

AN ANALYSIS OF EQUITY ISSUES IN PUBLIC SPENDING ON MNCH IN PAKISTAN

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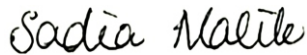
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Declaration

"We have read the research report titled *An Analysis of Equity Issues in Public Spending on MNCH in Pakistan*, and acknowledge and agree with the information, data and findings contained."



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List of Abbreviations

| | |
|------|---|
| BIA | Benefit Incidence Analysis |
| HIES | Household Income and Expenditure Survey |
| LHV | Lady Health Visitor |
| LHW | Lady Health Worker |
| MICS | Multiple Indicators Cluster Survey |
| MNCH | Mother, Newborn and Child Health |
| NCD | Non-Communicable Diseases |
| NFC | National Finance Commission |
| NHA | National Health Accounts |
| PDHS | Pakistan Demographic and Health Survey |
| PIA | Participation Incidence Analysis |
| PRSP | Poverty Reduction Strategy Paper |
| PSLM | Pakistan Standards of Living Measurement Survey |
| THE | Total Health Expenditure |

Executive Summary

A. Objectives of the Study

Health is an important dimension of human well-being and is recognized by many as the ultimate objective of development.¹ It is also an important component of human development which is widely used as a comprehensive yardstick to gauge the development of a country. Within health sector, it is not only the average status of health but also disparities in health outcomes of various population groups that are now considered as indicators of the overall performance of health systems.² The disparities in health outcomes – especially those that are often based upon socio-economic differences and are rectifiable through policy actions³ – are important to reduce because they reflect inequality in opportunities. On the basis of justice and fairness, inequality in opportunities is considered to be more unjust and more undesirable than inequality in incomes.⁴ Income inequality, to a certain extent, is tolerable as it reflects differences in natural abilities, acquired skills and personal efforts. Inequality in health, on the other hand, is much less tolerable simply because it denies the basic capabilities of people to function properly, and thereby creates unequal opportunities. Within health, it is inequality in *child health* – potentially leading to the life time denial of capabilities and opportunities – that is considered to be more unfair than inequality in other dimensions of health. Public policy can be much more effective in tackling inequalities in child health through simple policy actions such as the provision of clean water and sanitation; universal immunization; and basic reproductive health facilities etc. In contrast, there is a relatively limited role of policy in treating adult mortality, especially that which occurs due to individual risky behaviour and unhealthy life style.

Pakistan stands out at the international level not only in terms of its high level of infant and child mortality rate but also in terms of its extremely high levels of within country health inequalities. The analysis of household level datasets such as the Pakistan Standard of Living Measurement (PSLM) survey; Pakistan Demographic and Health Survey (PDHS); and Multiple Indicators Clusters Survey (MICS) reveals large scale spatial and socioeconomic disparities in crucial health indicators related to Mother New-born and Child Health (MNCH).

Health inequalities, in general, arise from disparities in all those factors that determine good health. Foremost among these are socio-economic status; education; and access to health care facilities. In countries such as Pakistan, geographical isolation of the poor may also be an important factor. In general, rural areas are poorly equipped with health and sanitation facilities. Poverty is significantly higher in these areas and therefore health outcomes of people living in rural areas are, on average, poorer than in urban areas.

¹ See e.g. Sen, Amartya (1999)

² See e.g. Gwatkin (2007); Murray et al. (2000); World Health Organization (2005).

³ There are some differences in health outcomes of individuals or population groups that may be attributed to biological or genetic differences or to differences in individuals' health related behaviour and are thereby not significantly rectifiable through policy actions.

⁴ See e.g. Anand (2004).

From a policy perspective, public spending on health that increases the availability of and access to public health care services may serve as a potentially important instrument to reduce disparities in health outcomes. Evidence in the context of Pakistan indicates, for instance, that infant and child mortality is found to be lower in villages that have a community hospital, a dispensary, or any other health facility⁵. Quite the contrary, public spending on health, if spent in an ineffective and inequitable manner, may exacerbate health inequalities. Evidence on many developing countries indicates that public spending on health is not only low but is ineffective and often spent in a manner that disproportionately benefits the rich more than the poor⁶ (see e.g. World Bank, 2004).

In general, the effectiveness of public spending in tackling health inequalities and improving the overall status of health depends upon the following key questions: how much does the government spend on health? On what services and health interventions does it spend its money? What is the resource allocation mechanism across regions? Is public spending equitable? Who benefits from these services? The present study is an attempt to answer these questions, particularly in the context of Mother, New-born and Child Health (MNCH) in Pakistan.

More specifically, the present study provides an in-depth analysis of:

- a) Who benefits from public health spending on MNCH related services in Pakistan? Is the distribution of public health spending pro-poor or pro-rich? This is done through *Utilization Incidence Analysis*, a proxy for *Benefit Incidence Analysis (BIA)* which is the standard approach to evaluate the distribution of public health subsidies across socio-economic groups.
- b) What is the observed pattern in the distribution of public health benefits for MNCH related services in Pakistan between 2007-08 and 2010-11?⁷
- c) What are the key policy insights that arise from our analysis? In particular, we will provide recommendations on how the level and pattern of budgetary allocations on health can be made more *efficient* and *equitable*.

B. Utilization Incidence Analysis of Public Subsidies on MNCH in Pakistan

B.1 Summary of Key Findings

Benefit Incidence Analysis (BIA) is the standard approach employed in the finance and development literature to determine the distribution of benefits from public subsidies across socio-economic groups. Traditionally, when reliable disaggregated national accounts data on government spending by services is readily available, economic benefits are defined in monetary terms. However, this is not always the case as government budget or expenditure data is often unreliable, inconsistent, doubtful, and frequently inadequately disaggregated by region or type of service. To overcome this limitation, many studies especially those in MNCH, use an alternative approach often referred to as the 'Utilization Incidence Analysis (UIA)'. This alternative approach – that is shown by the literature to yield similar, yet much

⁵ Siddiqi S. et al. (2004).

⁶ See e.g. O'Donnell et al. (2007) and World Bank 2004.

⁷ These years pertain to the PSLM data sets available and used in our analysis.

more intuitive results than the traditional approach⁸ - measures benefits in terms of the utilization of public health services. So anyone who uses a public health facility or participates in a public health programme is considered a beneficiary of public subsidies on health. The present study also makes use of this alternative approach.

We focus on seven MNCH related health services: i) pre-natal consultation ii) post natal consultation iii) hospital based maternal delivery iv) Tetanus Toxoid injections for pregnant women v) child immunization services vi) Basic Health Units and vii) Family Planning Units (FPU). These services are selected because data on the utilization of these services by type of facility (public vs. private) is readily available in micro level nationally representative household data collected through the Pakistan Living Standards and Measurement Survey (PSLM). We use both PSLM 2007-08 and recently available 2010-11 data. This allows us to compare the distribution of benefits over these time periods.

Our analysis yields some interesting results:

- We find that in 2007-08, the distribution of benefits from all MNCH related health services that we analysed in our study was pro-rich in varying degrees. More specifically, the share of benefits received by low income groups was less than their share in total population. In contrast, the share of benefits received by high income groups was higher than their respective population shares. The distribution of benefits improved and became pro-poor in many services in 2010-11. This is a positive trend and could be due to many reasons such as the expansion and effectiveness of publicly funded basic health care programmes like the National Programme for Family Planning and Primary Health Care; Expanded Programme of Immunization; Lady Health Worker Programme; and National Maternal Neonatal and Child Health (MNCH) Programme.
- For some services such as post-natal consultation; hospital based maternal delivery; and tetanus toxoid injection for pregnant women, the utilization incidence of public spending remains pro-rich in 2010-11. This is an important finding because, in general, due to higher fertility rates and greater burden of diseases among the poor, the potential users that qualify for MNCH related services are likely to be high amongst poor income groups. Moreover, because of subsidized health services in public health facilities, it is expected that poor income groups would use these facilities more than higher income groups.
- The utilization of Basic Health Units (BHUs) is clearly found to be pro-poor suggesting that increasing the provision of basic health facilities can potentially address the goals of achieving equity in health care and reducing poverty. This finding appears to be consistent with international evidence that shows that in most developing countries, the incidence of public health spending on primary health care facilities is pro-poor whereas that on tertiary care such as hospital services is pro-rich⁹.
- The extent of inequality in the distribution of benefits is higher in some services than in others. In 2007-08, the distribution of benefits from services for post-natal consultation was the most pro-rich followed by hospital based maternal delivery and pre-natal consultation. In 2010-11,

⁸ See e.g. Younger (2000); Gaddah and Munro (2011); Alabi et al (2010); Glick and Razakamanantsoa (2002).

⁹ See e.g. O'Donnell et al. (2007) and World Bank 2004.

the distribution of benefits from prenatal services improved markedly and now shows a pro-poor orientation. The distribution of benefits from post-natal services and maternal delivery also improved in 2010-11 but still remains pro-rich in most regions. Interestingly, the distribution of benefits from TT injections worsened in 2010-11. The distribution of benefits from immunization services remained, by and large, relatively equal. In general, the utilization of services that fall within the purview of basic health facilities such as immunization, BHUs, and prenatal consultation were relatively more equitably distributed than specialized services such as hospital based maternal delivery.

- At the provincial level, we find that the extent of inequality in the distribution of benefits is much higher in Balochistan and to some extent in Punjab compared to the rest of the two provinces. The plausible reasons for this finding are discussed in section C.1.5 below.
- In terms of *progressivity*, our findings indicate that the utilization incidence of almost all MNCH related services is progressive in Pakistan at the national and provincial level. This indicates that the benefits in terms of utilization of MNCH related public services are more equally distributed than the distribution of income implying that investment in MNCH related public health services can help reduce income inequality.
- Finally, our estimates of overall participation rate of MNCH related public health services indicate that the overall uptake of these services in a public facility is low particularly for hospital based maternal delivery, post natal consultation, and prenatal consultation. For prenatal consultation, only 26 per cent of the total women who qualified for the service utilized public health facility in 2010-11. For postnatal consultation, this ratio is as low as 8 per cent. For hospital based maternal delivery, only 13 per cent of women who qualified for this service actually used the public health facility. The low participation could either be due to low *overall* demand for health services owing to economic, cultural, and religious factors¹⁰ or due to low demand for *public* health services in particular.

C. Policy Implications

C.1 Policy Insights from Utilization Incidence Analysis

Based upon our empirical findings from Utilization Incidence Analysis, as present above, we recommend the following policies:

C.1.1 Expand basic reproductive health facilities

Our findings indicate that the distribution of benefits from public health spending on some MNCH related services such as post-natal consultation and hospital based maternal delivery are pro-rich. This could be due to both demand side factors such as inability to pay for access costs which are higher

¹⁰ The overall utilization of any health facility, public or private, is woefully low in Pakistan. According to PSLM 2010-11, only 28 per cent of the mothers used a medical facility for post-natal consultation. Similarly, in case of maternal delivery, around 58 per cent of births are still delivered at home. 29 per cent of the total births are delivered in private health facilities and only 12 per cent are delivered in public health facilities.

especially for maternal delivery; or due to supply side factors such as inadequate availability of emergency obstetric care especially in remote rural areas where majority of the poor reside. The government can achieve equity by expanding the availability of basic reproductive health facilities such as trained midwives and lady health workers across rural and urban areas. The national MNCH programme, that aims to increase the proportion of deliveries by skilled birth attendants, can go a long way - if implemented effectively – in achieving equity in maternal health outcomes.

C.1.2 Increase resource allocation for MNCH in hospital based services

Hospital based facilities for obstetric care and other MNCH related services need to be expanded as well. At present budgetary allocations for MNCH within hospital based services is extremely meagre. For example, disaggregated data on budgetary allocations obtained from PIFRA (Project to Improve Financial Reporting and Auditing) in Pakistan shows that only 0.1 per cent of the total Ministry of Health's budget for hospital services was allocated for MNCH related services in 2010-11¹¹.

C.1.3 Improve targeting of hospital based maternal services

Since hospital based maternal delivery is found to be pro-rich, public spending on these services need to be targeted effectively towards the poor. This can be accomplished, for example, through a voucher scheme that provides free or subsidized treatment to women below the poverty line. One such program called *Chiranjeevi* Scheme was implemented effectively in the Indian state of Gujarat. Evaluation of this scheme showed that this voucher program was effective in reducing financial barriers for the poor and in averting substantial number of maternal and neo-natal deaths¹². Similarly, Sri Lanka that had an unacceptably high MMR of more than 500 maternal deaths per 100,000 live births in 1950s, was able to achieved dramatic reductions in its MMR though political will to invest in MNCH; provision of free services to those who were not able to pay; expansion of coverage of skilled birth attendants and expansion of emergency obstetric care. It is important to note that the country first focussed on expanding primary health care facilities first and then moved towards hospital based care¹³. Pakistan has also recently introduced a health insurance scheme for the poor through Benazir Income Support Programme (BISP) which appears to be a step in this direction.

C.1.4 Continue to expand Basic Health Units (BHUs)

Our findings indicate that the distribution of utilization from Basic Health Units (BHUs) is pro-poor. This is consistent with evidence from other developing countries that shows that public spending on basic health services is pro-poor whereas that on curative hospital care is pro-rich¹⁴. At present, government spending on health care in Pakistan is heavily tilted towards specialized hospital care leaving little

¹¹ There are five major functional classifications of Ministry of Health's budget according to PIFRA. These include: Medical Products, Appliances and Equipment; Outpatient Services; Hospital Services; Public Health Services; R&D Health; and Health Administration. These categories are further divided into minor functions. For example, hospital services are further categorized into General Hospital Services; Special Hospital Services (mental hospitals); Medical and Maternal Services; and Nursing and Convalescent Home Services. The budgetary data obtained from Ministry of Health does not show any allocation for 'Nursing and Convalescent Home Services.' 'Medical and Maternal Services' account for 0.1 percent of the total budget classified under 'hospital services.'

¹² See e.g Bhat et al. (2007).

¹³ See e.g. Pathmanathan et al (2003).

¹⁴ O'Donnell et al. (2007) and World Bank 2004.

resources for basic health facilities. While curative health care is relatively expensive thereby justifying higher budgetary allocations, additional resources may be mobilized allowing for more spending on basic health facilities. In order to ensure that additional resources are used effectively, governments at provincial level may also consider providing conditional health insurance or vouchers that enable low income households to procure these services from public as well as private sector. This can increase the efficiency as well as equity of public health spending.

C.1.5 Increase budgetary allocations and improve targeting of public health subsidies in Balochistan

Our empirical findings indicate that the extent of inequality in the distribution of public health benefits is higher in Balochistan with benefits from most services captured by the rich rather than the poor. This could be an indication of poor governance and institutional weakness in public service delivery in the province. It could also be due to deteriorating law and order situation and sparse availability of public health services due to which poor people especially those who live in remote areas are not able to bear access costs related to transportation (Balochistan is the largest province in terms of area and has low population density). PSLM 2007-08 data shows that 47 per cent of the households interviewed in Balochistan did not have access to public health care services. This can be addressed by the province through increasing its overall allocation for health services. This may not be very cost effective - given the peculiar terrain and low population density in Balochistan - but at the same time may have huge dividends in terms of achieving equity and reducing poverty. Balochistan has one of the worst health indicators¹⁵ and on the basis of equity, more resources per capita need to be allocated for health services in this province. At the same time, it is equally important to improve the law and order situation in the province and improve governance of public services delivery so as to target these resources effectively towards the poor.

C.1.6 Demand side interventions must accompany the expansion in supply of public health services

Finally, our findings reveal an extremely low overall participation in public health services utilization particularly for prenatal consultation; postnatal consultation; and hospital based maternal delivery. This underscores the need for demand side interventions that help boost the overall uptake of these services. These interventions could range from raising awareness and increasing literacy to reducing access cost and improving the quality of public health services delivery.

C.2 General Recommendations

C.2.1 Increase overall budgetary allocations for health

The overall budgetary allocations for health in Pakistan are quite low compared to other developing countries that are at similar stages of development and have an epidemiological and demographic profile that is similar to or even better than Pakistan. As percentage of GDP, public spending on health has never exceeded 0.7 per cent and this percentage has been dwindling over time. In other countries

¹⁵ According to Pakistan Living Standards Measurement Survey (2007-08), infant mortality is highest in Baluchistan. Pakistan Demographic and Health Survey (2006-07) indicates that maternal mortality ratio in Baluchistan is 785 per 100,000 which is significantly higher than other provinces.

of the region such as India and Bangladesh, the corresponding percentage is 1.2 and 1.3 per cent respectively and has remained at this level between 2008 and 2010.¹⁶ No doubt, Pakistan is seriously off track in achieving the MDG Goal 4 of reducing 'Infant Mortality Rate' and lagging on 'Under-Five Mortality Rate' and 'Maternal Mortality rate.'¹⁷

Public spending on health is considered as pro-poor in Pakistan and is monitored and reported under the Poverty Reduction Strategy Programme (PRSP). Although poverty reduction has been an overarching goal of successive governments in Pakistan, public contribution in financing health of its population remains extremely limited. Around 72 per cent of the total health expenditure is financed by private sources out of which 92 per cent are out of pocket expenses.¹⁸ This feature of health care finance in Pakistan puts many households, especially those belonging to marginalized groups, into a vulnerable situation. A sudden illness, accident or medical emergency can push many households - especially those who do not have any assets to fall back upon - below the poverty line. According to a study conducted by the Planning Commission¹⁹, economic shocks related to health care expenditure are the most common shocks faced by households in Pakistan. Under this scenario, the overall increase in budgetary allocations for health need to be considered as the first step toward reducing poverty and achieving equity in health outcomes.

C.2.2 Increase efficiency and equity in public health sector spending

In terms of existing pattern of allocation of health sector budget across regions and across sectors, there is considerable room to improve the efficiency and equity of these allocations. To improve efficiency, public spending needs to be allocated for those subsectors and interventions that matter the most and have the biggest impact on mortality rates. Maternal and perinatal conditions have been identified as one of the leading causes of mortality in Pakistan²⁰ but attract less than 0.2 per cent of the total budgetary allocations on health²¹. The chunk of the budget is spent on specialized hospital and curative care (71.75 per cent). Although hospital care is important to treat maternal and perinatal conditions, yet existing allocations within hospital care shows a meagre amount being allocated for MNCH related services. Disaggregated data on budgetary allocations obtained from PIFRA (Project to Improve Financial Reporting and Auditing), shows that out of a total of Pak Rs. 905 million budgeted for hospital care in 2010-11, MNCH receives Pak Rs. 0.9 million which is merely 0.1 per cent of the total allocation for hospital care.

Infectious diseases such as diarrhoea, pneumonia and ARI are other leading causes of mortality especially among children under five years of age.²² These diseases can be prevented effectively through basic public health measures aimed at improving nutrition; creating awareness on hygiene and other

¹⁶ World Bank, World Development indicators.

¹⁷ See e.g. Millennium Development Goals Report prepared by Planning Commission of Pakistan

¹⁸ National Health Accounts of Pakistan (2007-08).

¹⁹ See Government of Pakistan (2007).

²⁰ See e.g. Pakistan Demographic and Health Survey (2006-07) and Draft National Health Policy of Pakistan (2009).

²¹ Poverty Reduction Strategy Paper (PRSP) – II Period Progress Report FY 2008/09 – FY 2010/11

²² See e.g. Pakistan Journal of Medical Association (2009) and Pakistan Demographic and Health Survey (2006-07).

public health matters; immunization programmes; and improving sanitary conditions etc.²³. According to Poverty Reduction Strategy Programme (PRSP), currently around 20 per cent of the total budget on health sector is devoted to “Health Facilities and Preventive Measures.” This category includes primary health care facilities such as rural health centres, basic health units, dispensaries, first aid posts, mother and child health centres, programmes such as Lady Health Worker Programme; Malaria Control Programme; Tuberculosis and HIV/AIDS Control Programme; National Maternal and Child Health Programme; the Expanded Programme on Immunisation; Food and Nutrition Programme. Our empirical findings from Utilization Incidence Analysis show that poor tend to use basic health facilities more than the rich. Increasing budgetary allocations on this category is therefore likely to enhance both the efficiency as well as equity in public health spending.

C.2.3 Integrate MNCH programmes into income support programmes

The social protection initiatives in Pakistan can be strengthened by integrating MNCH and other programs aimed at addressing nutritional deficiencies, with the income support programs. The social health protection initiatives implemented through Benazir Income Support Programme (BISP) have been designed to address MNCH as well. Integrating MNCH related programmes with income support programmes can potentially increase the effectiveness of all programmes involved. Such integrated programmes are effectively run in developed countries like U.S through basic and primary health care units.

Malnourishment is a serious problem in Pakistan and is often linked to socio-economic deprivation. A carefully designed social protection measure, aimed at improving the nutrition of women and children along with the provision of affordable health care services, can not only reduce poverty but is also likely empower women and address her nutritional needs through its implementation design. These health and nutrition programmes can be implemented through the Basic Health Units (BHUs). Pregnant women can visit the nearest Basic Health Unit, which can benchmark their health indicators and start providing them vouchers for food supplements. These vouchers can be exchanged for staple foods such as wheat, pulses, milk, and eggs at designated stores who can surrender those vouchers to the public health agency for cash compensation. This can ensure delivery of food items to households at affordable cost in a dignified manner and for intended purposes only. The nutritional interventions for mothers can continue until weaning thereby encouraging breastfeeding and subsequent birth control. As soon as the mother stops breastfeeding, the baby may qualify for vouchers up till the age of 5.

Such programs can also be used to provide an opportunity to raise awareness; deliver EPI; health related education; and family counselling services at the BHU level. Since the incentive (vouchers) for showing up is in place, the costs of delivering and monitoring EPI from door to door can be reduced. The maintenance of health records at local BHU can help in tracking those who do not complete immunization and can be approached by social mobilizers or mobile teams. The implementation design of such a broad based programme may further increase the effectiveness of BHUs in delivering preventive health care in Pakistan.

²³ See e.g. Bhutta et al. (2008).

C.2.4 Promote equity in regional allocation of public health resources

In terms of regional allocation of health sector budget, more resources need to be allocated towards regions that have poor health indicators and where the ability to pay for health care is low. After the recent enactment of National Finance Commission (NFC) award, health is now a provincial subject in Pakistan. Within provinces, there are significant spatial disparities. For instance, in Punjab, the southern districts have higher poverty and poor human development indicators. In order to achieve equity, provinces should take district level poverty and human development indicators while distributing resources at the inter-provincial level. Regions that show poorer health status and a greater proportion of marginalized population should receive more funds per capita than others.

