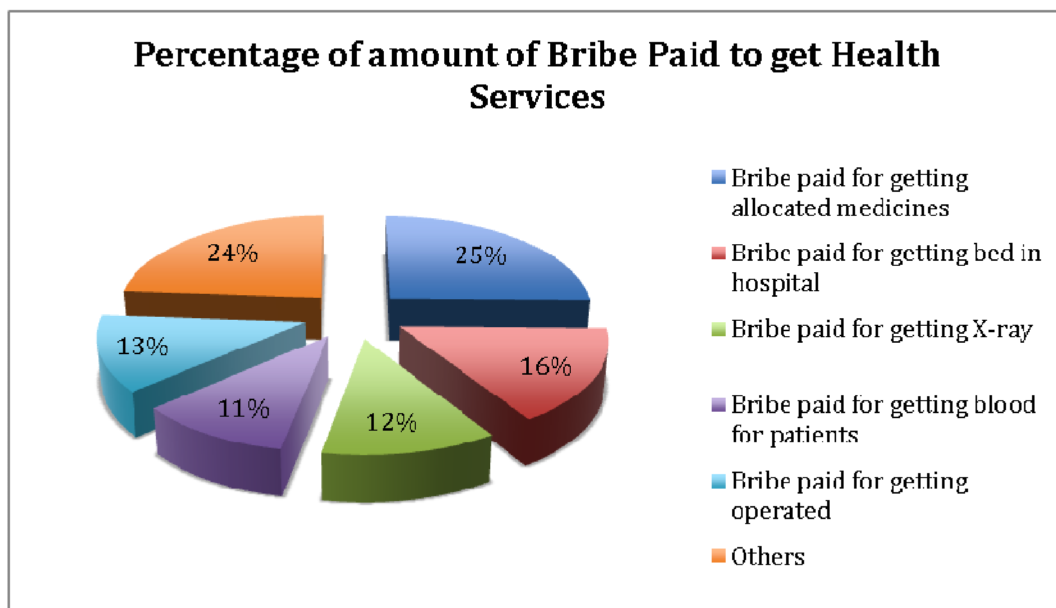
Table 1.4 Amount of Bribe Paid to get Health Services

Money paid to the staff in hospitals	Number of cases	Total amount of bribe in rupees
Bribe paid for getting allocated medicines	47	9950
Bribe paid for getting bed in hospital	23	6200
Bribe paid for getting X-ray	9	4700
Bribe paid for getting blood for patients	10	4200
Bribe paid for getting operated	4	4950
Others	14	9400
Total	107	39400

Source: Author's own calculations based on the survey of Katchi Abadies of Karachi.

Estimation has shown that approximately in forty-seven cases, resident of these slum areas claim to have paid nine thousand nine hundred and fifty rupees to get the urgently needed medicines, which are supposed to be freely available for the patients. In order to get bed for the patient in the hospital people paid nearly six thousand and two hundred rupees in twenty-three cases. Respondents paid four thousand and seven hundred rupees to get the x-ray of the patient in nine cases. Bribe paid for getting blood for patients is estimated to be four thousand and two hundred rupees in only ten cases. There are nearly four cases reported for the bribe payment for getting operated in which respondents claim to have paid four thousand nine hundred and fifty rupees. The respondents for getting the allocated medicines pay the largest percentage of the bribe. The smallest percentage of the bribe paid is for the purpose of getting blood for the patients. For reference please see figure 1.5.

Figure 1.5



1.6.5 Reason for Corruption in the Health Care Services

People living slum areas of Karachi strongly feel that Lack of accountability in the Health Care Services is the major cause of corruption. 36.0 percent respondents say that the Lack of accountability is responsible for corruption (table 1.5). While 21per cent respondents say that lack of transparency is responsible for corruption. Another 30.0 percent think shortages of medical supplies and staff in the hospitals is the major cause of corruption. 24per cent people say low salaries of doctors and nursing staff is responsible for corruption. 11.0 per cent respondents say that power of influential people is responsible for corruption. 16.0per cent persons feel discretionary power of doctors and staff is the main cause for corrupt activities. Another 5.0 percent think lengthy and difficult procedures give rise to corruption.

Table 1.5 Reasons for Corruption in the Health Care Services

No.	Reason	Percentage
1	Lack of accountability is responsible for corruption	36.00%
2	Lack of transparency is responsible for corruption	21.00%
3	Discretionary power is responsible for corruption	16.00%
4	Monopoly power is responsible for corruption	11.00%
5	Low salaries is responsible for corruption	24.00%
6	Power of influential people is responsible for corruption	11.00%
7	Lengthy and difficult procedure is responsible for corruption	5.00%
8	Shortages	30.00%
9	Other factors is responsible for corruption	6.00%

Source: Author's own calculations based on the survey of Katchi Abadies of Karachi