C.3 A Way Forward: Future Directions for Research

By highlighting some critical issues in health care finance for MNCH in Pakistan, the present study can be seen as paving way for future research in this area. It creates some questions that can be addressed in future studies in this area. For instance, now that we know that benefits from many public health services in Pakistan are unequally distributed in favour of high income groups, as a next step, it would be worthwhile to investigate the major factors that lie behind such a pro-rich pattern. Is it because of poor health seeking behaviour in general among low income households (that may be due to low literacy and awareness and higher opportunity cost of seeking care)? Is it because poor income groups prefer private health care services to public services? Or is it because of low availability of health care services in regions where majority of the poor reside? These are important questions, the answers to which can be sought through a decomposition analysis of the factors contributing to inequality in the distribution of benefits from public health subsidies on MNCH in Pakistan.

An Analysis of Equity Issues in Public Spending on MNCH in Pakistan

1. Introduction

Health is an important dimension of human well-being and is recognized by many as an *end* as well as *means* of development. It is also an important component of human development which is now widely used as a comprehensive yardstick to gauge the development of a country. Within health sector, it is not only the average status of health but also health inequalities that are increasingly being considered as indicators of the performance of health systems (See e.g. Gwatkin, 2007; Murray et al., 2000; World Health Organization, 2005).

What is Health Inequality?

Health inequality is generally defined as differences or disparities in health outcomes of individuals or various population groups classified on the basis of socio-economic status, gender, ethnicity, occupation, or area of geographic residence etc. There are some differences in health outcomes of individuals or population groups that may be attributed to biological or genetic differences or to differences in individual's health related behaviour and are thereby not rectifiable through policy actions. According to Pan American Health Organization, health inequity is a subset of overall health inequality and refers to those inequalities that are deemed to be unfair and can be rectified through policy actions (Pan American Health Organization, 2001). Since most variations in health outcomes have been found to be due to socio-economic differences and are unrelated to biological and behavioural factors, it is considered safe to use the term 'health inequality' in place of 'health inequity.'

Why do health inequalities matter?

Population averages of health status often mask widespread disparity in health outcomes across population groups classified on the basis of socio-economic status, gender, ethnicity and area of geographical residence etc. Countries with similar levels of average health indicators may differ significantly in terms of health inequality within their countries. Health inequality is increasingly being recognized as a distinct dimension of the weak performance of health systems. It is considered to be an undesirable feature according to the principles of justice and fairness. In fact, it is considered to be more unfair and less tolerable than inequality in income. This is because inequality in health invariably leads to unequal opportunities and in terms of fairness, it is inequality in opportunities that is deemed more unfair than inequality in income per se. Income inequality, to a certain extent, is tolerable as it reflects differences in natural abilities, acquired skills and personal efforts. Inequality in health, on the other hand, is much less tolerable simply because it denies the basic capabilities of people to function properly, thereby creating unequal opportunities.

Why do inequalities in MNCH matter more than inequalities in other dimensions of health?

There are two concrete reasons why inequalities in Mother and New-born Child Health (MNCH) should be considered more unfair - and thereby more undesirable - than inequalities in other dimensions of health status. Firstly, early childhood development affects health and achievement throughout the life course of a human being. Malnutrition and the prevalence of infectious childhood diseases such as malaria, diarrhoea, ARI and pneumonia reduce school attendance among children and hamper their cognitive development and physical growth. This reduces their opportunities to fulfil their cherished goals later on in life. If inequality in health reflects inequality in opportunities, then it is the inequality in child health – leading to a denial of life time opportunities for some – that deserves more attention than inequalities in adult or old age mortality rates (see e.g. Anand et al. 2004). That is also one reason why early death and disability is given more weight in the estimation of disability adjusted life years (DALYs) and healthy life years (HLYs).

Secondly, from a policy perspective, when we talk about inequities in health, we mean those inequalities in health that are caused by socio-economic differences and can be rectified through policy actions. As pointed out earlier, some inequalities in health outcomes may arise due to differences in genetics and risky human behaviour that cannot be rectified much through policy action. Child and maternal mortality qualify for such health dimensions that can be treated through simple policy actions such as the provision of clean water and sanitation; universal immunization; and basic reproductive health facilities etc. In contrast, there is a relatively limited role of policy in treating adult mortality especially that which occurs due to individual's risky behaviour and unhealthy life style choices. Finally, on humanitarian grounds, one can hardly think of any other injustice that is graver than the ultimate injustice of mothers dying to give life.

What is the status of Health Inequalities in Pakistan?

Pakistan stands out at the international level not only in terms of its high level of infant and child mortality rate but also in terms of its extremely high level of within country health inequalities. The index of inequality of child survival rates computed by WHO²⁴ in 2000 places Pakistan within the top 10 countries (out of a total of around 180 countries) with the highest level of health inequality. Obviously, within South Asia, Pakistan turns out to be the country with the highest value of the index of inequality in child survival rate: 0.54 compared to 0.40 in India; 0.31 in Bangladesh; and 0.17 in Sri Lanka.

The analysis of Pakistan Demographic and Health Survey (PDHS) shows huge disparity in terms of the prenatal and postnatal utilization of care: only 37 per cent of the women from bottom wealth quintile²⁵ receive prenatal care from a skilled health care provider compared to 92 per cent of the women in the top wealth quintile who receive such care (National Institute of Population Studies, 2008). Similarly, only 12.4 per cent of the women in bottom quintile (lowest 20 per cent income earners) have their delivery in a health facility compared to 73.8 per cent of the corresponding women in top wealth quintile. Large

²⁴ WHO (2000).

²⁵ A quintile refers to five equal parts into which a statistical sample can be divided. In case of income distribution it refers to five income groups ranging from lowest 20 per cent to highest 20 per cent.

scale spatial disparities also exist in MNH indicators. The Multiple Indicators Cluster Survey (MICS) of Pakistan conducted by UNICEF and the Government of Punjab (2007)²⁶ for instance, reveals large scale spatial inequality in child mortality across various districts and rural/urban areas of Punjab. Child mortality varies from 170 in the southern district of Bahawalpur to 52 (per 1,000) in the northern district of Rawalpindi. It varies from 126 in rural areas to 76 in urban areas. The same data source (MICS) reveals that child mortality in the lowest wealth quintile is three times higher than in highest wealth quintile.

What causes health inequalities?

Health inequalities, in general, arise from disparities in all those factors that determine good health. Foremost amongst these are income and education. Higher income households are able to afford better food and health care facilities. Poor households cannot afford adequate food and medical care. They often live in areas with poor environmental and sanitary conditions and are thereby more prone to infectious diseases. Similarly education, particularly among females, leads to better health outcomes by creating greater awareness of hygiene, sanitation and nutrition. In section 2, we provide evidence on socio-economic differences in health outcomes between various population groups classified on the basis of income, education and area of geographical residence: the prevalence of disease and poor health outcomes in Pakistan is much higher in population groups with lower income and less education.

Health inequalities also arise due to differences in the area of geographical residence. In developing countries such as Pakistan, rural areas are poorly equipped with health and sanitation facilities. Poverty is significantly higher in these areas and because of differences in living conditions between rural and urban areas, health outcomes of people living in rural areas is, on average, poorer than in urban areas. In many developing countries such as Pakistan, India and Bangladesh, there is a great deal of inter-provincial and inter-regional disparity in terms of socio-economic conditions. Infrastructure, roads, hospitals and health care facilities are unevenly distributed across regions. These disparities in living standards and social indicators lead to different health outcomes across provinces and districts. Again, section 2 provides evidence on regional inequality in health indicators in the context of Pakistan.

Ethnicity, race and religion are other prominent factors that lead to health inequality. There are two reasons why ethnic origin may be considered as one of the determinants of health inequality: First, there may be genetic differences in the health of people belonging to different races. Second, in some countries, people of some ethnic origin are more deprived compared to others. In U.S. for instance, the life expectancy at birth of Native American males in some counties is 56 years while that of Asian American women in other counties is above 95 years (Murray, Gakidou, and Frenk, 1999). Similarly in South Africa, infant mortality is five times higher among blacks than among whites (Evans, Whitehead, Diderichsen, Abbas, and Wirth, 2001). Disparities in health based upon ethnic origin have also been observed in other countries such as Peru, Sri Lanka and Thailand (e.g., Braveman and Tarimo, 2002).

In some countries, caste and religion may also be a factor behind health inequalities. In India for instance, people of certain castes such as scheduled castes and scheduled tribes, as well as people of certain religions have poor health outcomes (see e.g. Bhattacharya et al., 2011). Health inequalities

²⁶ A new round is underway, but the data set and results may not be available sooner.

between males and females may arise due to gender discrimination and differences in the socio-economic status of males and females. Differences in the utilization of health services may also lead to differences in health outcomes. Again, health care utilization depends upon both demand side factors such as income; education; and cultural and religious factors as well as supply side factors such as the availability of health care facilities within a reasonable distance; and the quality of health care service provided.

What is the role of public health spending in influencing health inequalities?

Both the level as well as the allocation of public spending on health, across sectors and regions, has a great bearing on socio-economic and regional disparities in health outcomes. Empirical studies across countries find that in many countries, public spending on health reduces health inequalities by benefitting the poor more than the rich (see e.g. World Bank, 1995; Bidani and Ravallion, 1997; Gupta et al., 2003; Houweling et al., 2005). In many other countries, however, the resource allocation and utilization mechanisms are such that they end up exacerbating rather than reducing health inequalities. World Bank (2004), for instance, argues that the pattern of public spending on health in some countries is such that the major share of public spending is directed towards specialized hospitals in urban centres, the beneficiaries of which are the rich, while very little is spent on preventive and curative care utilized by the rural poor. Doorslaer (1993) studies health care financing in five countries including Peru, Cote d'Ivoire, Ghana, Bolivia and Jamaica and finds that the allocation of funds by the Health Ministries favours urban, hospital based care and under-serves the rural population. In Ghana, two-thirds of the health budget is spent on hospital services. In South Africa, 89 per cent of the health care budget is spent on hospitals and in Madagascar and Kenya, this share is more than 50 per cent (Castro-Leal, Dayton, Demery, and Mehra, 2000).

In short, the critical questions that determine the impact of public health spending on health inequality are: how much a government spends on health? On what services does it spend its money on? What is the resource allocation mechanism across regions? Who benefits from these services? And how efficiently and transparently, public health spending is utilized? This report will answer these questions, particularly in the context of mother and child health in Pakistan.

What is this study about? Objectives and organization of the study

The key objectives of the study are to:

- a) Present evidence on socio-economic and regional disparities in health outcomes particularly Mother, New-born and Child Health in Pakistan (MNCH) and to compare the extent of these inequalities with the neighbouring countries;
- b) Critically analyse the level and pattern of resource allocation on health, in general, and on MNCH in particular in Pakistan. More specifically, we will examine the implications of these allocation patterns on health inequalities in Pakistan. We will examine how investing more in MNCH and targeting these public subsidies effectively towards the marginalized groups can promote simultaneously, the two central goals of public finance which are i) to achieve efficiency and ii) achieve equity in public health spending;

c) Conduct a Utilization Incidence Analysis of public spending on MNCH related health services so as to determine whether public spending on MNCH, at present, in Pakistan is being effectively targeted towards the poor; and

d) Provide policy recommendations on the basis of the findings of our analysis and point out future directions for research.

The report is organized as follows: section 2 presents the standard methodologies followed by development practitioners to measure health inequalities across countries and provides evidence on health inequalities in Pakistan. Section 3 analyses the level and pattern of public health spending across sub-sectors and regions in Pakistan and discusses the possible repercussions of these allocations on health inequality in Pakistan. Section 4 presents the methodology of measuring the incidence of public health spending across socio-economic groups; reviews relevant studies conducted in other parts of the world; and presents empirical results in the context of MNCH related services in Pakistan. Chapter 5 concludes and presents policy recommendations in light of the key findings of our study.

2. Measurement and Evidence of Health Inequalities

The most simple and straightforward way to gauge socio economic disparities in health is to categorize the population into socio-economic groups (these socio-economic groups may be classified on the basis of income, consumption, assets or education level) and then estimate the value of the health variable for each population group. In general, household level data such as Living Standards Measurement Surveys or Demographic and Health Survey are used for this purpose. Table 2.1 below presents socio-economic disparities in under-five mortality rate by place of residence (rural vs. urban); income; and by educational level of mother in South Asia. As is evident from the table, significant disparities in health outcomes of children exist according to the socio-economic criteria used. Under-five mortality rate in the poorest 20 per cent of the population is twice that observed amongst the richest 20 per cent of the population. Similarly, the mortality rate observed in households with women having least level I of education is twice that found in households where women have the highest level of education. A great deal of disparity is also observed in mortality rates in rural vs. urban areas.

Table 2.1: Socio-economic Inequalities in Under-Five Mortality Rate in South Asia (2006-07)

| | Under five mortality rate (probability of dying by age 5 per 1000 live births) | | | | | | | | |
|-------------------|--|-------|-------------------|-----------------|---------|----------------------|-----------------------------|---------|----------------------|
| | Place of residence | | | Wealth quintile | | | Educational level of mother | | |
| | Rural | Urban | Ratio rural-urban | Lowest | Highest | Ratio lowest-highest | Lowest | Highest | Ratio lowest-highest |
| South Asia | 76.6 | 54.4 | 1.4 | 90.2 | 42 | 2.1 | 88.2 | 41.4 | 2.46 |
| Pakistan | 100 | 78 | 1.3 | 121 | 60 | 2 | 102 | 62 | 1.6 |
| India | 94 | 61 | 1.5 | 118 | 39 | 3 | 106 | 49 | 2.2 |
| Maldives | 28 | 23 | 1.2 | 28 | 21 | 1.4 | 47 | 12 | 3.8 |
| Nepal | 84 | 47 | 1.8 | 98 | 47 | 2.1 | 93 | 32 | 2.9 |
| Bangladesh | 77 | 63 | 1.2 | 86 | 43 | 2 | 93 | 52 | 1.8 |

Note: Data on India corresponds to 2005-06. Data on Sri Lanka is not available.

Source: World Health Statistics 2011, World Health Organization

Table 2.2 reports the socio-economic disparities in births attended by skilled health personnel. The figures show significant socio-economic disparities in Pakistan with 60 per cent of the population in urban areas using skilled birth attendance compared to 30 per cent of the corresponding population in rural areas and 77 per cent in the top income group using skilled birth attendance compared to only 16 per cent in the bottom income group.

Table 2.2: Socio-economic Disparities in Births Attended by Skilled Health Personnel in South Asia (2006-07)

| | Births attended by skilled health personnel (%) | | | | | | | | |
|-------------------|---|-------|-------------------|-----------------|---------|----------------------|-----------------------------|---------|----------------------|
| | Place of residence | | | Wealth quintile | | | Educational level of mother | | |
| | Rural | Urban | Ratio urban-rural | Lowest | Highest | Ratio highest-lowest | Lowest | Highest | Ratio highest-lowest |
| South Asia | 38.6 | 64.2 | 2.14 | 27 | 74.8 | 6.56 | 31 | 66.8 | 3.8 |
| Pakistan | 30 | 60 | 2 | 16 | 77 | 4.8 | 27 | 74 | 2.8 |
| India | 37 | 73 | 2 | 19 | 89 | 4.6 | 26 | 75 | 2.9 |
| Maldives | 94 | 99 | 1.1 | 90 | 99 | 1.1 | 86 | 99 | 1.2 |
| Nepal | 19 | 52 | 2.8 | 5 | 58 | 12 | 11 | 53 | 4.7 |
| Bangladesh | 13 | 37 | 2.8 | 5 | 51 | 10.3 | 5 | 33 | 7.4 |

Note: Data on India corresponds to 2005-06

Source: World Health Statistics 2011, World Health Organization

Table 2.3 shows socio-economic disparity in measles immunization coverage in South Asia. Since in most South Asian countries, immunization facilities against some diseases including malaria is provided at a subsidized rate or free of cost by the government, we do not observe a very high disparity in the coverage across socio-economic groups. In Pakistan however, the figures show a higher disparity than the South Asian average.

Table 2.3: Socio-economic Disparities in Measles Immunization Coverage in South Asia (2006-07)

| | Measles immunization coverage among 1-year-olds (%) | | | | | | | | |
|-------------------|---|-------|-------------------|-----------------|---------|----------------------|-----------------------------|---------|----------------------|
| | Place of residence | | | Wealth quintile | | | Educational level of mother | | |
| | Rural | Urban | Ratio urban-rural | Lowest | Highest | Ratio highest-lowest | Lowest | Highest | Ratio highest-lowest |
| South Asia | 74.4 | 82.4 | 1.14 | 65 | 87.8 | 1.52 | 66.8 | 89 | 1.44 |
| Pakistan | 56 | 69 | 1.2 | 36 | 76 | 2.1 | 51 | 81 | 1.6 |
| India | 54 | 72 | 1.3 | 40 | 85 | 2.1 | 41 | 80 | 2 |
| Maldives | 95 | 94 | 1 | 96 | 94 | 1 | 90 | 95 | 1.1 |
| Nepal | 85 | 89 | 1.1 | 73 | 95 | 1.3 | 78 | 99 | 1.3 |
| Bangladesh | 82 | 88 | 1.1 | 80 | 89 | 1.1 | 74 | 90 | 1.2 |

Note: Data on India corresponds to 2005-06

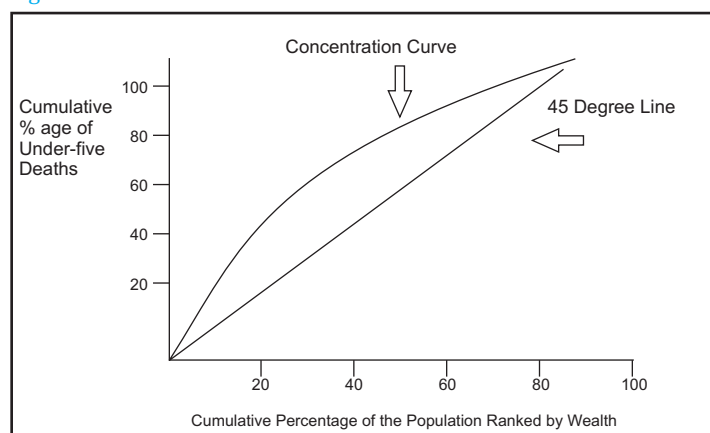
Source: World Health Statistics 2011, World Health Organization

2.1 The Concentration Curve and Index

The data on socio-economic inequalities in health presented above in the form of tables can also be presented graphically in the form of a concentration curve. This is typically done to present income related inequalities in health in a graphical form. The concentration curve plots the share of the health variable on the vertical axis against the population classified on the basis of living standards (income or consumption quintiles) measured on the horizontal axis beginning with the poorest and ending with the

richest. If the value of the health variable is the same for all population groups, the concentration curve will simply be a 45° line running from the bottom left hand corner to the top right hand corner. If on the other hand, the value of the health variable is disproportionately concentrated among the poor, the concentration curve will lie above the 45° line. In case the value of the health variable is disproportionately concentrated among the rich, the concentration curve will lie below the 45° line.

Figure 2.1: Concentration Curve: An Illustration



The concentration curve merely tells us whether or not inequality in health exists. It does not give us a summary measure of the degree of inequality that can be compared across countries. For this purpose, the concentration index – a summary measure that is closely related to the concentration curve – is used. Theoretically, it is defined as twice the area between the concentration curve and the 45° line. The value of the index lies between -1 and +1. If the variable measured on the y-axis is an ill health variable such as child mortality, the value of the index will typically be negative indicating a disproportionate concentration of the ill-health variable among the poor. If the value of the index is 0, the concentration curve coincides with the 45° line and there is no inequality. Table 2.4 presents the estimates of concentration index computed for under-five mortality rate in selected South Asian countries. The absolute value of the concentration index for Pakistan increased between 1990 and 2006-07. Its latest estimate of 0.124 is less than the latest estimate for India but greater than those of Bangladesh and Nepal.

Table 2.4: Recent Estimates of Concentration Indices for Under-Five Mortality Rate in South Asian Countries

| Countries | Survey Years | Concentration Index (Under Five Mortality Rate) |
|------------|--------------|---|
| Pakistan | 1990-91 | -0.089 |
| | 2006-07 | -0.124 |
| India | 1992-1993 | -0.171 |
| | 2005-06 | -0.178 |
| Bangladesh | 1999-2000 | -0.126 |
| | 2004 | -0.099 |
| Nepal | 1996 | -0.095 |
| | 2006 | -0.115 |

Source: Save the Children (2010)²⁷

2.2 Socio-economic and Regional Inequality in MNCH related Indicators in Pakistan: Estimates from Household Data

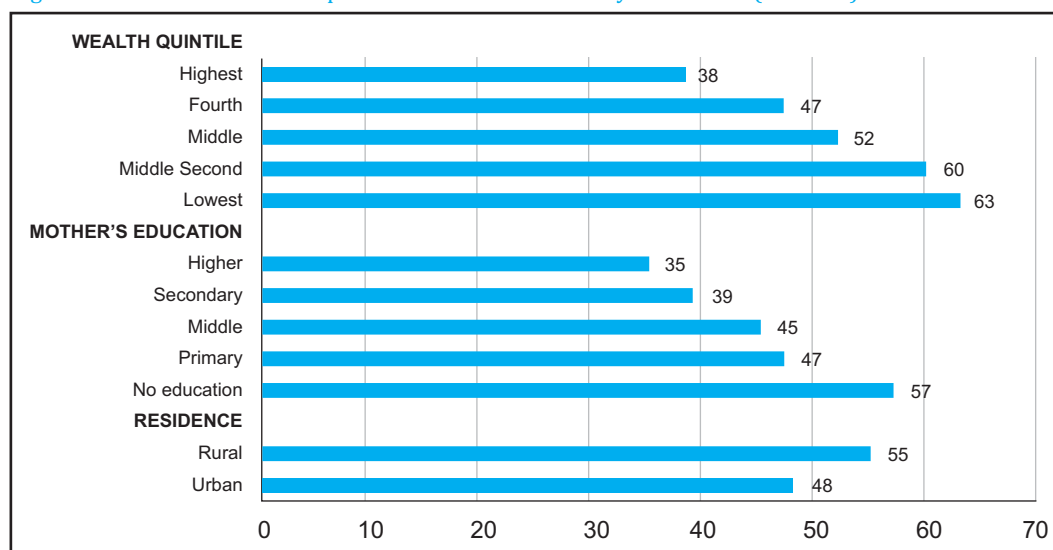
In this section, we present evidence on socio-economic and regional disparities in mother, new-born and child health indicators in Pakistan. When possible, latest available data is utilized for this purpose. Data on socio-economic disparities in health services is also presented.

2.2.1 Disparities in Child Health Indicators in Pakistan

According to the Pakistan Demographic and Health Survey (PDHS) 2006-07 data, a great deal of socio economic disparities are observed in mortality rates among children. Various age-specific rates have been used to express the infant and child mortality. **Neonatal mortality**, which is the possibility of dying within the first month of life, varies in Pakistan across different wealth quintiles, level of education, income and place of residence. It can be seen that the neonatal mortality rate increases from 38 in the highest quintile to 63 per 1000 lives in the lowest wealth quintile.

On the basis of mother's level of education, the same can be observed. Neonatal mortality amongst women with no education is 10 percentage points higher than those with primary education (see figure 2.2)

Figure 2.2: Socio-Economic Disparities in Neonatal Mortality in Pakistan (2006-07)



Source: PDHS 2006-07

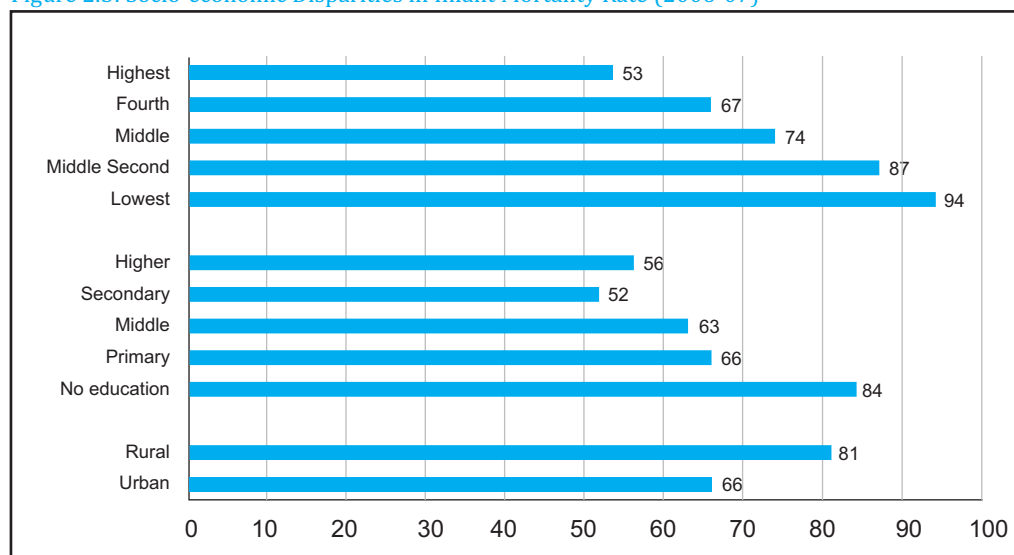
Socio-economic differentials also exist in **infant mortality rates**, a ratio which measures infant deaths before the first birthday per 1000 live births. The infant mortality rate increases with increasing level of income. The rate increases by almost 41 percentage points as we move to from the wealthiest quintile to lowest quintile. The rate of infant mortality is also associated with the mother's level of education.

²⁷ Save the Children, 2010. "Inequalities in Child Survival: Looking at wealth and other socio-economic disparities in developing countries,"

http://www.savethechildren.org.uk/sites/default/files/docs/Final_draft_inequalities_of_child_survival_10_August_formatted_2_1.pdf

The rate decreases with increases in education. Notice that the biggest reduction in infant mortality occurs when we move from no education to primary education. This indicates that returns to primary education in terms of reduction in infant mortality rate are certainly high.

Figure 2.3: Socio-economic Disparities in Infant Mortality Rate (2006-07)



Source: PDHS 2006-07

Using data from Pakistan Living Standards Measurement Survey (PSLM, 2007-08), Table 2.5 shows rural urban and provincial disparity in infant mortality rate in Pakistan. Although there does not appear to be much provincial disparity observed, there is a significant level of rural urban disparity with rural areas having almost double the rate of infant mortality in urban areas.

Table 2.5: Regional Disparity in Infant Mortality Rate in Pakistan (2007-08)

| Region | Male | Female | Total |
|-------------|------|--------|-------|
| Pakistan | 76 | 65 | 71 |
| Urban | 43 | 46 | 45 |
| Rural | 89 | 73 | 81 |
| Punjab | 80 | 65 | 72 |
| Sindh | 75 | 72 | 73 |
| KPK | 64 | 58 | 61 |
| Balochistan | 82 | 66 | 74 |

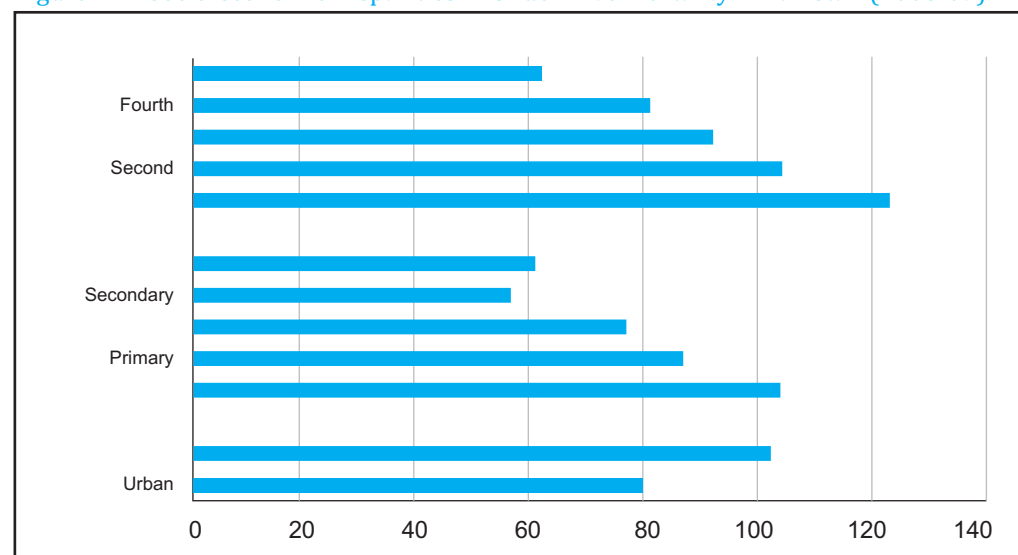
Source: PSLM 2007-08

Significant differentials in **under-five mortality** are also observed on the basis of place of residence, province, mother's level of education and level of income (figure 2.4). Under-five mortality is strongly linked with the level of income. The rate increases by almost 100 per cent as we move from the highest to the lowest quintile. Differentials also exist on the basis of mother's level of education. As mother's level of education increases, the under-five mortality decreases

Significant levels of socio-economic disparities in under five mortality rate exist across various districts in the same province. According to the results of Multiple Indicators Cluster Survey (MICS) Punjab, 2007-

08 under five mortality ranges from a high of 149 in the district of Bahawalpur to the low of 60 in Punjab. A great deal of disparity is observed in Punjab with respect to mother's level of education with under-five mortality increasing from 24 per 1,000 for mothers with higher education to 137 per 1,000 for mothers without any education. A great deal of income related inequality in health is also observed in Punjab with an under-five mortality rate of 156 in poorest wealth quintile to 52 per 1,000 in the richest wealth quintile. Similar level of inter-district variation is observed in infant and under-five mortality in other provinces.

Figure 2.4: Socio-economic Disparities in Under-Five Mortality in Pakistan (2006-07)

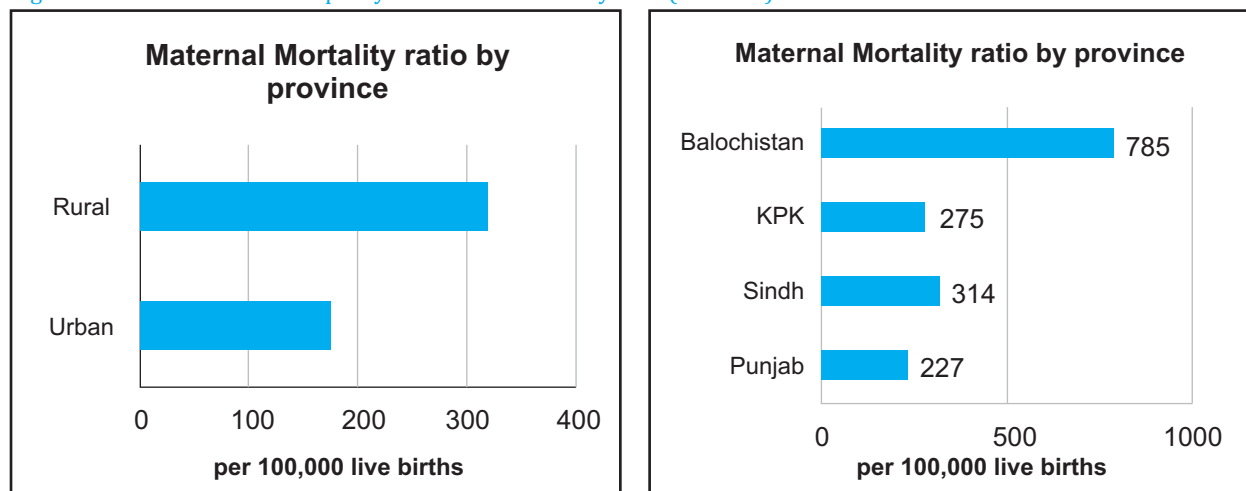


Source: PDHS 2006-07

2.2.2 Disparities in Maternal Health Indicators

Maternal mortality ratio is an important indicator for MNCH. It measures the ratio of maternal deaths due to childbearing to number of live births. PDHS 2006-2007 expresses this ratio per 100,000 live births. A distinct disparity exists between rural and urban areas, with 319 maternal deaths per 100,000 live births in rural areas compared to a much lower ratio of 175 in urban areas. Important differentials are also observed on the basis of province. Balochistan has the highest ratio of 785 (per 100,000), which is significantly higher than the other provinces. Punjab on the other hand has the lowest maternal mortality ratio. A great deal of disparities in maternal mortality rates within provinces also exists as shown by the district level data.

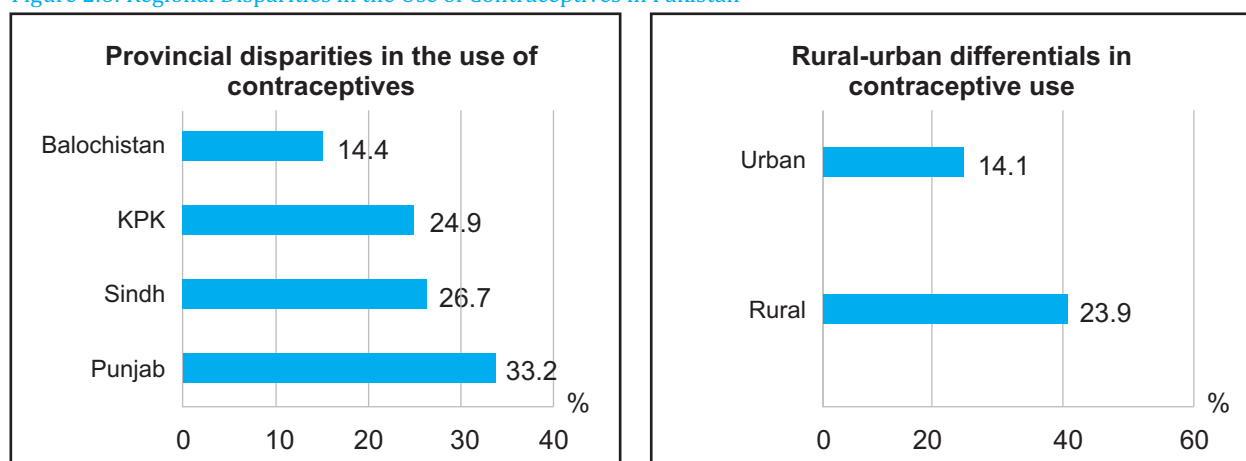
Figure 2.5: Socio-economic Disparity in Maternal Mortality Rate (2006-07)



Source: PDHS 2006-07

Contraceptive use is another indicator of a mother's health. Figure 2.6 shows provincial and rural-urban disparities in the usage of contraceptives.

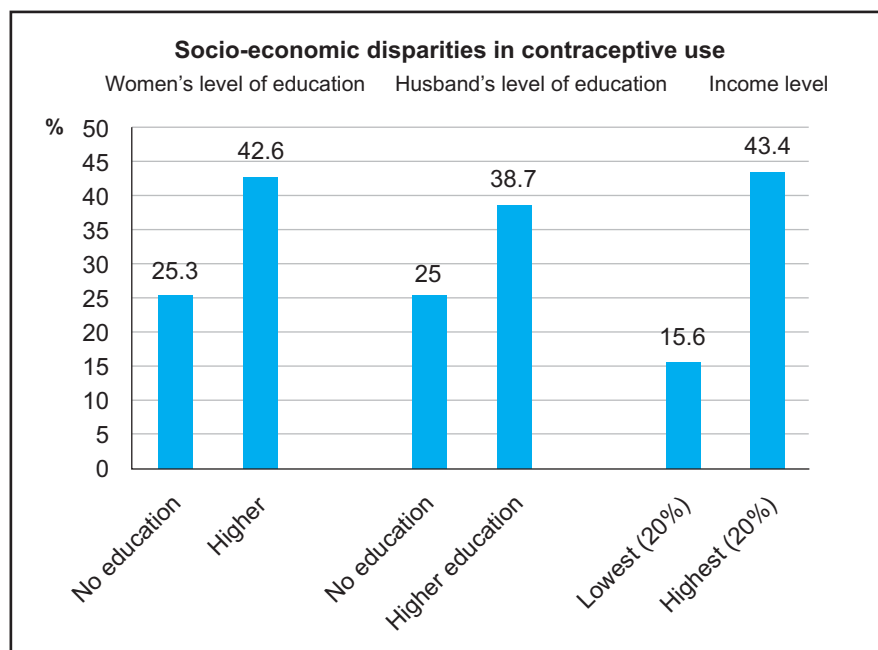
Figure 2.6: Regional Disparities in the Use of Contraceptives in Pakistan



Source: PDHS 2006-07

Contraceptive use amongst married women is highest in Punjab, with lowest being in Balochistan. There is also a significant difference between rural and urban usage of contraceptives, with 41.1 per cent of the females using them in urban areas, as opposed to only 23.9 per cent using in rural areas. Furthermore, socioeconomic disparities can also be observed in contraceptive use from figure 2.7 below.

Figure 2.7: Socio-economic Disparities in Contraceptive Use (2006-07)



Source: PDHS 2006-07

Contraceptives use increases with women's level of education, father's level of education and the income of households. As seen from the figure 2.7, the contraceptive use is 42.6 per cent amongst women with higher level of education against 25.3 of women with no education. Use of contraceptives also increases with husband's level of education and the overall income of the household. It is interesting to note that the link is stronger with women's education than with men's education.

2.2.3 Disparities in Health Services Utilization

Socio-economic inequality not only exists in terms of health status indicators but also in terms of utilization of health services. In general, provinces that display poor health indicators also fare poorly in terms of health services utilization. This is especially true for Balochistan. Similarly rural areas, that depict poor health indicators, also show lower utilization of health services. Below, we provide evidence of socio-economic as well as regional disparity in terms of utilization of key health services related to mother and child health.

2.2.3.1 Immunization coverage

Pakistan has done well in the provision of immunization coverage. Recent PSLM (2010-11) data on immunization shows that based upon recall and record, around 80 per cent or more children are immunized against key diseases (refer to table 2.6). However immunization coverage is still low in Balochistan. Not much socio-economic disparity is observed in immunization coverage.

Table 2.6: Regional Disparity in Immunization Coverage (Recall and Record): 2010-11

| PROVINCE | BCG | DPT1 | DPT2 | DPT3 | POLIO1 | POLIO2 | POLIO3 | MEASLES |
|--------------------|-----|------|------|------|--------|--------|--------|---------|
| Pakistan | 88 | 88 | 87 | 85 | 81 | 81 | 79 | 82 |
| Urban | 95 | 95 | 94 | 92 | 89 | 88 | 87 | 87 |
| Rural | 85 | 85 | 84 | 83 | 78 | 77 | 76 | 80 |
| Punjab | 93 | 93 | 92 | 91 | 90 | 90 | 89 | 86 |
| Sindh | 83 | 82 | 81 | 79 | 71 | 71 | 70 | 77 |
| Khyber Pakhtunkhwa | 83 | 83 | 82 | 81 | 74 | 73 | 71 | 78 |
| Balochistan | 63 | 63 | 61 | 60 | 40 | 40 | 39 | 58 |

Source: PSLM 2010-11

2.2.3.2 Skilled birth attendance

PSLM data (2007-08) shows that only 30.2 per cent of births in Pakistan are attended by doctors whereas a significant percentage of 25 per cent is attended by traditional birth attendants (table 2.7). This overall picture masks great deal of socio-economic disparity: in poorest income quintile, 34.2 per cent are attended by traditional birth attendant whereas merely 16 per cent are attended by doctors. In contrast, 60 per cent of births in the top income quintile are attended by doctors and only 9.5 per cent are attended by traditional birth attendants.

Table 2.7: Type of Birth Assistance by Income Quintiles (2007-08)

| | | | family member/ relative | neighbour | TBA* | Trained Dai | doctor | LHV | LHW | Nurse | other |
|-------|----------|-----|----------------------------|-----------|-------|-------------|--------|------|-----|-------|-------|
| Total | quintile | 1st | 15.4% | 1.8% | 34.2% | 26.2% | 16.0% | 1.4% | .6% | 3.8% | .5% |
| | | 2nd | 14.7% | 1.6% | 27.4% | 27.8% | 19.5% | 1.6% | .4% | 6.8% | .2% |
| | | 3rd | 12.5% | 2.6% | 25.7% | 22.3% | 26.4% | 2.5% | .6% | 7.1% | .2% |
| | | 4th | 8.1% | 2.5% | 21.7% | 18.9% | 40.5% | 1.5% | .3% | 6.5% | |
| | | 5th | 6.2% | 2.3% | 9.5% | 13.6% | 60.1% | 1.3% | .2% | 6.8% | |
| | Total | | 11.9% | 2.1% | 24.9% | 22.5% | 30.2% | 1.7% | .4% | 6.1% | .2% |

Source: PSLM (2007-08)

*Traditional Birth Attendant

A great deal of regional disparity is also observed. According to PSLM 2010-11, 68 per cent of the births in rural areas are delivered at home compared to 34 per cent in urban areas. Across provinces, 74 per

cent of the births in Balochistan are delivered at home compared to the corresponding average of 57 per cent in Punjab.

Table 2.8: : Place of Delivery by Provinces 2010-11 (%)

| | Pakistan | Punjab | Sindh | KPK | Balochistan |
|-------------------------|------------|------------|------------|------------|-------------|
| Home | 58 | 57 | 52 | 62 | 74 |
| Govt. Hospital/RHC/BHU | 12 | 12 | 12 | 16 | 10 |
| Private Hospital/Clinic | 29 | 31 | 35 | 21 | 16 |
| Other | 0 | 0 | 1 | 0 | 0 |
| Total | 100 | 100 | 100 | 100 | 100 |

Source: PSLM 2010-11

Similarly, only 17 per cent of the births are attended by doctors in Balochistan, compared to 33 per cent in Punjab (refer to table 2.9).

Table 2.9: Person that assisted with delivery by provinces: 2010-11

| | Pakistan | Punjab | Sindh | KPK | Balochistan |
|--------------------------------|------------|------------|------------|------------|-------------|
| Doctor | 34 | 33 | 42 | 33 | 17 |
| Nurse | 06 | 7 | 3 | 2 | 6 |
| midwife | 03 | 4 | 4 | 2 | 4 |
| TBA | 12 | 13 | 16 | 3 | 18 |
| Trained Dai | 28 | 34 | 21 | 18 | 20 |
| Family member/Neighbour/Friend | 12 | 5 | 12 | 34 | 30 |
| Other | 04 | 4 | 1 | 9 | 5 |
| Total | 100 | 100 | 100 | 100 | 100 |

Source: PSLM 2010-11

The picture gets even worse when we examine district-wise data. In some districts, mostly located in South Punjab, Sindh and Balochistan, the percentage of births delivered at home is extremely high. In Punjab for instance, the percentage of deliveries at home are as high as 90 per cent in D.G Khan and 94 per cent in the district of Rajanpur. It is 97 per cent in Kohistan (KPK). This percentage is even higher than some districts in Balochistan such as 74 per cent in Thatta, and 87 per cent in Tharpakar and 83 per cent in Chaghi. Similarly in some districts located in KPK, over 80 per cent of the births are delivered at home.

2.2.3.3 Pregnant women receiving tetanus injection

Provincial and rural urban disparities in pregnant women receiving Tetanus injections are presented in table 2.10. Inter-district variation is depicted in graphs in appendix A.

Table 2.10: Regional Disparity in Pregnant Women Receiving Tetanus Injection by Regions: 2010 -11

| PROVINCE | URBAN | RURAL | TOTAL |
|--------------------|-------|-------|-------|
| Pakistan | 83 | 63 | 69 |
| Punjab | 86 | 74 | 77 |
| Sindh | 84 | 42 | 60 |
| Khyber Pakhtunkhwa | 74 | 58 | 61 |
| Balochistan | 41 | 28 | 31 |

Source: PSLM 2010-11

2.2.3.4 Pre natal consultation

According to PSLM 2010-11, prenatal consultation rate is 44 per cent in Balochistan against 68 per cent in Pakistan and 79 per cent in urban Pakistan as against 57 per cent in rural Pakistan (table 2.11).

Table 2.11: Regional Disparity in Pre-Natal Consultation: 2010-11

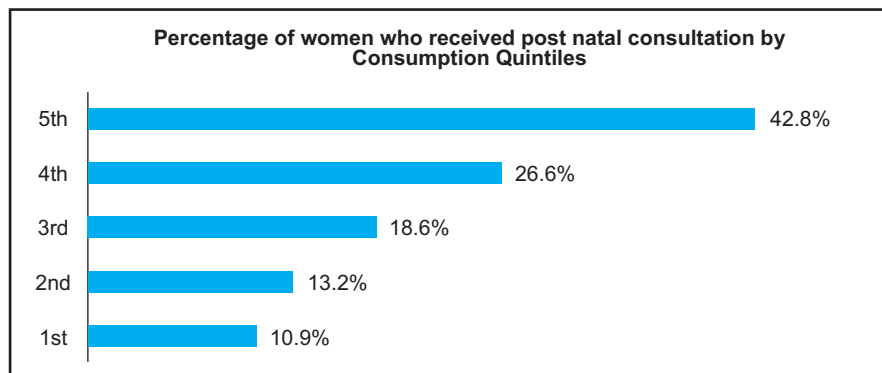
| PROVINCE | PERCENTAGE OF CASES | | |
|--------------------|---------------------|-------|-------|
| | URBAN | RURAL | TOTAL |
| Pakistan | 79 | 57 | 64 |
| Punjab | 79 | 63 | 68 |
| Sindh | 85 | 49 | 65 |
| Khyber Pakhtunkhwa | 69 | 49 | 52 |
| Balochistan | 55 | 41 | 44 |

Source: PSLM 2010-11

2.2.3.5 Post natal consultation

According to PSLM 2007-08, around 43 per cent of the women from the richest quintile received postnatal consultation compared to around 11 per cent from the poorest quintile.