1.7 Empirical Results for the Health Care Services

The results from the regression model of corruption in the Health Care Services are presented in Table (1.6). In the model representing the prevalence of corruption in the Health Care Services, the coefficients of all the five districts are significant and positively related to the incidence of corruption in Health Care Services. However, the people living in the District Malir and District East are more exposed to corruption as compared to the other districts as the value of the coefficients is higher. Household heads who are even graduates are paying bribes to the corrupt officials in the Health Care Services. Health is one of the most essential basic needs of every individual living in any society. Individuals need health services in order to maintain their performance. Therefore even the educated households are paying bribes for obtaining the public health services. The same is true for the households with average family income of sixteen thousand rupees or more. The positive significant coefficient of this variable shows that people with better income and education comprehends the consequence of good health and are thus likely to to pay higher bribes to get the health services. However, households with female head have the significant but negative coefficient. This is may be due to the fact that in these slum areas female heads always try to opt for the money saving alternatives like hakeems and other homeopaths. In addition to this it should also be noted that in the public hospitals all staff including doctors, nurses and others are actively involved in corrupt activities.

Table 1.6 The Regression Model for Corruption in the Health Care Services

Dependent Variable: Bribe Paid by the respondents to the official of the Health Care Services		
Variable	**Coefficient**	**t-Statistic**
Female Head	-0.578*	-1.721
High Income	0.539*	1.679
Graduate	0.798**	2.096
Intermediate	0.162	0.411
Matriculate	0.007	0.019
Junior Staff	0.814***	3.554
Senior Staff	0.558**	1.989
District Central	4.629***	9.726
District East	5.843***	11.336
District Malir	5.114***	9.461
District South	4.706***	9.827
District West	4.289***	8.567
Own House & Plot Size	-0.002	-1.203
Working Family Member	0.049	0.665
R-squared	0.475	n=92
Adjusted R-squared	0.388	

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

1.8 Conclusion

The overall picture of the public health sector in Pakistan requires the immediate attention of the politicians, bureaucrats and policy makers to introduce anticorruption reforms in the basic health policy to prevent the leakages of these scarce resources and to ensure the efficient allocation of financial and human resources. Improvement in the delivery of health services is the dire need to meet the challenges of the twenty first century. To keep up with the increasing demand due to high population growth rates, increasing growth rates need to be complemented with healthy productive human resources. This could be achieved only with good governance and efficient public service delivery mechanism.

Lessons can be learned from the model of the Nigerian economy. The Health sector of Nigeria was suffering from similar ailments as that of Pakistan till 2002. That is the lack of existence of system facilitating the consumers to register their complaints regarding the public health service delivery mechanism. The implementation of the "Partnership in Transforming Health Systems Program" (PATHS) in Nigeria proved to be highly effective in facilitating the consumers by intensifying voice and accountability mechanism related to the health care services. This program can be modified to make it applicable to Pakistani society. In Pakistan efforts have been made to improve governance in recent years. Public sector reforms are introduced to improve the working of the public health systems and local government. The increasing numbers of NGOs have come forward related to the health care services working hand in hand with the public sector in the field of health care. The working of NGOs in Pakistan should be monitored regularly. The active involvement of civil society can assist in promoting the accountability and transparency in the health care sector.

References

Agboatwalla, M. and Niazi T. (2010) 'Extent of Absenteeism in the Health Sector in Pakistan'. TAP Workshop, Washington DC 23rd –26th March 2010.

Antonio, L. et al. (2006) 'Evaluating NGO service delivery in South Asia: Lessons for Afghanistan', Workshop in Public Affairs, International Issues Public Affairs, 860.

Green, C. (2008) 'Strengthening Voice and Accountability in the Health Sector', Nigeria Partnership for Transforming the Health sector (PATHS), London.

Hammer, J.S. and Chaudhery, N.v (2003), "Ghost Doctors: Absenteeism in Bangladeshi Health Facilities". Development Research Group, World Bank. World Bank Policy Research Working Paper 3065, Washington D.C.

Health Policy for the Province of Sindh (2005), Health Care Services Government of Sindh NO: SO (TECH-I) 11-16/2005, Karachi, dated the 07th March 2005. http://www.sindhhealth.gov.pk/portal/ accessed on 16th of June 2012.

Israr, S. and Islam, A. (2006) 'Good governance and sustainability: a case study from Pakistan'. Department of Community Health Sciences, Aga Khan University, Karachi, Pakistan and James P. Grant School of Public Health, BRAC University, Dhaka, Bangladesh.

Mamdani, B. and Lewis M. (2006) "Governance and corruption in public health care systems". Working Paper 78. Center for Global Development, Washington, DC

Mumtaz, Z., et al. (2003) "Gender-based barriers to primary health care provision in Pakistan: the experience of female providers". Health Policy and Planning, 18(3), 261-269.

Social audit of governance and delivery of public services, Baseline survey 2002, National report. National Reconstruction Bureau. Available at http://www.ciet.org/_documents/2006224174624.pdf

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