Figure 2.8: Postnatal Consultation by Quintiles



Source: PSLM 2007-08

A great deal of rural-urban disparity also exists in postnatal consultation. According to PSLM 2007-08 (the percentage of women in urban areas receiving postnatal care (33.2 per cent) is twice the corresponding percentage in rural areas (16.0 per cent)

Table 2.12: Provincial Disparity in Post Natal Consultation 2010-11

| | Rural | Urban | Total |
|---------------------------|--------------|--------------|--------------|
| Pakistan | 38 | 24 | 28 |
| | | | |
| Punjab | 40 | 24 | 28 |
| | | | |
| Sindh | 40 | 29 | 34 |
| | | | |
| Khyber Pakhtunkhwa | 29 | 22 | 23 |
| | | | |
| Balochistan | 22 | 17 | 18 |

Source: PSLM 2010-11

A great deal of disparity is observed in this indicator across districts in the same province. In many districts of KPK and Balochistan for instance, none of the women interviewed by the surveyors for 2010-11 PSLM data collection had consulted a health facility for post natal care. These include the districts of Shangla, Bonair, Batagram, Kohistan (KPK); Hernai, Awaran, Washuk, Musa Khel, Sherani (Balochistan).

Similarly, significant variation is observed between provinces and districts in the type of facility consulted. For Pakistan as a whole, majority of women (54 per cent) consulted private health facility followed by 22 per cent of the women who consulted government health facility for postnatal consultation. About 8 per cent of the women, on average, in Pakistan consulted home LHW and LHVs. However, it is important to note that in many districts, particularly in Balochistan, none of the women consulted LHVs and LHWs indicating limited coverage of lady health workers in these districts. These include Sibi, Ziarat, Kohlu, Dera Bugti, Hernai, Lasbilla, Panjgur, Loralai, Barkhan, Qilla Saifullah, Nasirabad, Jhal Magsi, and Bolan.

Table 2.13: Type of Facility Consulted for Post-Natal Care in Pakistan (2010-11)

| | Rural | Urban | Total |
|-----------------------------------|--------------|--------------|--------------|
| 1. Home TBA | 5 | 17 | 12 |
| 2. Home LHW | 3 | 7 | 5 |
| 3. Home LHV | 2 | 4 | 3 |
| 4. Home Doctor | 3 | 2 | 3 |
| 5. Govt. Hospital/RHC/BHU | 25 | 20 | 22 |
| 6. Private Hospital/Clinic | 62 | 49 | 54 |
| 7. Other | 1 | 1 | 1 |

Source: PSLM 2010-11

3. An Analysis of Public Spending on MNCH in Pakistan

In section 2, we examined the evidence on socio-economic inequalities in MNCH indicators in Pakistan and saw that there is a great deal of socio-economic disparity in health services utilization and health outcomes of the population. Certain population groups that are marginalised in socio-economic terms have much poorer MNCH indicators than others. In this section, we examine how public spending on health in Pakistan can be geared towards improving the health services utilization of these marginalized groups and reducing the overall health inequality in Pakistan. Let us begin by examining the present structure of health financing in Pakistan.

3.1 An Analysis of Overall Level of Health Expenditures in Pakistan

Total health expenditures (THE) in Pakistan – that include both private and public health expenditure – are conspicuously low not only by international standards but also by the low-income countries' standards. Total health expenditures in Pakistan represent merely 2.6 per cent of its GDP which is the lowest amongst all South Asian countries as well as developing and low income regional averages and is way below the global average. It translates into per capita total expenditures of \$ 62 (purchasing power parity \$) which is also below what most other South Asian countries including India (\$PPP 122); Sri Lanka (\$PPP 187) and all developing regions (see table 3.1) spend on health per person. This marked difference in total health expenditure figures for Pakistan and the rest of the developing world has recently led some researchers to conduct studies aimed at cross-checking these estimates that are provided by WHO with those pertaining to National Health Accounts in Pakistan.

Lorenz (2010) for instance reconciles the total health expenditures estimates (THE) provided by WHO and the NHA data recently collected by Pakistan Bureau of Statistics and finds that WHO estimates only include public and household out-of-pocket health expenditures and does not include health expenditures from many sources such as military, cantonment boards, autonomous bodies and private hospitals etc²⁸. After the inclusion of expenses by these entities, the per capita total health spending increases from US\$22 as estimated by WHO to US\$33. However, as the study points out, even after this adjustment, total health spending in Pakistan remains lower than most of the neighbouring countries with comparable levels of per capita income and epidemiological profile, such as India where per capita total health spending is US\$ 45 and Afghanistan where this figure is US \$47.

²⁸ These expenditures, according to Lorenz (2010) are neither reported as 'public' nor as 'household' sources of health expenditures by the WHO. The WHO counts public expenditure at the financing agent level (such as the Ministry of Health) rather than at the Financing Source level (such as the Ministry of Finance). This means that health related expenditures that are not channeled via Ministry of Finance such as Military and Cantonment Board health related expenditures are not included. This also means that funds channeled to Ministry of Finance from non-public sources such as donors would be counted as 'public.'

Table 3.1: Total Health Expenditures in Pakistan and other Developing Countries (2008)

| | As % of GDP | Per Capita Total Expenditures on Health* (US\$) | Per Capita Total Expenditures on Health (Int. \$PPP) |
|------------------------------|-------------|---|--|
| Pakistan | 2.6 | 22 | 62 |
| Afghanistan | 7.4 | 47 | 57 |
| Bangladesh | 3.3 | 17 | 44 |
| India | 4.2 | 45 | 122 |
| Nepal | 6 | 24 | 66 |
| Sri Lanka | 4.1 | 83 | 187 |
| African Region | 6 | 83 | 146 |
| Eastern Mediterranean Region | 4.2 | 153 | 262 |
| Low income | 5.4 | 32 | 74 |
| Lower middle income | 4.3 | 99 | 197 |
| Global | 8.5 | 854 | 899 |

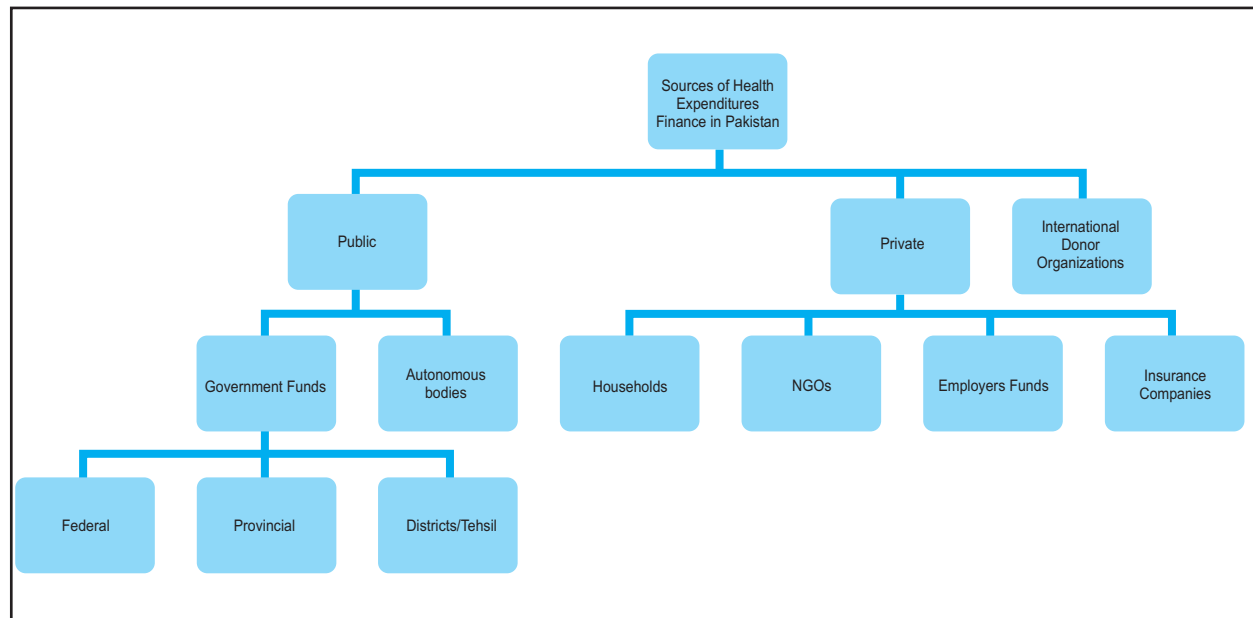
Source: World Health Statistics 2011.

* at average exchange rate

3.2 Key Sources of Health Care Financing in Pakistan

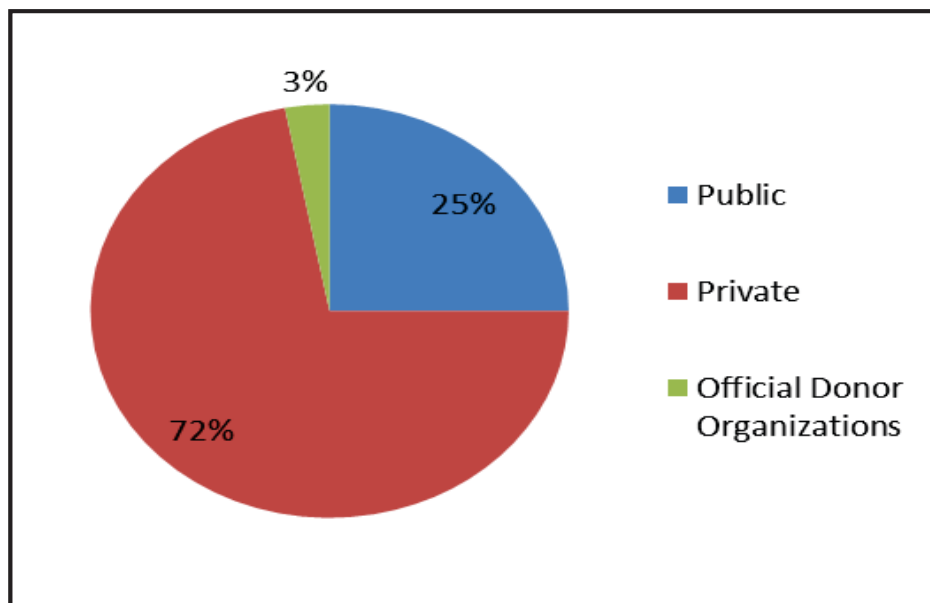
There are three major sources of health care expenditure in Pakistan with a markedly skewed contribution of each these sources. These financing sources are broadly categorized into 1) public 2) private 3) international donor organizations. Public sources of funds are further categorized into a) government funds that include outlays by federal, provincial, and district governments; and b) autonomous bodies. Private sources include households out of pocket expenditure; contributions from employers; Non-Governmental Organization (NGOs); and private insurance companies. International donor organizations expenses, according to NHA 2007-08, include only those expenses that do not flow via budgetary aid.

Figure 3.1: Sources of Health Care Expenditure in Pakistan



The bulk of total expenditure on health in Pakistan is financed by private sources with a relatively small contribution by the public sources. Around 72 per cent of the total health expenditure is financed by private sources whereas the remaining expenditure is funded by the government and international development partners. According to NHA 2007-08, 25 per cent of the total health expenditure is financed by the government and 3 per cent by the international development partners and donor organizations. Other countries in the region show similar pattern in terms of health financing sources. The National Health Accounts of India for 2004-05, for instance show that around 20 percent of the total health expenditure is financed by the government; 78 per cent by the private sector and the remaining 2.3 per cent by the international donors (Govt. of India, 2005). Let us analyse each of these three key sources of health expenditure finance in Pakistan:

Figure 3.2 : Percentage Contribution of Key Sources of Health Expenditure Finance in Pakistan (2007-08)

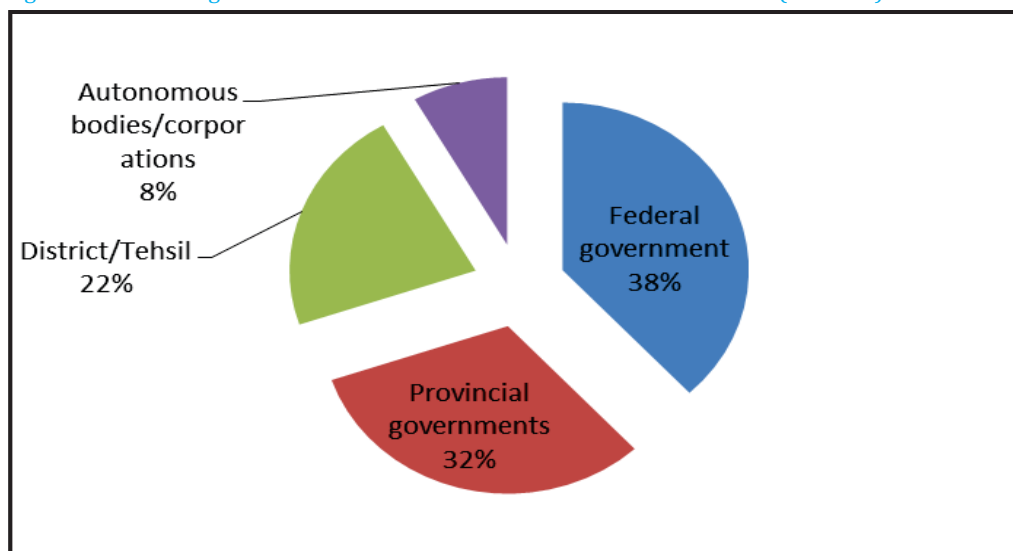


Source: NHA 2007-08

3.2.1 Public Sources

Public sources of health expenditure finance, according to the National Health Accounts of Pakistan, include federal, provincial and district governments as well as autonomous bodies and corporations. The share of autonomous bodies and corporations in total public health expenditure is about 8 per cent. The rest 92 per cent consists of expenditure by federal, provincial, and district governments.

Figure 3.3: Percentage Contributions of Public Sources of Funds in Pakistan (2007-08)



Source: NHA 2007-08

Out of total federal health expenditures, 70 per cent are reported to be for civilian part and the rest 30 per cent is disbursed through military sources. Out of total provincial expenditure via public sources, the greatest share is taken by Punjab followed by Sindh, KP and Balochistan.

3.2.2 Private Sources

Private sources include private firms, households, private health insurance schemes and non-profit institutions. In Pakistan, private health insurance schemes, non-profit institutions as well as private firms have a minimal role in financing health expenditures of the households. Private pre-paid plans, for instance, represent only 0.3 per cent of the total private expenditures on health (refer to table 3.2). This is much lower than 2.3 per cent in India; 2.4 per cent for low income countries; and 4.9 per cent for lower-middle income countries.

Private sources of financing health expenditure in Pakistan, therefore, predominately consist of out of pocket health expenditures. Out of pocket expenditures on health are defined as expenses made purely by households out of their pockets and these expenses are net of employers' contribution and insurance company claims. These expenses however include insurance premiums. In NHA for Pakistan, zakat (Islamic charity) and Bait-ul-Mal funds are counted as out of pocket expenditures, primarily due to difficulty in disaggregating data (see Pakistan Bureau of Statistics, 2007-08). The contribution of zakat funds in total household spending on health is however suspected to be a negligent amount (see Govt. of Pakistan 2007-08).

According to the latest NHA estimates for 2007-08, around 92 per cent of the private health expenditures consists of out of pocket health expenditures. This specific pattern of health care finance puts the major responsibility of health care finance on the shoulders of households themselves and thereby places them into a vulnerable situation. It has special implications on equity as well as poverty. Medical related expenditures due to physical accident, disability or even an illness can push people - close to the poverty threshold - below the poverty line. According to a study conducted by the Planning Commission,²⁹ economic shocks related to health care expenditure are the most common shocks faced by households in Pakistan. Around 54 per cent of the households interviewed by the study were vulnerable to health care expenditure shocks. Another study³⁰ investigating the poverty effects of out of pocket expenditure on health care in 11 Asian countries, including India and Bangladesh, found that when out of pocket payments on health care were taken into account, the prevalence of absolute poverty turned out to be 14 per cent higher than the conventional measures that do not take into account out of pocket payments for health care.

²⁹ See Government of Pakistan (2005) "Social Protection Strategy, 2005." Planning Commission, Government of Pakistan

³⁰ Van Doorslaer et al. (2006)

Table 3.2: Private Pre-paid Plans as Percentage of Private Expenditures on Health (2008)

| | |
|-------------------------------------|-----|
| Pakistan | 0.3 |
| Bangladesh | 0.3 |
| India | 2.3 |
| Iran | 3.2 |
| Sri Lanka | 9.1 |
| Eastern Mediterranean Region | 6.1 |
| Low income | 2.4 |
| Lower middle income | 4.9 |

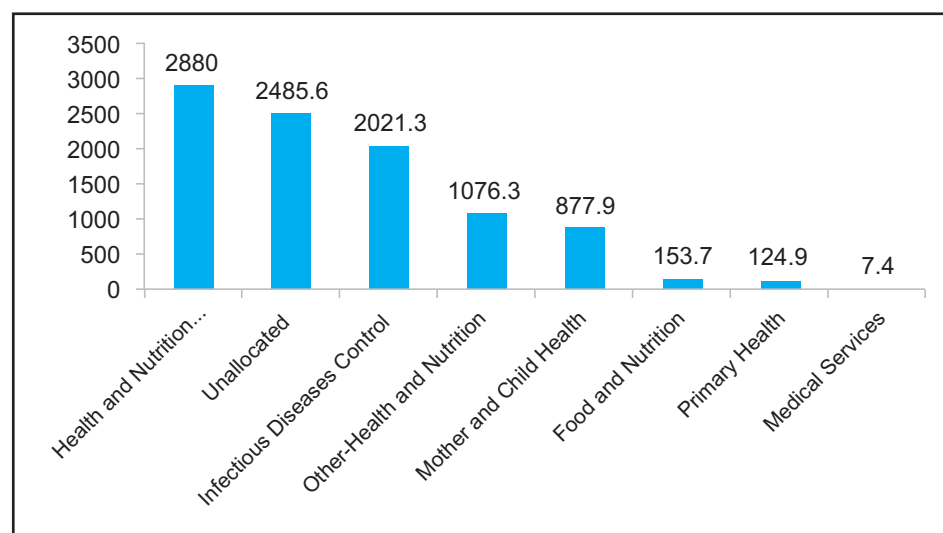
Source: World Health Statistics 2011

3.2.3 International Donor Organizations

According to NHA 2007-08, the contribution of international donor organizations in total health expenditures in Pakistan is about 3 per cent. These are contributions that are not part of the budgetary aid and therefore do not flow through the Ministry of Finance. The international donor organizations' contributions through budgetary aid are included in the government sources of health expenditure finance in order to avoid double counting.

With respect to the allocation of international donor organizations funds across various sectors, the biggest share went to 'health and nutrition' followed by 'infectious disease control' in 2007 -08. In the same reference year, about 9 per cent of the total health funding by donor organizations was allocated towards 'Mother and Child Health Care'. This percentage is a little less than 2005 -06 NHA estimate which was around 15 per cent for the categories of 'maternal health' and 'child health' combined together. However, it must be noted that many of the other heads classified by the Development Assistance Data Base (DAD) - from where NHA acquires this data – such as 'infectious Disease Control' and 'Food and Nutrition' may contain expenditures directed at mother and particularly child health.

Figure 3.4: Health Expenditure by International Donor Organizations by Sectors (Pk. Rs. Million)

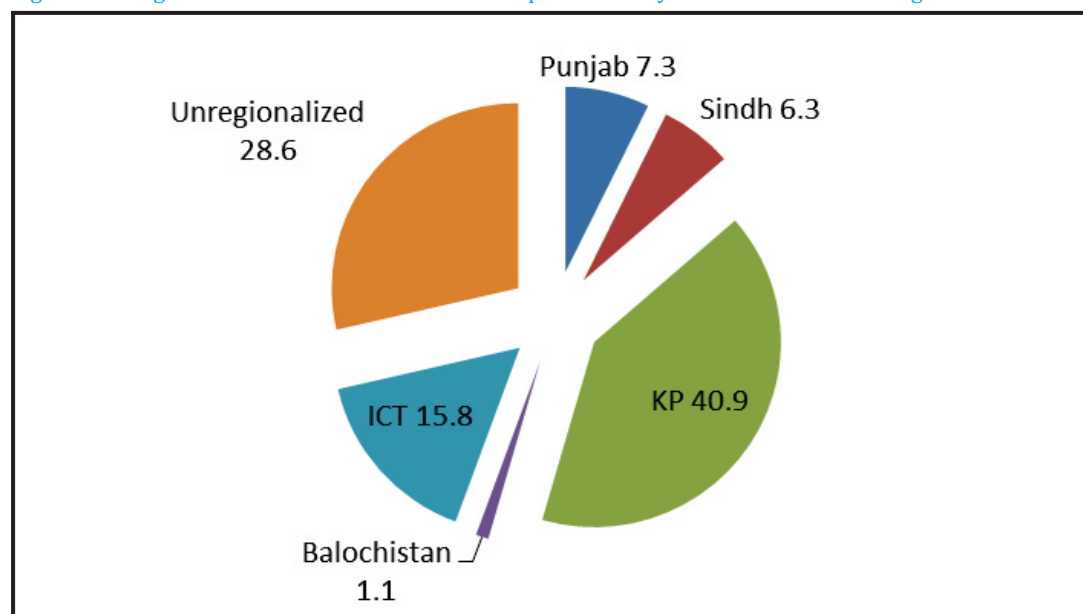


Source: NHA 2007-08

Note: These figures include both off and on budget contributions

With respect to the interprovincial allocation, the major chunk of funds (40.5) per cent is received by KPK. This could have been driven by rehabilitation efforts by donor community following the devastating earthquake in 2005, the major epicentre of which was KPK and northern areas. A significant share of 11.3 per cent is allocated for Islamabad Capital Territory. Around 28.6 per cent of the funds allocated for the health sector are un-regionalized.

Figure 3.5: Regional Distribution of Health Care Expenditures by International Donor Organizations in 2007-08



Source: NHA 2007-08

3.3 Efficiency and Equity Issues in Public Health Financing in Pakistan

With the background presented above with regards to the sources of health expenditure finance, let us now focus our attention to the public sector. With a contribution of only around 25 per cent in financing total health expenditure, the public sector has a limited role in financing health in Pakistan. Yet, from a public policy perspective, it is important to make sure that whatever limited amount is allocated by the public sector is utilized properly and spent in a way that achieves the two central goals of public finance namely *efficiency* and *equity*.

Although the major objective of the present study is to analyse the equity implications of public health financing, particularly that of MNCH in Pakistan, it might be useful to comment on the efficiency implications of these investments as well. In particular, we will argue that the achievement of the two goals mentioned above may not be mutually exclusive and hence can be achieved simultaneously through a specific intra-sectoral and inter-regional allocation of health sector budgets. This is quite in contrast to the traditional macro-economic proposition of the existence of a trade-off between efficiency and equity objectives in a setting where the social goal is to maximize production or income. When the social goal is to maximize health outcomes, our proposition is that there is no trade-off between efficiency and equity especially in the context of MNCH in Pakistan. Policies that aim at achieving equity can also achieve efficiency provided they are implemented in an effective manner.

Before we analyse the allocation of health sector budgets across regions and across sub-sectors and examine the equity and efficiency implications of those allocations, let us first throw light on the crucial role of the government in public health finance and look at recent trends in public spending on health, in general, in Pakistan viz a viz some other selected countries that are at comparative levels of development. In section 3.3.2, we examine the efficiency and equity issues in budgetary allocations for health in Pakistan and show how investment in MNCH can help realize the two important goals of achieving efficiency and equity in health spending.

3.3.1 The Role of Government in Financing Health Expenditures in Pakistan

Recent national debates, economic policy frameworks, and strategies in economic planning in Pakistan emphasize the role of free markets in promoting efficiency and economic growth in Pakistan³¹. This has been the basis of privatising some state corporations and encouraging the private sector to take lead in all sectors. While the efficacy of such a market led approach is undisputable especially when it comes to fostering economic growth and employment, there are certain sectors where a complete reliance on markets and an abdication of the role of the government is neither desirable nor recommended even by strict advocates of free market economies. Education and health fall under these domains primarily because they are categorized as ‘merit’ goods and generate positive externalities. The treatment of communicable diseases is a standard example of a health intervention that generates positive externalities by preventing the transmission of disease. Similarly, better health leads to an expansion of human capital by enabling the population to acquire skills and education and by increasing the productivity of the work force. Cross country evidence indicates that countries where the prevalence of childhood illnesses such as malaria and diarrhoea is low show higher school enrolments and better educational outcomes. From a purely theoretical perspective of public finance literature, the presence of such positive externalities implies that the social benefits of investment in public health exceeds the costs thereby pointing to a clear role of government in the provision of these services. Markets and households if left on their own will lead to an underinvestment in health, from the point of view of what is optimal from a society’s perspective. This is not to undermine the role of the private sector as it has a major role in the provision of health care services in Pakistan. According to the recent NHA accounts, for instance, around 70 per cent of the health care needs in Pakistan are being met by the private sector. Nevertheless, the idea here is to recognize the significance of the role of government both when it comes to financing as well as regulating the health sector. Similar arguments apply for the education sector.

From an equity perspective, there are many convincing reasons for the government to invest in health. First, markets allocate resources, not on the basis of *need* but on the basis of the *ability to pay*. Those who are not able to pay are left out, no matter how great is their need. Since health is often associated with matters of life and death and is regarded as a basic need, it is the responsibility of the government to look after those who are not able to meet this basic need. Markets, may be efficient but they may not be just, fair and equitable. Perhaps the idea of justice, fairness and equity may not be important when it comes to the distribution of luxury goods, but there are some goods such as health and other basic

³¹ See e.g. report on recent growth strategy in Pakistan at <http://www.pc.gov.pk/>

necessities that are considered as ‘special goods’ whose distribution – according to the concept of specific egalitarianism proposed by Nobel Laureate, James Tobin - should not be determined by the distribution of income.

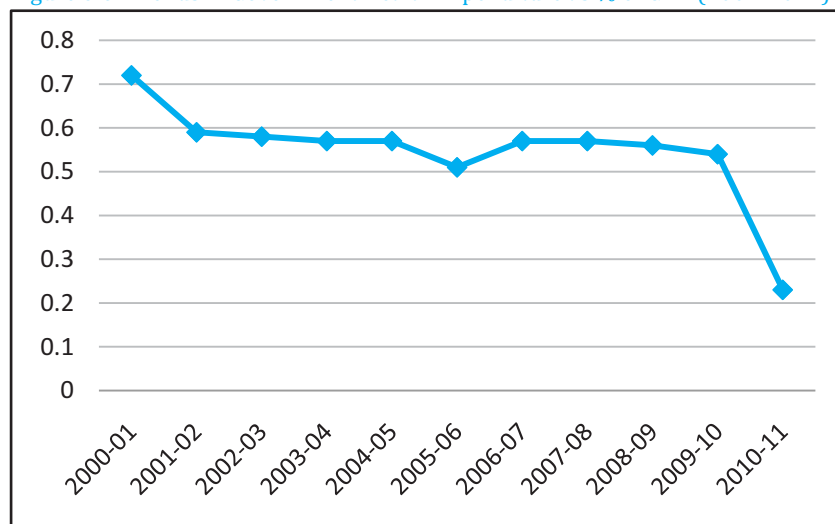
Second, in countries like Pakistan - where insurance and social security arrangements are almost non-existent and medical expenditures almost exclusively rely on out-of pocket expenditures - poor health and frequent occurrence of medical emergencies put the ordinary population into a vulnerable position. An accident or a sudden illness can easily push many people – who are already living close to the poverty line - below the poverty line. According to a study conducted by the Planning Commission,³² economic shocks related to health care expenditure are the most common shocks faced by households in Pakistan. Around 54 per cent of the households interviewed by the study were vulnerable to health care expenditure shocks. If poverty eradication is the foremost goal of the government, then investment in health sector clearly serves as an important instrument in achieving that goal.

In the sub-section that follows (3.3.1.1), we examine trends in overall budgetary allocations for health in Pakistan and compare it with the neighbouring developing countries.

3.3.1.1 Trends in Public Health Expenditures in Pakistan

If budgetary allocations on health sector are taken as a reflection of the government’s commitment towards this sector, it may not be hard to conclude that health sector has never been a priority sector when it comes to the allocation of the government’s scarce resources. Public spending on health has never exceeded 0.7 per cent of the total GDP.

Figure 3.6: Trends in Government Health Expenditure as % of GDP (2001-2011)



Source: Economic Survey of Pakistan 2011.

Government expenditure on health as percentage of general government expenditure in Pakistan also remains lower than what its neighbouring countries as well as low-income and middle income countries spend on average.

³² See Government of Pakistan (2005) “Social Protection Strategy, 2005.” Planning Commission, Government of Pakistan

Table 3.3 : General Government Expenditure on Health (2008)

| | As % of Total Government Expenditure | Per Capita (PPP \$ Int.) |
|-------------------------------------|--------------------------------------|--------------------------|
| Afghanistan | 3.7 | 12 |
| Bangladesh | 7.4 | 14 |
| India | 4.4 | 40 |
| Iran | 8.7 | 260 |
| Pakistan | 3.1 | 20 |
| Sri Lanka | 7.9 | 82 |
| African Region | 9.6 | 71 |
| Eastern Mediterranean Region | 6.9 | 127 |
| Low income | 8.9 | 30 |
| Lower middle income | 7.8 | 88 |
| Global | 13.9 | 524 |

Source: World Health Statistics 2011.

In a country like Pakistan that suffers from capacity constraints and governance issues, it is not sufficient to look at budgetary allocations alone without looking at the utilization of that budget. Historically, a significant proportion of the budgeted allocation – especially the development component of health sector budget - in Pakistan remains unutilized due to capacity constraints and excessive centralization of operational decision making (see e.g. Nishtar 2010, pp. 86). A disaggregation of total budget into development and non-development budget shows a significant underutilization of development component and overutilization of non-development component. The following table presents the actual utilization of funds against the allocation for health sector. Non-development/current expenditures predominantly include expenses on salaries, maintenance, rent and interest payments. Development expenditure includes expenses on long term assets that are crucial for the promotion of health outcomes in the long run..

Table 3.4 : Actual vs. Budgeted Expenditures on Health in Pakistan

| | FY 2009/10 | | | FY 2010/11 | | |
|--|-------------|---------|--------|-------------|---------|--------|
| | Development | Current | Total | Development | Current | Total |
| Budgeted (Rs. Million) | 57966 | 26881 | 84847 | 56549 | 38017 | 94566 |
| Actual (Rs. Million) | 28301 | 66098 | 94399 | 27658 | 78359 | 106017 |
| Utilization rate (% of budgeted amount) | 48.82 | 245.89 | 111.26 | 48.91 | 206.12 | 112.11 |
| Deviation (%) | -51.18 | 145.89 | 11.26 | -51.09 | 106.12 | 12.11 |

Source: Poverty Reduction strategy Paper (PRPSP) II Progress Report 2008-09

3.3.2 Efficiency and Equity Issues in Public Sector Allocations for Health

3.3.2.1 Efficiency

The concept of efficiency in public finance refers to an optimum use of available resources so that with minimum resources, maximum gains are achieved in terms of health outcomes. It is essentially the relationship between inputs and output and is typically assessed by using the health production

function.³³ Of course, public spending on health is just one of the many inputs in a health production function. Education; awareness and practice of a healthy life style; income; environmental pollution; and sanitation facilities are other key inputs that determine the health status of the population. Spending on medical care alone will have little efficacy in improving health status if other inputs stay the same or deteriorate. This implies that the efficiency of public spending on health is contingent, to some extent, on the progress achieved in terms of achieving other social sector goals such as improving education; reducing poverty; enhancing the status of women and improving physical environment; and increasing the provision of sanitation facilities. This has been duly recognized by the government of Pakistan to the extent that investment in health sector is considered as pro-poor and is considered as part of poverty reduction strategy. The Health Policy (2009) itself however does not recognize the synergies between health and other social sectors such as education, environment, and sanitation. This is despite the fact that the major causes of mortality in Pakistan include diseases that can easily be prevented through better education, particularly among females and through better hygiene and sanitation facilities. These cross-sectoral synergies between health and other social sectors need to be considered in order to improve the efficiency of public spending on health.

Transparency and good governance are critical to improve the efficiency of public spending in health. In fact, empirical evidence across countries indicates that public spending on health in itself has very little or no independent effect on health outcomes. An important factor behind this weak relationship between health outcomes and public spending on health - apart from the interdependence between health spending and other factors such as education and sanitation etc. as highlighted above - is the corruption and leakages from the system that reduces the efficiency of public funds in achieving goals that these funds were invested for. An important study by Rajkumar and Swaroop (2008) for instance, argues that the efficacy of public spending in improving human development outcomes across countries is largely explained by differences in the quality of governance which is measured by an index of corruption and bureaucratic quality. The study finds that public spending reduces child mortality only in countries with good governance.

In many less-developed countries including Pakistan, the intra-sectoral allocation of health care budgets by type of intervention is often done without any regard to *efficiency* criterion. Budgets are heavily tilted towards expensive hospital care leaving little funds for preventive public health care. In Pakistan, more than 65 per cent of the total civilian budget on health sector is spent on hospital services and administration and only 16 per cent on 'public health services' (NHA 2007-08, table 5). This is notwithstanding the fact that the three topmost causes of deaths in Pakistan, highlighted by the Draft National Health Policy of Pakistan (2009), listed in order of their share in total mortality, are: 1) communicable diseases 2) Cardiovascular diseases 3) Maternal and/Perinatal conditions. The draft National Health Policy states the following: "*The burden of diseases (BoD) is heavily dominated by communicable diseases, reproductive health and malnutrition issues accounting for 50 per cent of the total burden of diseases.*"(pp. 3). Clearly, if the goal of the national health policy is to reduce mortality – which appears to be the case as reflected in the vision and goals outlined in the draft national health

³³ See e.g. Folland, Sherman et al. (2010)

policy – then an efficient allocation would require more investment in Public Health³⁴ as well as Mother and Child Health so as to combat communicable diseases and reproductive health issues that are the major causes of mortality and burden of disease in Pakistan.³⁵ A recent study by Arif et al. (2012) on the basis of data from Pakistan Panel Household Survey (PPHS) conducted by Pakistan Institute of Development Economics, finds that the most significant factors determining child malnutrition in Pakistan include mothers' nutritional status as reflected by her BMI; the presence of toilet facility in the household; and lady health workers' visits. These recent findings in the context of Pakistan reinforce the significance of public health and basic health services in reducing child malnutrition in Pakistan.

Table 3.5 : Percentage Distribution of Health Sector Expenditures by Province & Sub sector

| Health sub-sector | Federal | Punjab | Sindh | KP | Balochistan | Total |
|---|---------|--------|-------|-------|-------------|-------|
| FY 2010-11 | | | | | | |
| General Hospitals & Clinics | 35.55 | 84.91 | 76.48 | 87.57 | 65.28 | 71.5 |
| Mother & Child Health | 0.04 | 0.49 | 0 | 0.13 | 0 | 0.22 |
| Health Facilities & Preventive Measures | 61.94 | 1.03 | 12.14 | 4.22 | 18.13 | 17.95 |
| Others | 2.48 | 13.57 | 11.38 | 8.08 | 16.59 | 10.33 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| FY 2009-10 | | | | | | |
| General Hospitals & Clinics | 32.43 | 83.53 | 78.39 | 86.44 | 42.52 | 68.43 |
| Mother & Child Health | 0.03 | 0.87 | 0.02 | 0.28 | 1.32 | 0.45 |
| Health Facilities & Preventive Measures | 65.05 | 1.05 | 10.96 | 6.82 | 18.94 | 20.22 |
| Others | 2.49 | 14.54 | 10.64 | 6.46 | 37.22 | 10.9 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| FY 2008-09 | | | | | | |
| General Hospitals & Clinics | 33.14 | 86.61 | 87.65 | 78.39 | 46 | 73.47 |
| Mother & Child Health | 0.02 | 0.44 | 0 | 0.28 | 1.85 | 0.3 |
| Health Facilities & Preventive Measures | 63.72 | 0.82 | 4.65 | 5 | 15.78 | 15.39 |
| Others | 3.11 | 12.14 | 7.7 | 16.33 | 36.37 | 10.84 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

Source: PRSP – II Period Progress Report FY 2008/09 – FY 2010/11

Does the inter-sectoral allocation of government health budget in Pakistan reflect the stated goals of national health policy which is to reduce mortality – particularly child and maternal mortality – and the

³⁴ The domain of Public Health in Pakistan includes Anti-Malaria; Nutrition and other Hygiene Programs; Anti-tuberculosis; Chemical Examiner and Laboratories; Expanded Program of Immunization; Preparation and dissemination of information on Public Health Matters; Population Welfare measures; and other health facilities and preventive measures.

³⁵ It may not be irrelevant to mention here that even in advanced countries of Europe and North America, the secular decline in mortality in early twentieth century was caused, amongst other factors, by public health interventions that improved sanitary conditions, increased the supply of purified water and resulted in a better treatment and disposal of sewage.

burden of disease? This is essentially a critical question. Table 3.5 presents the percentage distribution of health budget by sub sectors. The figures show an extremely skewed distribution of the total budget across sectors. General hospitals and clinics receive the chunk of the budget (71.75 per cent in 2010-11) leaving less than 20 per cent of the budget for “Health Facilities and Preventive Measures” and almost nothing (0.22 per cent in 2010-11) for “Mother and Child Health.” Although hospital care is important to treat maternal and perinatal conditions, yet existing allocations within hospital care shows a meagre amount being allocated for MNCH related services. Disaggregated data on budgetary allocations obtained from PIFRA (Project to Improve Financial Reporting and Auditing), shows that out of a total of Rs. 905 million budgeted for hospital care in 2010-11, MNCH receives Rs 0.9 million which is 0.1 per cent of the total allocation for hospital care.

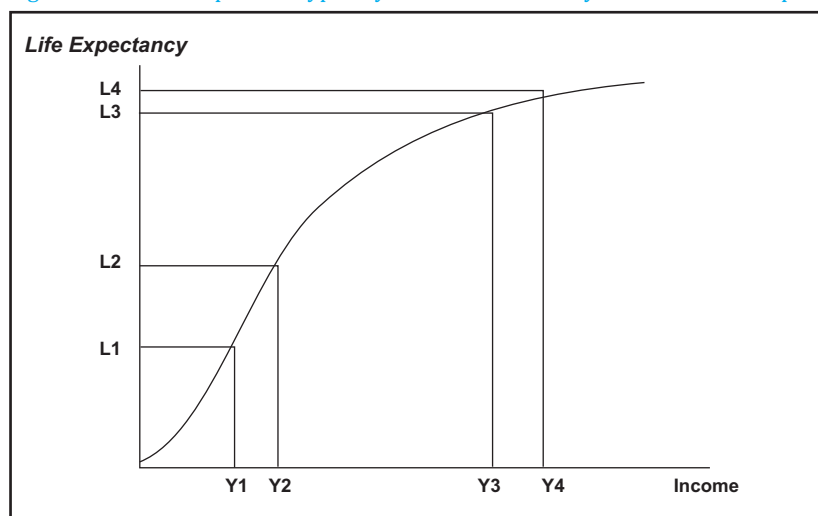
This is clearly an inefficient pattern of allocation of health sector budget. In the next section, I will argue that this is also an inequitable pattern of allocation. This pattern is however not unique to Pakistan. Many other countries in South Asia allocate budgets in accordance with what has been the traditional norm in the past with almost no regard to efficiency and equity criteria (see e.g. Bhattacharya, 2009). Some studies conducted in the context of inequities in access to health care services in India, for instance, go as far as to argue that the roots of these inequities go back to the policies and practices in the British Colonial period when hospital and allopathic curative services were given preference (see e.g. Baru et al. 2010; and Priya, 2005). A development economist would term this as “path dependence” where historical legacy, rather than the principles of public finance namely efficiency and equity, determines the pattern of allocation across types of interventions.

Finally, the socio-economic groups targeted through policy intervention also determine the efficiency of public health spending in reducing mortality and morbidity. Section 2 gives ample evidence on the presence of socio-economic inequalities in health outcomes in Pakistan. Child and maternal mortality is significantly higher amongst the poorest quintile than among the richest quintile. This implies that a dollar spent on the health of the poor is likely to reduce mortality and morbidity more than the reduction in mortality that would be brought if the same amount is targeted towards the richer income group. The theoretical underpinnings of this argument can be traced back to the concavity of the relationship between income and health outcome that is observed empirically both in cross country as well as within country data on income and health.

Figure 3.7 shows how the positive relationship between income and health varies at different levels of income. At lower levels of income, the rate at which increases in income improves health is higher than that at higher levels of income. This implies that the marginal return of spending a dollar of income is much higher at lower levels of income (e.g. at Y1) in terms of achieving gains in health outcomes than the same amount spent at higher income levels. The underlying idea here is that targeting the poorer income groups not only promotes the equity objective, as we will argue in the next section, but by enhancing the returns to spending, it also meets the efficiency criterion. Moreover, investment in public health and preventive measures by the government is efficient due to the presence of externalities particularly in the treatment of non-communicable diseases. It also promotes the goal of equity as communicable diseases are mostly concentrated among the poor. In short, targeting the poor and

investing in public health and MNCH related services not only leads to greater efficiency in public spending but also greater health equity.

Figure 3.7: An Example of a Typically Observed Concavity in the Relationship between Income and Health



3.3.2.2 Equity

Health inequalities, in general, arise from inequalities in all those factors that determine health. Foremost amongst these factors is income and education. Viewed from a holistic perspective, therefore, public policies that reduce poverty and improve education should also help in reducing health inequalities in an indirect manner. Targeting health inequalities in a more direct manner, from a resource allocation perspective, however, requires increasing overall financial allocations for health and targeting them towards those geographical areas where majority of the poor reside and towards those services that are typically used by the poor.

Often, in many less developed countries, the resource allocation and utilization mechanisms are such that they end up exacerbating rather than reducing health inequalities. World Bank (2004), for instance, argues that the pattern of public spending on health in many countries is such that the major share of public spending is directed towards specialized hospitals in urban centres, the beneficiaries of which are the rich, while very little is spent on preventive and curative care utilized by the rural poor. Doorslaer (1993) studies health care financing in five countries including Peru, Cote d'Ivoire, Ghana, Bolivia and Jamaica and finds that the allocation of funds by the Health Ministries favours urban, hospital based care and under-serves the rural population. In Ghana, two-thirds of the health budget is spent on hospital services. In South Africa, 89 per cent of the health care budget is spent on hospitals and in Madagascar and Kenya, this share is more than 50 per cent (Castro-Leal, Dayton, Demery, and Mehra, 2000).

A more precise way to gauge as to who benefits from public health subsidies, benefit incidence studies are conducted that determine the proportional utilization of public subsidies on health by socio-economic groups. Many of these studies, conducted in the context of developing countries, find a pro-rich bias in the utilization of subsidies that are spent on tertiary care and a pro-poor bias in the utilization of primary health care facilities (for a complete review of these studies, see section 4.4). The present study conducts this analysis for MNCH related services for Pakistan. The results are presented and discussed in the next chapter. In this chapter, we will focus on the pattern of budgetary allocations on health in Pakistan across regions and sectors and predict the potential repercussion of these allocations on health equity.

Inter-sectoral Allocations

As discussed in section 3.3.2.1 above, the major chunk of health sector budget in Pakistan (around 70 per cent) is spent on hospital services whereas less than 20 per cent is spent on public health and preventive measures. An extremely small amount (about 0.2 per cent) is set aside for mother and new born child health. What are the equity implications of this pattern of allocation? Theoretically, when we talk about inequities in health, we mean those inequalities in health that are caused by socio-economic differences and can be rectified through policy actions. As pointed out earlier, some inequalities in health outcomes arise due to differences in genetics and risky human behaviour that cannot be rectified much through policy action. This leads us to pay more attention to dimensions/measures of health that can be improved through relevant policy action. Child and maternal mortality qualify for such health dimensions that can be treated through simple policy actions such as the provision of universal immunization and reproductive health facilities. In contrast, there is a limited role of policy in treating adult mortality especially that which occurs due to individual risky and unhealthy life style behaviour.

Secondly, when we talk about inequality in health as reflecting inequality in opportunities then it is the inequality in child health – leading to a denial of life time opportunities of certain groups of population – that deserves more attention than to inequalities in adult or old age mortality rates (see e.g. Anand et. al. 2004). For instance, child malnutrition - that is a serious problem particularly among children in Pakistan – is shown in empirical studies having serious negative effects on long-term cognitive and mental development of children (see e.g. Arif et. al. 2012). From a public policy perspective, this argument clearly calls for more budgetary expenditure on MNCH.

Inter-regional Allocations

When it comes to the collection of socio-economic data, there are three major regional classifications used in Pakistan. These are 1) Rural-urban 2) Provincial 3) District level. Although socio-economic data is available under all these regional classifications, budgetary data is only available at the national and provincial level. Data on socio-economic indicators point out stark variations in rural and urban areas with poverty much higher and social indicators such as education and health much poorer in rural areas. (see section 2 for rural urban disparity in health indicators). Similarly, certain districts especially in the province of Balochistan, southern Punjab and Sindh depict health indicators that are way below the national average.

Equity considerations in public health spending would normally require government to allocate more resources to rural areas and those districts that are lagging in terms of health indicators. Due to the lack of disaggregated budgetary data according to rural/urban and district level classification, we cannot comment precisely on the current regional allocations on health down to that regional level and its equity implications.

However, since provincial budget data is available through NHA accounts, let us examine the provincial allocations and its implications on equity.

Table 3.6: Regional Allocation of Total Health Expenditure in Pakistan by Provinces

| Regions | % Share in Total Health Expenditure | % share in Total Population |
|----------------|-------------------------------------|-----------------------------|
| Punjab | 52.13 | 57% |
| Sindh | 22.32 | 24% |
| KP | 14.57 | 14% |
| Balochistan | 5.41 | 5% |
| ICT | 2.24 | - |
| Unregionalised | 3.33 | - |
| Total | 100.00 | 100% |

Source: NHA 2007-08

The above table shows that the percentage share of each province in total public health expenditure is roughly consistent with its population share. This implies that per capita expenditure is roughly the same across provinces. Need based criteria such as poverty and health status etc. are not given due consideration.

The equity implications of this pattern of the distribution of health resources are debatable. The notion of *horizontal equity* that emphasizes the notion of 'equal treatment for equal need' favours a distribution criterion in which health status and demographics (a proxy for need) are taken into account while allocating resources. Provinces like Balochistan and Sindh that show poorer health status should receive more funds per capita than those of others that show relatively better health status. The notion of *vertical equity*,³⁶ on the other hand emphasizes the 'ability to pay' as the major criterion to determine who should receive public health subsidies. According to this notion of equity, provinces with a higher proportion of impoverished population should receive more public health subsidies. Although official estimates of poverty at the provincial level are not available, unofficial estimates from reports and research studies indicate that the province of Balochistan is the most impoverished, followed by KPK and Sindh (in order of the poverty level). Punjab is relatively more prosperous than other provinces (see e.g. Jamal, 2009; UNDP, 2003; and Cheema, 2010). It is important to note that both the notion of horizontal equity which is based on need based criterion, and the notion of vertical equity that is based on ability to pay criterion would advocate for a higher allocation of public health subsidies per capita to Balochistan, KPK and Sindh. After the recent enactment of National Finance Commission (NFC) award, health is now a provincial subject in Pakistan so each province should allocate its budget on health

³⁶ Diderichsen, Fin (2004)

according to its need. There is substantial level of inter-district variation within the same province. Some districts in Southern Punjab and Sindh have similar or even poorer socio-economic indicators than some parts of Balochistan. In order to achieve equity, provinces should take district level poverty and human development indicators while distributing resources at the inter-provincial level. Regions that show poorer health status and a greater proportion of marginalized population should receive more funds per capita than others.

4. Who Benefits from Public Health Spending on MNCH in Pakistan

In section 3, we argued that the principle of both efficiency and equity in public health spending in Pakistan requires that the government increases its allocation on MNCH and targets its health subsidies towards low-income groups that have poor health outcomes and have low ability to pay for health care services. As mentioned earlier, public sector investment on health has been recognized by the government of Pakistan as a pro-poor endeavour and is included in the government's poverty reduction strategy programme (PRSP). By implication, public spending on health is recognized as an important instrument to reduce poverty. How well are public subsidies on health in Pakistan, at present, targeted towards the poor? This is an important question and the empirical answer to this can be useful to guide policy. The statistical approach that is often employed to evaluate the distribution of public health subsidies across socio-economic groups in order to determine who benefits from these subsidies, is referred to as the *Benefit Incidence Analysis*. In this section, we will employ this approach to evaluate the distribution of public subsidies on MNCH in Pakistan across socio-economic groups and will examine the progressivity and pro-pooriness of these subsidies.

This section is organized as follows: In section 4.1, we present a brief overview of public health care delivery system, particularly that related to mother and child health in Pakistan. The coverage of some key nationally administered and publicly financed programmes with direct relevance to MNCH will also be discussed in this section. In section 4.2, we will present some descriptive statistics from household data on the usage of public health services - by socio-economic groups where possible - along with the satisfaction level of households and the challenges that they face in accessing these services. In section 4.3, we explain the standard methodology of Benefit Incidence Analysis; the data requirements; and the modifications of this approach that are suggested in the literature to cope with data constraints. In section 4.4, we present a comprehensive review of Benefit Incidence studies conducted in the context of other countries and report key findings of these studies. In section 4.5, we present the specific approach that we choose given the data limitations in the context of MNCH in Pakistan. In section 4.6, we present the key results and conclude.

4.1 An Overview of Public Health Care Delivery System for MNCH in Pakistan

Pakistan's public health care delivery system is administered at the district level and works as an integrated system. Many of the national flagship programmes conceived and designed at the federal and provincial level are implemented at the district level. As far as MNCH is concerned, most of the related programmes fall within the purview of primary and secondary health care. Primary health care

includes Basic Health Units (BHUs), Rural Health Centres (RHCs) and Maternal and Child health centres (MCHCs). Secondary health care services are provided by Tehsil Head Quarters (THQ) and District Head Quarter (DHQ) by serving 100,000 to 300,000 and 1-2 million people respectively (Fikree et al., 2006)

Under the health policy of 1970 and early 1980, **Basic Health Units (BHUs)** were established as the 'First Level Health Care Facilities (FLHCFs) in rural areas. At the moment, 5344 BHUs are working nationwide in Pakistan (Economic Survey of Pakistan, 2011). Each BHU is established upon approximately 2 to 3 acres of land and comprises the healthcare block, residence for Medical Officers and 5 other residences for the staff. BHUs aims to provide services such as mother and child health; expanded programme of immunization; family planning; advice on food and nutritional status; training for lady health workers, lady health visitors, and birth attendants etc. (PRSP, 2008). BHUs serve, on average 10,000 to 15,000 people.

Rural health centres (RHC) aim to provide a wide range of primary healthcare services such as prenatal, postnatal, family planning, immunization, nutritional advices etc. Laboratory and X-ray facilities and a 15–20 bed inpatient facility are also available in each RHC. RHCs are designed to serve 25,000 to 50,000 respectively. According to the Economic Survey of Pakistan (2011), there are 577 RHCs currently operating in Pakistan,

Maternal and Child health centres (MCHC) have been established to provide antenatal care, anaemia treatment, nutrition advice, family planning services, as well as preventive and curative health services. Services of children include free immunization services, ORS for diarrhea. In addition, minor ailments like cough, fever, etc. are also treated. According to the Economic survey of Pakistan, 2011, there are around 909 MCHCs operating in Pakistan.

The National Program for Family Planning and Primary Health Care, widely known as the Lady Health Worker (LHW) Program, was launched in 1994 to provide door step essential primary healthcare in community. LHW is the ministry of health's flagship programme and is the largest public sector intervention especially for rural and peri-urban areas. At present, around 100,000 LHWs are employed with coverage of around 65 per cent of the population in Pakistan (Research and Advocacy Fund, Pakistan). Each LHW is responsible for about 1,000 individuals. Lady Health Workers visit women in their homes and provide basic health services such as family planning, immunization, prenatal care, postnatal care, malaria drugs etc. This program is funded by the Federal Government and each lady health worker receives training, supervision, medical supplies, and a small allowance from government health facility. Lady Health Visitors (LHVs) do their duties for maternal, neonatal and child health services including reproductive health and family planning etc. at Maternal and Child Health centres (MCHC) in urban and large rural areas (Sabih et al., 2010).

Family Welfare Centres (FWC) acts as a cornerstone of Pakistan's Population Welfare Programme and aims to promote and deliver family planning services, maternal and child health services and treatment of minor ailments in urban and rural areas. "The FWC operates in a rented building and serves as a

static facility for about 7,000 people; furthermore, through its satellite clinics and outreach facilities, it covers an additional population of around 20,000–25,000.”³⁷

Reproductive Health Services (RHS) Centres also fall within the purview of the Population Welfare Programme. Its service outlets are based in teaching hospitals in big cities; all District Health Office (DHO) hospitals; and selected Tehsil Health Office (THO) hospitals. RHS centres provide facilities such as MCH care as well as the prevention and management of HIV/AIDS etc.

Maternal, Neonatal and Child Health (MNCH) Launched in 2005, it is the national flagship program aiming to improve maternal, neonatal and child health indicators in Pakistan. In particular, the program aims to reduce infant and child mortality; reduce high maternal mortality ratio; increase skilled birth attendance by training of community midwives; and increase contraceptive prevalence rate.

Programs on Immunization are one of the cost effective public health interventions. In Pakistan, the national vaccination program was initiated in 1976 on a pilot-scale and expanded nation-wide by 1978. In 1982, the activities of immunization were accelerated through Expanded Program on Immunization (EPI). The national vaccination program is coordinated by the federal EPI cell in Islamabad that is responsible for activities such as planning, vaccine procurement and international coordination. Provincial governments are responsible for implementation of program by undertaking delivery activities. Vaccinations are provided from 2,649 fixed centres, 4,564 outreach teams and 98 mobile teams to illegible children and women. LHWs also assist the program through community mobilization and by vaccinating tetanus toxoid (TT) vaccine to pregnant women. Historically, EPI program has focused on six diseases namely tuberculosis, Poliomyelitis, Diphtheria, Pertussis, Measles & Tetanus, however, Hepatitis B vaccine is introduced for infants in 2001 (MOH, 2003).

Other publicly financed programs and initiatives with indirect relevance to MCH include Malaria Control Program; Food and Nutrition Program; Polio Eradication Initiative; and National Program for the Control of Diarrheal Diseases.

4.2 Issues in the Utilization of Public Health Care Services for MNCH

In relation to the burgeoning population and growing demand for health care services, the public health care sector in Pakistan is a relatively small sector catering to less 30 per cent of the overall demand for curative health care. More than 70 per cent of the curative health care needs in Pakistan are met by the private sector.

³⁷ [http://www.falah.org.pk/datacentral/Client%20Centered%20Family%20Planning%20Services Advance/Pakistan%20Nationals%20Standards%20for%20Family%20Planning.pdf](http://www.falah.org.pk/datacentral/Client%20Centered%20Family%20Planning%20Services%20Advance/Pakistan%20Nationals%20Standards%20for%20Family%20Planning.pdf)

Table 4.1: Percentage Distribution of Health Consultations in Past 2 Weeks by Type of Health Provider Consulted

| PROVINCE & DISTRICT | HEALTH PROVIDER / CONSULTED | | | | | | | |
|---------------------------|-----------------------------|-------------------|-------------|-------------------|-------------|-------------------|--------------|-------------|
| | PRIVATE DISP/HOSP | PUBLIC DISP/ HOSP | RHC/ BHU | HAKEEM/ HERBALIST | HOMEOPATH | CHEMIST/ PHARMACY | SIANA* SAINI | OTHER |
| Pakistan | 70.71 | 19.10 | 2.74 | 2.20 | 0.68 | 3.90 | 0.47 | 0.21 |
| Urban | 77.58 | 16.94 | 0.43 | 1.54 | 1.07 | 2.17 | 0.16 | 0.10 |
| Rural | 67.26 | 20.18 | 3.90 | 2.53 | 0.48 | 4.77 | 0.62 | 0.26 |
| Punjab | 73.64 | 17.73 | 1.28 | 2.89 | 0.66 | 3.12 | 0.44 | 0.24 |
| Sindh | 77.92 | 16.29 | 2.94 | 1.36 | 0.88 | 0.24 | 0.26 | 0.11 |
| Khyber Pakhtunkhwa | 49.92 | 26.44 | 7.40 | 0.97 | 0.37 | 14.29 | 0.40 | 0.22 |
| Balochistan | 57.06 | 30.85 | 4.73 | 2.63 | 0.84 | 0.87 | 2.58 | 0.44 |

Source: PSLM 2010-11

The category 'Siana' includes spiritual healers.

Table 4.1 presents the percentage utilization of health care facilities by type of provider. The data is obtained from the recently available PSLM (2010-11) survey. According to the results of the survey, only 22 per cent of the population in Pakistan utilize public health facilities. In KPK and Balochistan, a relatively higher percentage of 33 per cent and 36 per cent respectively utilize public health services. Around 2.7 per cent of the respondents nationwide utilized RHUs and BHUs. Notice that the uptake of RHUs/BHUs is significantly higher in rural (3.90 per cent) than in urban areas (0.43 per cent). There is a great deal of provincial disparity in the usage of RHUs/BHUs: 7.4 per cent of the population in KPK use these services as against 1.28 per cent in Punjab.

Table 4.2: Pre-Natal Consultations in Pakistan by Type of Facility (PSLM 2010-11)

| PROVINCE & DISTRICT | PERCENTAGE OF CASES | | |
|-----------------------------------|---------------------|-----------|-----------|
| | URBAN | RURAL | TOTAL |
| Pakistan | | | |
| Pre - Natal Consultation | 79 | 57 | 64 |
| PERSON/FACILITY CONSULTED | | | |
| 1. Home TBA | 4 | 7 | 6 |
| 2. Home LHW | 3 | 7 | 6 |
| 3. Home LHV | 2 | 6 | 4 |
| 4. Home Doctor | 3 | 2 | 2 |
| 5. Govt. Hospital/RHC/BHU | 30 | 31 | 30 |
| 6. Private Hospital/Clinic | 58 | 47 | 51 |
| 7. Other | 1 | 1 | 1 |

Source: PSLM 2010-11

Most of the MNCH related services are also sought from the private sector. PSLM 2010 -11 data shows for instance that only 12 per cent of the deliveries are performed in government hospitals compared to 29 per cent performed in private hospitals and 58 per cent performed at home. Similarly around 30 per cent of the pre-natal consultations in Pakistan are conducted by the government facility in contrast to 51 per cent in private hospital/clinic (table 4.2). The corresponding figures for post-natal consultations are 22 per cent in government facility and 54 per cent in private facility.

As far as major factors responsible for low utilization of public health care facilities are concerned, the results of Pakistan Living Standards Measurement Surveys reveal that lack of adequate coverage of public health care facilities and low quality of services are the key reasons expressed by the respondents interviewed by these household surveys. Table 4.3 presents the results of PSLM 2007 -08 on reasons put forward by respondents for not using public health facility for the treatment of Malaria. The majority of respondents cited absence of government facilities followed by ineffective medicines; staff not being helpful; and facility too far away as the major reasons for not using a public health facility. Notice that the coverage of public health facilities appears to be quite low in Balochistan where 48 per cent per cent of respondents did not consult public health facility because they did not find one. The second highest percentage (14.7 per cent) responded that the facility was too far away.

Table 4.3: Reasons for Not Consulting Public Health Facility for the Treatment of Malaria (% of Respondents)

| Reasons | Total | Rural | Urban | Punjab | Sindh | NWFP | Balochistan |
|----------------------------|-------|-------|-------|--------|-------|------|-------------|
| No govt. facility | 26.3 | 27.8 | 24.0 | 29.9 | 13.9 | 18.5 | 47.5 |
| Medicines ineffective | 13.4 | 16.1 | 9.4 | 22.2 | 3.9 | 0.0 | 9.5 |
| Staff not helpful | 12.2 | 5.9 | 21.7 | 16.5 | 5.0 | 22.1 | 4.2 |
| Cannot treat complications | 11.1 | 12.9 | 8.5 | 3.1 | 30.6 | 0.0 | 5.1 |
| Doctors not available | 9.9 | 14.5 | 3.0 | 8.7 | 7.2 | 34.8 | 3.4 |
| Too far away | 7.4 | 4.8 | 11.2 | 3.9 | 10.9 | 5.9 | 14.7 |
| Timing not suitable | 6.9 | 4.8 | 10.1 | 0.0 | 17.1 | 4.7 | 12.7 |
| Not enough medicines | 6.1 | 7.8 | 3.6 | 10.9 | 1.3 | 2.1 | 1.0 |
| Doctors never available | 3.6 | 2.3 | 5.5 | 2.8 | 5.9 | 4.4 | 0.5 |
| No female staff | 1.7 | 1.1 | 2.7 | 2.1 | 0.0 | 7.5 | 0.0 |
| Other | 1.4 | 2.0 | 0.4 | 0.0 | 4.2 | 0.0 | 1.4 |

Source: PSLM 2007-08

Similarly for the treatment of diarrhoea, the major reasons cited by the respondents for not consulting public health facilities are distance; lack of government health facilities; and the lack of helpfulness of the staff (refer to table 4.4).

Table 4.4: Reasons for not Consulting Public Health Facility for the Treatment of Diarrhoea (% of Respondents)

| Reasons | Urban | Rural | Pakistan |
|----------------------------|-------|-------|----------|
| No govt. facility | 10.8% | 27.3% | 22.7% |
| Too far away | 27.1% | 20.6% | 22.4% |
| Staff not helpful | 8.0% | 9.6% | 9.2% |
| Medicines ineffective | 10.8% | 8.2% | 9.0% |
| Not enough medicines | 8.9% | 8.7% | 8.7% |
| Cannot treat complications | 8.8% | 6.1% | 6.8% |
| Timing not suitable | 10.6% | 4.6% | 6.3% |
| Doctors never available | 5.6% | 4.8% | 5.0% |
| Doctors not available | 3.7% | 5.1% | 4.7% |
| Other | 4.1% | 4.9% | 4.7% |
| No female staff | 1.5% | .1% | .5% |

Source: PSLM 2010-11

4.2.1 Benefit from Basic Health Unit

The latest Pakistan Living Standard and Measurement Survey 2010-11 includes a module on benefit from services that asks respondents about the usage of public services including basic health and family planning services. The survey asks questions about the frequency of usage of these services; reasons for not using public services; and the satisfaction level of the respondents from these services. Table 4.5-4.7 presents the responses of households to these questions.

Table 4.5: Usage of Basic Health Units (BHUs) by Regions in Pakistan (PSLM 2010-11)

| Region | Never | Sometimes | Often | All the time | Total |
|-------------|-------|-----------|-------|--------------|-------|
| Pakistan | 42.9 | 41.8 | 13.3 | 2.0 | 100 |
| Urban | 73.4 | 17.0 | 7.4 | 2.3 | 100 |
| Rural | 27.3 | 54.5 | 16.3 | 1.9 | 100 |
| Punjab | 48.9 | 35.5 | 14.3 | 1.4 | 100 |
| KPK | 28.1 | 53.0 | 16.1 | 2.8 | 100 |
| Balochistan | 17.3 | 64.5 | 12.8 | 5.4 | 100 |
| Sindh | 41.5 | 46.5 | 9.5 | 2.5 | 100 |

Source: PSLM 2010-11

Table 4.5 shows that around 43 per cent of the population in Pakistan has never used BHU whereas 42 per cent of the population has used this service at least once. The usage of BHUs is much higher in rural areas and in the province of Balochistan. When asked about the reasons for not using these facilities, the majority of respondents at the national level responded that the facility was either irrelevant or had insufficient facilities. A significant proportion of the respondents, particularly in rural areas, replied that the facility was too far away. Notice that only 3.3 per cent of the respondents in rural areas considered BHUs as irrelevant compared to 63.1 per cent who thought so in urban areas. With regards to the satisfaction level, around 54 per cent of the respondents nationwide were satisfied and 46 per cent were dissatisfied with the services.

Table 4.6: Reasons for not Using Basic Health Units (BHUs) by Regions in Pakistan (%) (PSLM 2010-11)

| Region | too far away | too expensive | improper | staff not available | insufficient facility | other | irrelevant | Total |
|-------------|--------------|---------------|----------|---------------------|-----------------------|-------|------------|-------|
| Pakistan | 16.3 | 1.1 | 1.7 | 5.1 | 21.4 | 29.6 | 24.9 | 100 |
| Urban | 3.5 | 1.6 | 1.7 | 2.2 | 7.8 | 20.2 | 63.1 | 100 |
| Rural | 23.5 | 0.8 | 1.7 | 6.7 | 29.0 | 35.0 | 3.3 | 100 |
| Punjab | 18.7 | 0.5 | 1.8 | 4.2 | 22.8 | 29.8 | 22.2 | 100 |
| KPK | 20.2 | 1.3 | 0.5 | 8.5 | 16.1 | 33.3 | 20.1 | 100 |
| Balochistan | 16.9 | 0.9 | 4.4 | 13.3 | 17.5 | 37.3 | 9.8 | 100 |
| Sindh | 8.3 | 2.6 | 1.6 | 3.7 | 21.3 | 25.7 | 36.8 | 100 |

Source: PSLM 2010-11

From an equity perspective, it is useful to know the usage of these basic health services varies by income level of the households. However, since Household Income and Expenditure Survey (HIES) accompanying PSLM (2010-11) had not been released officially at the time of this study, we were able to construct socio-economic groups by ownership of durable assets. Tables 4.7-4.8 show that it is mostly the less wealthy who use these services. The percentage of respondents who never used BHU increases as the income/assets of the household and the educational level of women increase. This shows that BHUs are more often accessed by households that belong to the lower socio-economic strata of the population.

Table 4.7 : Usage of BHUs by Asset Ownership (% of Respondents)

| Assets Level | Never | Some times | Often | All the time | Total |
|--------------|-------|------------|-------|--------------|-------|
| 0-4 items | 29.3 | 55.8 | 12.9 | 2.0 | 100.0 |
| 5-9 items | 37.0 | 45.6 | 15.6 | 1.8 | 100.0 |
| 10-14 items | 59.4 | 27.6 | 10.7 | 2.2 | 100.0 |
| 15-20 items | 71.8 | 16.6 | 7.9 | 3.7 | 100.0 |
| Total | 43.0 | 41.7 | 13.3 | 2.0 | 100.0 |

Source: PSLM 2010-11

Table 4.8: Usage of BHUs by Education of Women

| Education Level | Never | Some times | Often | All the time | Total |
|-------------------|-------|------------|-------|--------------|-------|
| Never attended | 31.8 | 53.1 | 13.0 | 2.1 | 100 |
| Less than Primary | 33.3 | 48.9 | 15.8 | 2.0 | 100 |
| Primary | 41.8 | 41.0 | 15.5 | 1.7 | 100 |
| Middle | 50.8 | 33.9 | 13.7 | 1.6 | 100 |
| Matric | 57.9 | 27.8 | 12.4 | 1.9 | 100 |
| Inter | 62.6 | 24.3 | 10.5 | 2.6 | 100 |
| Above inter | 66.3 | 22.5 | 8.8 | 2.5 | 100 |
| Total | 42.9 | 41.8 | 13.3 | 2.0 | 100 |

Source: PSLM 2010-11

4.3 Who Benefits from Public Subsidies on Health? Methods in Benefit Incidence Analysis

4.3.1: The Traditional Approach of Benefit Incidence Analysis (BIA)

The *Benefit Incidence Analysis (BIA)* is a well-known approach that is mostly used to evaluate methodically, the distribution of public health subsidies across individuals ranked by their living standards. In simple terms, BIA is an accounting procedure that estimates who receives how much of the public spending on a particular service (O'Donnell et al., 2008). The key objective is to determine whether the distribution of benefits from public health spending is pro-poor or pro-rich.

The standard Benefit Incidence Analysis involves four principal steps:

1. Categorize individuals according to some measure of living standards. In general, household consumption is used for socio-economic categorization of population.
2. Estimate the utilization of public health services in relation to living standards.
3. Weight each individual's use of service by the value of the public subsidy she receives.
4. Evaluate the distribution of the subsidy against some target distribution.

The service public subsidy on service j received by an individual i is estimated as:

$$S_{ji} = q_{ji}c_{jk} - f_{ji}$$

Where q_{ji} represents the quantity of service j utilized by individual i ; c_{jk} is the unit cost/subsidy of providing service j in region k where individual i resides and f_{ji} represents the amount paid for service j by i .

The unit cost or per unit subsidy for a particular services is computed using data on government spending on that particular service from national health accounts or any other documented source. More specifically, unit costs/unit subsidy is obtained by dividing the total government expenditure (Net of any cost recovery fees and out of pocket payments etc.) for a particular service by the number of users of a particular service.

4.3.2 Data Requirements

The traditional Benefit Incidence Analysis requires two types of data: 1) Micro level household survey containing data on income/consumption of households as well as the utilization of health services by these households, distinguishing clearly the type of facility used (such as public and private); 2) national health accounts containing data on government recurrent expenditure on particular health services that one is interested in and an estimate of the cost recovery fee or out-of pocket expenditure on that particular service. Ideally, government expenditure data needs to be disaggregated by regions and by the type of service provided.

4.3.3 Assumptions

The standard approach of *Benefit Incidence Analysis* is based upon some critical assumptions that are given as below:

1. The approach only considers the monetary benefits of public health subsidies. Non-monetary benefits of health subsidies - that can be substantial in many cases- are excluded. Immunization services, for instance, often results in saving human lives and having a life time free of disability and disease. These benefits albeit substantial, are hard to measure and are therefore excluded from the traditional Benefit Incidence Analysis.
2. Data on utilization of health services do not capture differences in the quality of service provided. These differences can be substantial across regions such as rural/urban and across socio-economic groups. Given the lack of information on quality, the BIA approach assumes that the quality of publicly provided service is homogenous across various users of the service.

4.3.4 Limitations of Traditional BIA Approach

Traditional BIA is criticized on many accounts and much of this criticism is related to the unreliability of unit cost/unit subsidy data. In literature, government budget or expenditure data are utilized to derive unit subsidies in health care. Government budget or expenditure data is often unreliable, doubtful and frequently inadequately disaggregated by region or type of service. In many cases, health resources are jointly used across a range of services and a clear demarcation of resources across different services is often very complex. Moreover, in many cases, the only data available is data on budgetary allocations whereas BIA requires actual recurrent expenditure data and there can be a substantial difference between the two especially when the entire budget is not utilized or when government funds are insufficient to provide budgeted amounts.

The purpose of our study is to conduct Benefit Incidence Analysis for MNCH in Pakistan and there are two crucial reasons that prevent us from applying the traditional approach of BIA to our study on MNCH. *First*, the national health accounts data is not disaggregated enough by type of service provided. Although, we are able to get expenditure data on MNCH, we do not have any information on how much is spent on each service/intervention that fall within the purview of MNCH. For instance, we do not know how much is spent on deliveries, pre-natal and post natal care etc. We cannot assume a uniform unit cost/subsidy for these services as there are substantial variations in per unit cost between, for example, deliveries and pre-natal care and between pre-natal and post-natal care. *Second*, MNCH related health services are not categorically defined in national health accounts. Expenditure on many of the programmes closely related to MNCH such as the Expanded Programme on Immunization (EPI); Anti Malaria; Nutrition and hygiene programmes; and Lady Health Workers (LHW) programmes etc. are categorized separately from MNCH related expenditure. Public expenditure data on these other programmes are neither published in National Health Accounts Report in disaggregated form nor available publicly. Due to these limitations, we opt for an alternative approach often referred to as the 'Utilization Incidence Approach' or 'Participation Incidence Approach.' The econometric results from this approach are shown by earlier studies to be similar and in fact much more intuitively reasonable than the traditional Benefit Incidence Analysis Approach (refer to section 4.4 on literature review for more on this). This approach is also called the Binary Approach and is described in the next sub-section.

4.3.5 The Utilization Incidence Approach: An Alternative to the Benefit Incidence Analysis

The *Utilization Incidence Analysis*, also referred to as the Binary Approach, is the most frequently applied approach for the analysis of public health subsidies on maternal and child health services because it avoids reliance on doubtful unit cost data. Simple binary indicator codes 1 if a particular service is used and 0 otherwise. An important assumption here is that all those who use a particular service or participate in a programme receive the same benefits. Moreover, just like the traditional Benefit Incidence Analysis, this approach assumes that the quality of service received is the same regardless of the socio-economic group that a beneficiary belongs to. This may not be true in practical terms as there may be differences in the quality of services provided to various members of across socio-economic groups. However, according to Younger and Sahn (2000), “the method is easy to implement, and going beyond it is not easy.”

As discussed in the next section, a number of studies have applied this approach. Heltberg et al. (2003) for instance, analysed benefit incidence by using binary approach for antenatal care and vaccination for children of age 0-5 years in Mozambique. Gaddah and Munro (2011) and Alabi et al. (2010) applied this approach to examine prenatal care, postnatal care and immunization for 0-5 years in Ghana and Nigeria respectively. Younger (2000) used this approach to analyse the incidence of childhood vaccination and preventive healthcare for children in Peru. Similarly, Glick and Razakamanantsoa (2002) examined prenatal care and child vaccination in Madagascar by applying this approach. Glick et al. (2004) also examined the incidence of child vaccination with reference to gender gaps and advocated the usefulness of binary approach by arguing that despite its simplicity, the binary method has been shown to yield the results very similar to those that employ the cost of provision method.

4.3.6 Evaluating the Progressivity and Pro-poorness of Benefits

The Benefit Incidence Analysis provides us estimates of the shares of public health subsidies accruing to various population groups ranked by their living standards. Likewise, the Utilization Incidence Analysis gives us estimates of the benefits in terms of the participation of each population group in the utilization of a particular public health service. This distribution of public health subsidies or benefits is finally compared with some target distribution – mostly the population shares of each group – in order to evaluate whether public health services are pro-poor. For this purpose, the concentration curve and the concentration index for public health benefits are generally used.

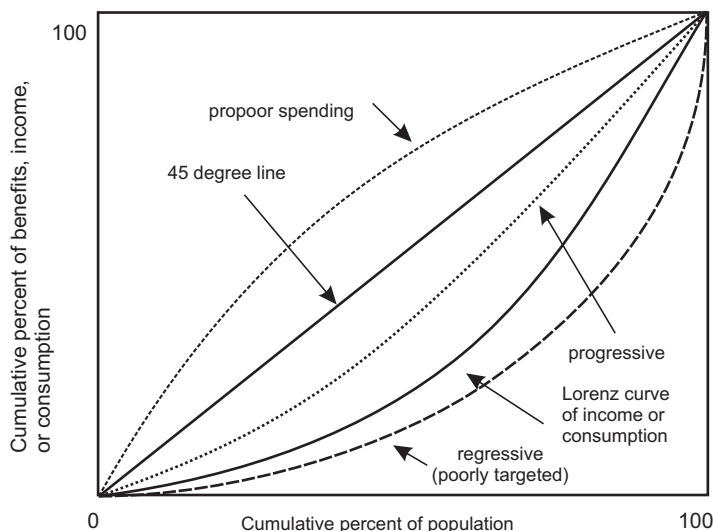
The concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line). The line of equality represents perfect equality which implies that each population group receives the same share which is equal to its share in the total population.

If there is no socioeconomic-related inequality, the concentration index value is zero. Negative (positive) value of concentration index indicates the disproportionate concentration of the health variable among the poor (rich) people. CI takes the negative value when concentration curve lies above the line of equality (45-degree line) and vice versa for positive value of CI. The concentration curve plots the cumulative percentage of the health variable on y-axis against the cumulative percentage of the population, ranked by living standards (from poorest to the richest) on x-axis (O'Donnell et al., 2008). Figure 4.1 plots the cumulative percentage of public health benefits on y-axis against the cumulative

percentage of the population ranked by living standards on x-axis. The public health benefits are pro-poor if the concentration curve lies above the 45-degree line. In this case, the poorest 20 per cent of the population receives more than 20 per cent of total public health subsidies. To put it differently, the benefits of public health subsidies are relatively more concentrated amongst the poor income groups and their share in total public health subsidies is greater than their share in total population. The concentration curve in this case is said to dominate the 45-degree line of equality. If on the other hand, concentration curve lies below the 45-degree line, then public health services and their benefits are pro-rich.

If public health subsidy is considered as part of final income, then one might be interested in knowing whether public health subsidies reduce income inequality or not. In this case we need to compare the distribution of income/consumption with the distribution of public health subsidies. If public health subsidies are more equally distributed than the distribution of consumption, then public health subsidies are thought to reduce income inequality and are referred to as progressive. In this particular case, the concentration curves lies above (or dominates) the Lorenz curve that reflects the distribution of income/consumption. If on the other hand, benefits are distributed more unequally than consumption (i.e. the concentration curve lies below the Lorenz curve or Lorenz curve dominate the concentration curve of benefits), services are said to be regressive (Younger et al., 2000., Davoodi et al., 2003 and O'Donnell et al., 2008).

Figure 4.1: Evaluating the Pro-poorness and Progressivity of Public Health Benefits through Concentration Curve



Source: Davoodi (1995); and Demery (2000)

The Kakwani index is often used as a summary measure of the progressivity of public health subsidies and is defined as twice the area between a concentration curve and the Lorenz curve. It is calculated as:

$$\text{Kakwani index} = \text{Concentration index} - \text{Gini index}$$

The value of Kakwani index ranges from -2 to 1 . If the concentration curve dominates the Lorenz curve, its value is negative and vice versa for positive value of Kakwani index. The Kakwani index takes zero value in the case in which concentration curve lies on top of the Lorenz curve (O'Donnell et al., 2008).

Dominance Testing:

Dominance testing is conducted by comparing the concentration curves of benefits with the two benchmarks that are 45-degree line and Lorenz curve. "One decision rule that has been used in Lorenz (concentration) dominance tests has been to reject the null of non-dominance in favour of dominance if there is at least one significant difference between curves (or a curve and the 45-degree line) in one direction and no significant difference in the other. For example, if there is at least one quintile point at which curve A lies significantly above curve B and there is no quintile point at which curve B lies above curve A, then it is concluded that A dominates B (O'Donnell et al, 2008). The present study employs the multiple comparison approach decision rule, with comparisons at 19 equally spaced quintile points at 5 per cent significance level. STATA ado file prepared by World Bank authors (O'Donnell et al., 2008) is used for dominance testing in present study.

4.4 A Review of BIA Studies and their Findings

Benefit Incidence Analysis (BIA) is carried out by large number of studies all over the world to access the distribution of benefits from public provision of a range of services that not only includes health but many other sectors including education. Some selected studies that have applied this approach to analyse the distribution of public subsidies, among socio-economic groups, across a range of services include Demery, L et al. (1995); Younger, S. D (2000); Glick, P (2002, 2004); Heltberg, R et al. (2003); Davoodi, H.R et al. (2003); Hovhannisyanyan, S (2006); Syntyche, N.D et al. (2007); Akram, M and Khan, F.J (2007); and Demery, L and Gaddis, I (2009). Gasparini, L.C and Panadeiros, M (2004) examined many other programs along with health programs, such as milk in hospitals and food in kindergartens and meals in local centers programme. Khatib, R and Mataria, A (2010) analysed the education and infrastructure sector (water and electricity) as well as the health sector. Similarly, Selowsky, M (1979) analysed health, education, electricity, piped water, and sewerage sector.

In literature, Selowsky, M (1979) is the pioneer of studies for the incidence of public spending. He analysed the incidence of public spending in Colombia. Later on, most well-known studies for the incidence of government expenditures are organized by Van de Walle and Demery. Their analysis is further used by many researchers who extended the analysis according to the availability of data.

Within the health sector, two dimensions of benefits are examined in the literature: distribution of utilization of health services and distribution of health subsidy. When cost data is unavailable and unreliable, the distribution of utilization or participation rate of health facilities is analysed instead of the distribution of health subsidies in monetary terms (see e.g. Sahn and Younger, 2000; Younger, 2000; Glick and Razakamanantsoa, 2002; Heltberg et al., 2003; Khatib and Mataria, 2010; Alabi, et al., 2010; Gaddah and Munro, 2010; and Acharya et al., 2010).

As far as the findings of these studies are concerned, many studies find a pro-rich bias in the distribution of public health subsidies particularly in developing countries. According to the studies conducted by the

World Bank (2004), for instance, government health expenditure in developing countries is pro rich as compared to the developed countries such as UK and Denmark where it is pro-poor. These studies find for instance that around 50 per cent of the total public subsidies on health sector accrue to the richest 20 per cent of the population compared to less than 5 per cent that accrue to the poorest 20 per cent in the Indian state of Bihar. Similarly in other developing countries such as Peru, Ghana, Vietnam, and Indonesia, a clear pro-rich pattern is seen in terms of benefit incidence of public health spending. World Bank (2004) argues further that the pattern of public spending on health in these countries is such that the major share of public spending is directed towards specialized hospitals in urban centres, the beneficiaries of which are the rich, while very little is spent on preventive and curative care utilized by the rural poor.

Doorslaer (1993) studies health care financing in five countries including Peru, Cote d'Ivoire, Ghana, Bolivia and Jamaica and finds that the allocation of funds by the Health Ministries favours urban, hospital based care and under-serves the rural population. In Ghana, two-thirds of the health budget is spent on hospital services. In South Africa, 89 per cent of the health care budget is spent on hospitals and in Madagascar and Kenya, this share is more than 50 per cent (Castro-Leal, Dayton, Demery, and Mehra, 2000). A comprehensive review of major studies along with their findings; data used; country of study; technique employed; and limitations are provided in a table in appendix B.

Although a number of studies have been conducted in an international context to determine as to who benefits from public subsidies on health, no systematic study has been conducted for Pakistan especially in the context of MNCH. There is only one working paper by Akram and Malik (2007) that has made an attempt to measure the incidence of government health spending in Pakistan by using PSLM 2004-05. The findings of the paper indicate that the overall public health spending is regressive in Pakistan whereas spending on mother and child health is more regressive in Punjab compared to other provinces. The paper however suffers from several technical limitations. Foremost among them is its method of computing per capita expenditure on health which is a critical component in conducting the benefit incidence analysis. More specifically, the study computes per capita public expenditure on health by dividing the total public expenditure on health by the *total* population rather than the population that uses those services. Furthermore, the study assumes that the average expenditure on MNCH is 40 per cent of the overall average expenditure incurred on health which appears to be an arbitrary assumption. The study also does not indicate what services (such as prenatal care, postnatal care, vaccinations and delivery services etc.) are included under MNCH.

Using the latest available data, the present study is the first ever systematic study on the distribution of benefits from public health services in the context of MNCH in Pakistan. The next sub-section presents the key variables and sources of data.

4.5 Benefit (Utilization) Incidence Analysis of Public Health Services for MNCH in Pakistan

In this section, we report and discuss the results of our analysis for MNCH related public health services in Pakistan. As described earlier, the major objectives of our quantitative analysis are to seek answers to the following key questions:

- Who are the beneficiaries of public spending on MNCH in Pakistan?
- Is public spending on MNCH in Pakistan pro-poor or pro-rich? Which services are more pro-poor/pro-rich than others?
- Is public spending on MNCH in Pakistan progressive? To figure out the progressivity of public health spending, we compare the distribution of utilization of public health spending and the distribution of income/consumption. If the utilization of public health spending is more equally distributed than the distribution of consumption, then public health spending is thought to reduce income inequality and is considered as progressive.
- Which provinces depict greater inequality in the distribution of benefits from public spending on MNCH?

4.5.1 Data and Variables

The latest available micro-level household data set of Pakistan Living Standards and Measurement Survey (2010-11) along with the accompanying Household Income and Expenditure Survey (HIES) have been utilized for the purpose of our analysis. A comparison using 2007-08 data has also been made in order to access trend in the utilization incidence of public health services by income groups. Representative sample size of 76546 was used for 2010-11 survey to yield statistics that were representative at national, provincial and district level. This sample size was much bigger than the 2007 - 08 survey that used 15512 households to produce the reliable results at national, provincial and regional level. Two types of sampling frames were adopted for urban and rural areas. With regards to the sampling frame for urban areas, cities/towns were divided into Enumeration Blocks (E.Bs). Each E.B was comprised of about 200-250 households and further divided into low, middle, and high income groups. In case of sampling frame for rural areas, the lists of villages/mouzas/dehs according to Population Census, 1998 were utilized (PSLM, 2007-08 Reports).

A two-stage stratified sampling design was adopted in these surveys. At first stage, Primary Sampling Units (PSUs) were selected from different strata and sub-strata. Enumeration Blocks in urban areas and villages in rural areas were selected as PSUs while at second stage, households within the sample Enumeration Blocks/Villages were selected as Secondary Sampling Units (SSUs). By using systematic sampling technique with a start, twelve and sixteen households were selected in each urban PSU and rural PSU respectively. This sampling procedure implied that households from different parts of the country were selected with different probabilities of selection. Sampling weights were taken into account to get the representative estimates at national, provincial and regional level. These sampling weights were according to the sampling strategy of the survey and weighed each household by a factor that was inversely proportional to its probability of selection. Each household was visited twice for the interview. Social sector information was collected in the first visit and consumption/expenditure data was collected in the second visit (PSLM, 2007-08 Reports).

Household Integrated Economic Survey (HIES) collects data for household expenditure and income in different dimensions. In 1998-99, the HIES was integrated with PIHS by revising the data collection

method and questionnaire. After this, HIES is conducted as an Integrated Survey with PIHS and PSLM (HIES, 2007-08 Report).

PSLM (2010-11) provide a rich source of data related to education, household assets /amenities, health (immunization, prenatal and postnatal care, malaria, diarrhoea, family planning etc.), consumption expenditures and income etc. The following MNCH related variables, data on which is available from PSLM (2010-11), are used for the purpose of the present study. These are the only MNCH related services that are covered under PSLM.

- Women who received pre-natal consultation from a public provider
- Women who received assistance in delivery of their child through a public provider
- Women who received post-natal care from public provider
- Women who received Tetanus Toxoid injection from a public provider
- Children under five years who received full immunization from a public provider

Moreover, a distinguishing feature of PSLM 2010-11 - that sets it apart from previous surveys - is that includes a separate module on benefit form services and facilities. The health related services included in this module are Basic Health Unit (BHU) and Family Planning Unit (FPU). These two variables are also analysed for their usage by income groups.

PSLM survey collects information from ever married women aged 15-49 years who had given birth in the last three years from survey. They are asked about at least one visit for prenatal and postnatal consultation and child delivery place for last pregnancy. If they had received prenatal and postnatal service, they are further asked about the type of facility for these services: either public or private. They are also asked about place of child delivery. The table given below indicates the standard classification of the type of facility for prenatal consultation, post-natal consultation, and place of child delivery

Table 4.9: Standard Classification of the Type of Health Care Provider used in PSLM

| Pre-natal and Postnatal Consultation | Child Delivery Place |
|---|-----------------------------|
| Home (Traditional Birth Attendant) | Home |
| Home Lady Health Worker | Govt. Hospital/Clinic |
| Home Lady Health Visitor | Private Hospital/Clinic |
| Home doctor | Other |
| Govt. Hospital/Clinic | |
| Private Hospital/Clinic | |
| Family Welfare Center | |
| Reproductive Health Service Unit | |
| Mobile Service Unit | |
| Other | |
| | |

Source: PSLM Standard Questionnaire

The focus of present study is on public provision of health care facilities, therefore, home LHW, home LHV, Govt. hospital/Clinic, Family Welfare Center, Reproductive Health Service Unit and Mobile Service Unit are considered as public providers for prenatal and postnatal consultation. For child delivery, govt. hospital/clinic is considered as public provider.

Under-five years of age children and pregnant women are vaccinated by EPI Program. EPI program aims to protect children against Childhood Tuberculosis, Poliomyelitis, Diphtheria, Pertussis, Tetanus & Measles by vaccinating 4 antigens such as BCG, Trivalent OPV, DPT and Measles to prevent above mentioned diseases. Pregnant women are also vaccinated with Tetanus Toxoid vaccine to protect new-born from neonatal tetanus through EPI program. Expanding the coverage of immunization is the primary objective of Government of Pakistan. Preventive health services, including EPI are almost exclusively provided by public sector health care delivery system. These immunizations often include antigens other than the routine EPI like MMR, Hib etc (MOH, 2003).

In keeping with the generally accepted convention, the living standards indicator that we use is consumption expenditure. More precisely, we use 'monthly per Adult Equivalent Consumption Expenditure.' A relatively simple equivalence scale: 0.8 for all those household members younger than 18, and 1 for all the other household members is used for per adult measurement.

4.5.2 Data Caveats and Limitations of the Study

Before we report the results of our exercise, it important to reconcile some data caveats that we alluded to in several places above:

- First, as mentioned earlier, due to non-availability of disaggregated unit cost data on various MNCH services, we are not able to estimate the monetary benefits of public health services accruing to various socio-economic groups.
- Benefits are measured in terms of utilization of services. So anyone who uses a public health service is considered as beneficiary. Of course, same level of health services utilization may yield different benefits to different people depending upon their medical and socio-economic conditions. For instance, a person who is very sick as well as poor is likely to get more benefit from using a particular health facility than a person who is not very sick and has a relatively better socio-economic status. This study, however, assumes that everyone who utilizes a particular health facility receives the same benefit.
- One limitation of our study that also holds for the traditional BIA approach is that unit costs/utilization may be a poor proxy of the benefits received by individuals because there may be substantial social benefits of a particular health service that are not captured by cost or utilization data per se. The cost of a polio and DPT vaccine cannot possibly reflect the value to a child of a lifetime free of polio, tetanus, pertussis and diphtheria. Similarly, the cost of a few pre-natal and post-natal visits cannot fully capture the impact of prenatal and postnatal care on a new born's current and future health.
- Data on utilization of health services do not capture differences in the quality of service provided. These differences can be substantial across regions such as rural/urban and across socio-economic groups.
- In case of maternal delivery, there are only four categories of service facilities given in the questionnaire: home, private hospital/clinic, government hospital/clinic, and other. Home deliveries are not further categorized by the type of attendant: public or private. To deal with this limitation, we focus on 'hospital based maternal deliveries' that take place in a public facility.

4.6 Results and Discussion

In this section, we present the results of Benefit Incidence Analysis where benefits are defined in terms of the utilization of public health services. Anyone who participates in a public health programme or utilizes a public health facility is considered to be a beneficiary of public health subsidies. Benefit (Utilization) Incidence Analysis will reveal the percentage share of each socio-economic group in the total utilization of a particular public health service. Based upon this information, we will be able to comment on whether the benefit (usage) of a particular public health service is more concentrated among the rich or the poor. We will also compute concentration indices and construct concentration curves for each service by regions. With the help of Dominance Testing, we will be able to conclude whether particular health service utilization is pro-poor and progressive. Concentration indices and Kakwani Indices will also be reported to predict the extent to which these services are progressive and pro-poor.

4.6.1 Pre-Natal Consultation Services

Table 4.10 presents the results of UIA for pre-natal consultation at rural-urban and national level. The first column in each region indicates the percentage share of each income group in the total consultation conducted in public health facilities. These shares add up to 100 per cent. The results show that in 2007-08, the percentage share of the poorest 20 per cent in total consultations was merely 16 per cent compared to 22.5 per cent for the richest quintile. This shows that richer income groups benefitted more in terms of utilizing public health spending than the poorer income groups during this period. This situation however appears to have improved lately with the latest data for 2010-11 showing a pro-poor trend in the utilization: in 2010-11 around 21 per cent of the poorest quintile utilized public health services, whereas 15.5 per cent of the richest income group utilized the same. This pattern seems to be consistent for rural and urban areas with higher public health utilization/participation rate among poorer income groups in 2010-11.

The second column in each region indicates the participation rate which shows the utilization rate of public health services. Overall, 20.4 per cent of those who qualify for pre-natal consultations used public health facilities in 2007-08. This rate increased to 26.2 per cent in 2010-11.

Table 4.10: Utilization Incidence of Public Health Services for Pre-Natal Consultation in Pakistan

| | Pakistan (2007-08) | | Pakistan (2010-11) | |
|-----------------------|---------------------------------|--------------------|---------------------------------|--------------------|
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.161 | 0.164 | 0.209 | 0.273 |
| 2nd | 0.196 | 0.200 | 0.220 | 0.287 |
| 3rd | 0.194 | 0.199 | 0.199 | 0.261 |
| 4th | 0.224 | 0.229 | 0.218 | 0.285 |
| 5th | 0.225 | 0.230 | 0.155 | 0.203 |
| All | 1 | 0.204 | 1 | 0.262 |
| | Urban Pakistan (2007-08) | | Urban Pakistan (2010-11) | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.155 | 0.205 | 0.249 | 0.324 |
| 2nd | 0.203 | 0.269 | 0.238 | 0.310 |
| 3rd | 0.211 | 0.280 | 0.236 | 0.307 |
| 4th | 0.216 | 0.285 | 0.150 | 0.196 |
| 5th | 0.215 | 0.284 | 0.127 | 0.163 |
| All | 1.00 | 0.265 | 1 | 0.260 |
| | Rural Pakistan (2007-08) | | Rural Pakistan (2010-11) | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.174 | 0.157 | 0.199 | 0.261 |
| 2nd | 0.216 | 0.195 | 0.221 | 0.290 |
| 3rd | 0.181 | 0.164 | 0.173 | 0.227 |
| 4th | 0.219 | 0.198 | 0.215 | 0.282 |
| 5th | 0.21 | 0.19 | 0.192 | 0.252 |
| All | 1.00 | 0.181 | 1.00 | 0.262 |

As explained in detail in section 4.3.6, public health spending is referred to as ‘pro-poor’ if the utilization share of public health services by the poor is more than their share of population. So if e.g. utilization share of the poorest 20 per cent of the population is more than 20 per cent of the total utilization, then public health spending is pro-poor. From the results on pre-natal consultation above, it appears that public health utilization was pro-rich in 2007-08 as the percentage shares of public health utilization by richer income groups (quintiles 4 and 5) were greater than their respective shares in population (which is 20 per cent). In contrast the percentage shares of public health utilization by poorer income groups (quintiles 1, 2 and 3) were less than their respective shares in population. This situation seems to have improved in 2010-11 and the distribution of benefits for pre-natal consultation has become pro-poor.

Table 4.11 reports the results of UIA for pre-natal consultation by provinces. The results show huge inequalities between the lowest and the highest consumption quintiles in all provinces in 2007-08. For instance, in Punjab and Balochistan, the poorest women’s shares in utilization were 16 per cent and 13 per cent for prenatal consultation in Punjab respectively and the richest women were receiving 26 per

cent and 30 per cent share in these provinces respectively. In the provinces of Sindh and KPK, the utilization shares of poorest women were 15 per cent and 17 per cent respectively and the richest women's share in total utilization was 17 per cent and 19 per cent in respective provinces in the same year. This distribution of utilization improved and turned more equitable in 2010-11 in all provinces except Balochistan where the distribution of benefits from prenatal consultation is still inequitable.

Table 4.11: Utilization Incidence for Pre-Natal Consultation by Provinces

| | Punjab 2007-08 | | Punjab 2010-11 | | Sindh 2007-08 | | Sindh 2010-11 | |
|-----------|----------------|--------------------|----------------|--------------------|---------------------|--------------------|---------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.155 | 0.133 | 0.222 | 0.296 | 0.154 | 0.175 | 0.187 | 0.197 |
| 2nd | 0.164 | 0.141 | 0.236 | 0.313 | 0.223 | 0.254 | 0.237 | 0.249 |
| 3rd | 0.181 | 0.155 | 0.221 | 0.294 | 0.212 | 0.241 | 0.171 | 0.181 |
| 4th | 0.239 | 0.205 | 0.193 | 0.257 | 0.239 | 0.272 | 0.245 | 0.259 |
| 5th | 0.261 | 0.224 | 0.129 | 0.171 | 0.172 | 0.195 | 0.16 | 0.168 |
| All | 1 | 0.172 | | 0.266 | 1 | 0.228 | | 0.211 |
| | KPK 2007-08 | | NWFP 2010-11 | | Balochistan 2007-08 | | Balochistan 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.167 | 0.224 | 0.192 | 0.314 | 0.132 | 0.167 | 0.135 | 0.156 |
| 2nd | 0.21 | 0.283 | 0.193 | 0.315 | 0.196 | 0.247 | 0.217 | 0.254 |
| 3rd | 0.2 | 0.268 | 0.182 | 0.297 | 0.182 | 0.23 | 0.189 | 0.216 |
| 4th | 0.232 | 0.309 | 0.204 | 0.333 | 0.186 | 0.233 | 0.218 | 0.251 |
| 5th | 0.191 | 0.256 | 0.229 | 0.373 | 0.304 | 0.382 | 0.241 | 0.277 |
| All | 1 | 0.268 | | 0.326 | 1 | 0.252 | | 0.231 |

Table 4.12 presents the results of regional distribution of the incidence public health services utilization for pre-natal consultation. The results show that the share of Punjab in total public health services utilization for pre-natal consultation is the highest (47 per cent) which further increased to 59.4 per cent in 2010-11. The benefit utilization share of Balochistan is the lowest at 17 per cent which reduced further to 5 per cent in 2010-11. These shares in utilization are however more or less consistent with their respective population shares. Likewise, In terms of rural-urban division, rural areas seem to be utilizing more public health services than urban areas. This makes sense as the majority of the population in Pakistan resides in rural areas. The participation rate in public health services for pre-natal consultation is also higher in rural than in urban areas.

Table 4.12: Regional Distribution of Incidence of Public Health Services Utilization for Pre-Natal Consultation.

| Province/Region | 2007-08 | | 2010-11 | |
|-----------------|---------|--------------------|---------|--------------------|
| | Share | Participation Rate | Share | Participation Rate |
| Punjab | 0.467 | 0.301 | 0.594 | 0.266 |
| Sindh | 0.119 | 0.189 | 0.168 | 0.211 |
| NWFP | 0.244 | 0.534 | 0.188 | 0.326 |
| Balochistan | 0.169 | 0.412 | 0.051 | 0.231 |
| Urban | 0.127 | 0.152 | 0.299 | 0.260 |
| Rural | 0.873 | 0.394 | 0.701 | 0.262 |

In order to make definite conclusions about whether public health services for pre-natal consultation in Pakistan are pro-poor or pro-rich, we need to look at the concentration curves and concentration indices. The result from Dominance Tests will confirm whether the concentration curves dominate the 45-degree line or vice versa. Figure 4.2 plots the concentration curve for public health services utilization from pre-natal consultation against the 45-degree line and against the Lorenz curve. The concentration curve for 2010-11 lies above the 45-degree line indicating that the utilization of public health services for pre-natal consultation is pro-poor. Table 4.13 reports the results of the Dominance test. The positive sign against 45-degree line shows that the concentration curve dominates the 45-degree line and hence the utilization benefits are concentrated more among the poor.

With respect to progressivity, public health spending is considered to be progressive if the distribution of benefits in terms of utilization is more equal than the distribution of consumption. In this case, the concentration curve for benefits should lie everywhere above the Lorenz curve for consumption. Figure 4.2 shows that concentration curve lies above the Lorenz curve indicating that public health benefits for pre-natal consultation are weakly progressive (distributed relatively more equal than consumption). Table 4.13 confirms the dominance of concentration curve over the Lorenz curve.

Figure 4.2: Concentration Curve for Public Health Benefits for Pre-Natal Consultation in Pakistan (2010-11)

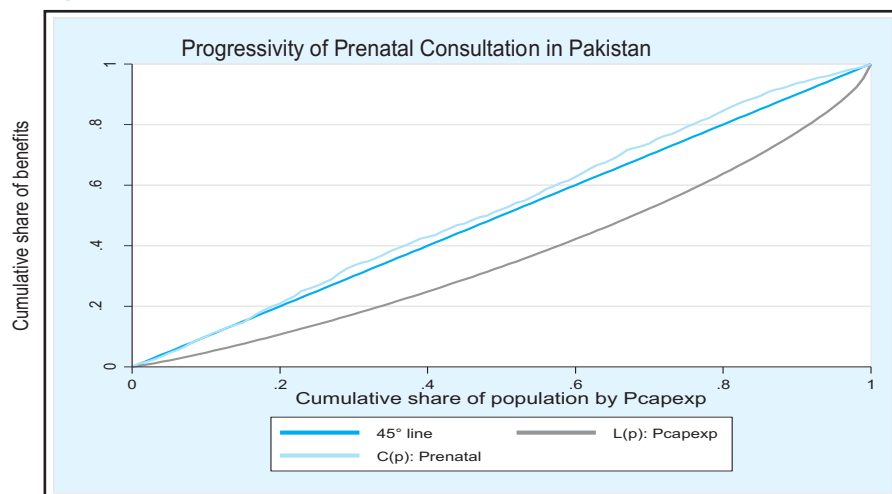


Table 4.13: Dominance Test for Pre-Natal Consultation (2010-11)

| Prenatal Public Health Services | | | | | | | |
|---------------------------------|----------|-------|-------|--------|-------|-----|-------------|
| | Pakistan | Urban | Rural | Punjab | Sindh | KPK | Balochistan |
| Against Lorenz Curve | + | + | + | + | + | + | + |
| Against 45 Line | + | + | + | + | + | | |

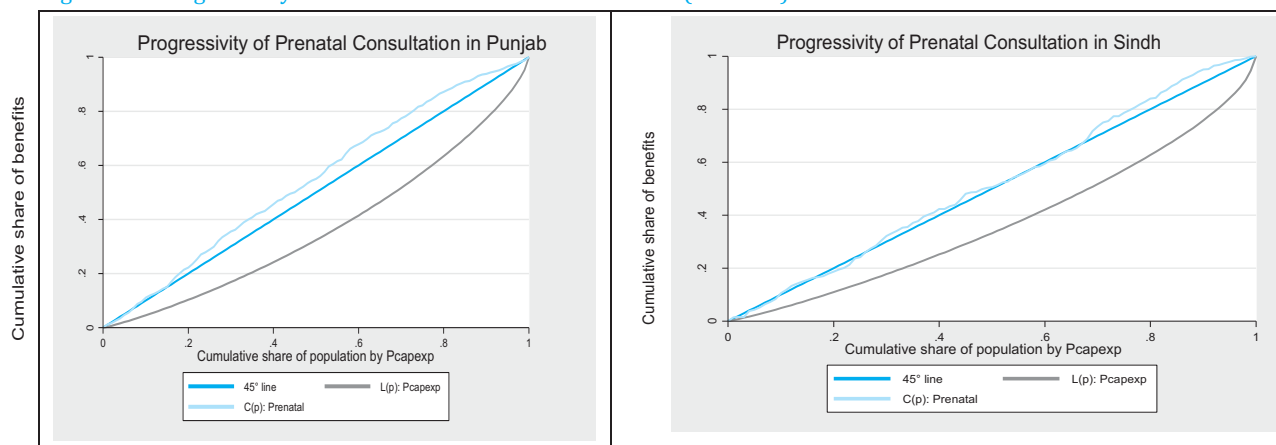
Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

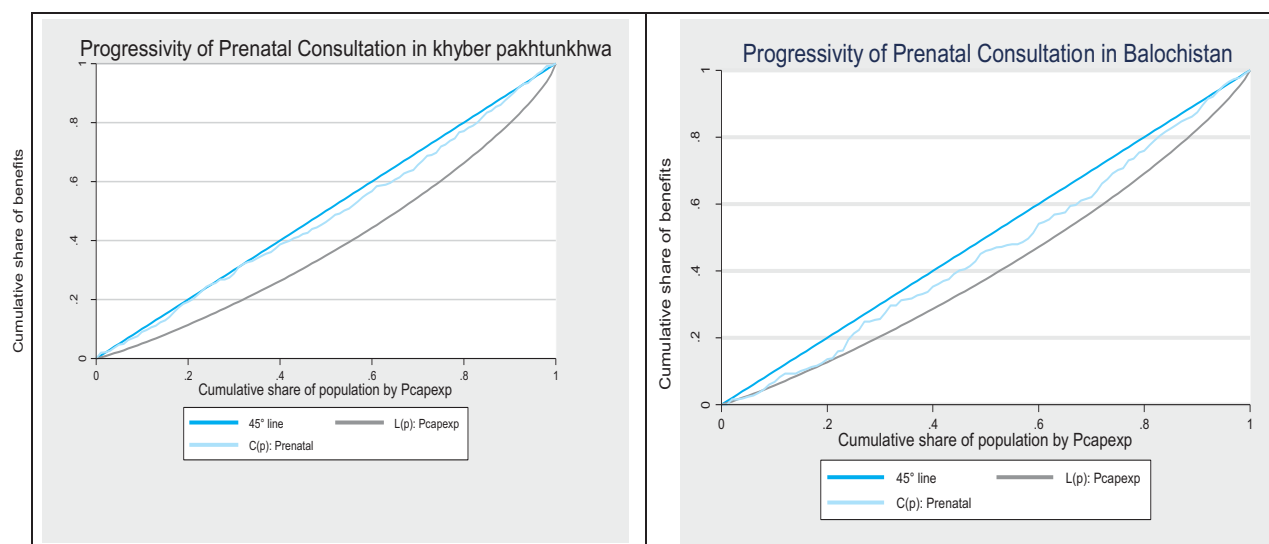
+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

Figure 4.3 plots the concentration curves against the Lorenz curve and 45-degree line for the four provinces using 2010-11 data. The plots show that in Punjab concentration curves clearly lie above the 45-degree line and therefore the benefits are clearly pro-poor whereas in Balochistan, the benefits are still pro-rich. The results from dominance test in table 4.13 confirm this. In Sindh and NWFP, on the other hand, concentration curves are more tightly located with the 45-degree line. The dominance tests in table 4.13 predicts the dominance of concentration curve in Sindh (indicating pro-poor utilization) while non-dominance for KPK and Balochistan.

Figure 4.3: Progressivity of Prenatal Consultation in Provinces (2010-11)





With respect to progressivity, all provinces show progressivity of benefits, with concentration curves dominating the Lorenz curves. Dominance tests (table 4.13) confirm the dominance of concentration curve over Lorenz curve for all regions. Table 4.14 presents the Kakwani Indices. Negative values of these Indices show that the utilization benefits are weakly progressive in all provinces. Notice that the values of concentration indices are negative for all regions except KPK and Balochistan indicating a pro-rich distribution of utilization benefits in these two provinces.

Table 4.14: Progressivity Analysis of Utilization Incidence of Public Health Spending for Pre-Natal Consultation (2010-11)

| Prenatal Public Health Services | | | | | | 95% Confidence Interval | |
|---------------------------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T-ratio | Lower | Upper |
| Pakistan | -0.048 | 0.254 | -0.302 | 0.020 | -15.352 | -0.340 | -0.263 |
| Urban | -0.139 | 0.287 | -0.426 | 0.033 | -12.764 | -0.492 | -0.360 |
| Rural | -0.011 | 0.226 | -0.238 | 0.023 | -10.482 | -0.282 | -0.193 |
| Punjab | -0.090 | 0.262 | -0.352 | 0.027 | -13.061 | -0.405 | -0.299 |
| Sindh | -0.029 | 0.259 | -0.288 | 0.044 | -6.516 | -0.375 | -0.201 |
| KPK | 0.039 | 0.223 | -0.183 | 0.034 | -5.347 | -0.251 | -0.116 |
| Balochistan | 0.084 | 0.181 | -0.097 | 0.040 | -2.408 | -0.177 | -0.017 |

4.6.2 Post-Natal Consultation

Table 4.15 shows the incidence of public health services utilization for post-natal consultation in Pakistan. The results show a clear pro-rich pattern in post-natal health services utilization in 2007-08. The percentage share of bottom income quintile in public health services utilization was merely 12 per cent compared to the share of 36.3 per cent for top income quintile. This pro-rich pattern in utilization shares was consistent in 2007-08 for rural and urban areas where the utilization share of bottom three income quintiles was less than their population shares and the share of top two income quintiles was

higher than their respective population shares. In 2010-11, the utilization share of poorer income quintiles increased but the distribution still remains pro-rich.

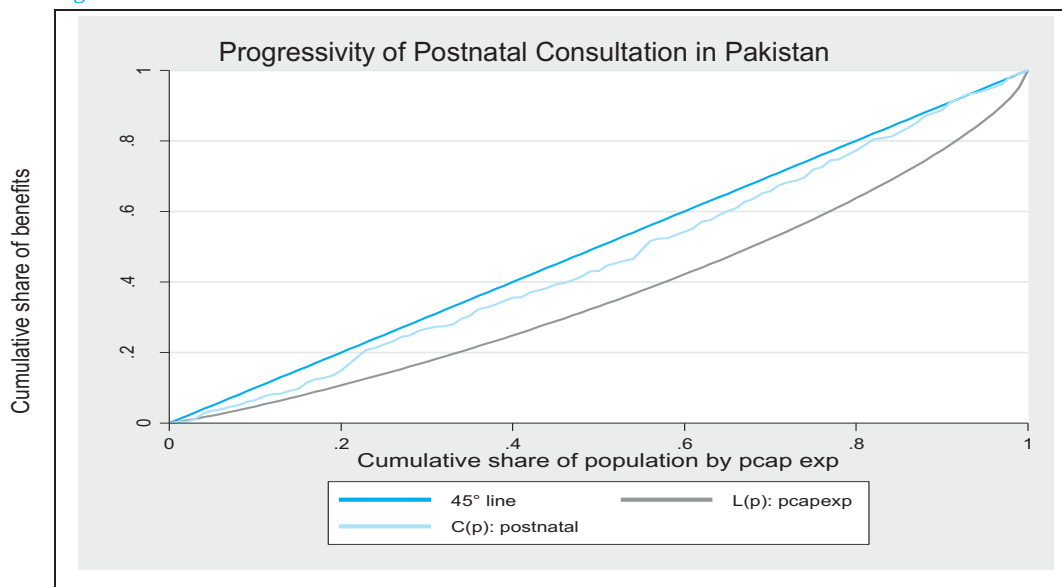
The overall participation rate in public health services is quite low: only around 8 per cent of the total women who qualify for post-natal consultation utilize public health services. This rate is even lower in rural areas at 6 per cent. Overall participation rate is higher for higher income groups and lower for lower income groups.

Table 4.15: Benefit Incidence of Public Health Services for Post-Natal Consultation in Pakistan

| | Pakistan 2007-08 | | Pakistan 2010-11 | |
|-----------------|------------------|--------------------|------------------|--------------------|
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1 st | 0.119 | 0.047 | 0.149 | 0.058 |
| 2 nd | 0.116 | 0.046 | 0.206 | 0.08 |
| 3 rd | 0.169 | 0.066 | 0.187 | 0.073 |
| 4 th | 0.234 | 0.092 | 0.231 | 0.09 |
| 5 th | 0.363 | 0.143 | 0.227 | 0.089 |
| All | 1 | 0.079 | | 0.078 |
| | Rural 2007-08 | | Rural 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1 st | 0.137 | 0.041 | 0.143 | 0.05 |
| 2 nd | 0.145 | 0.043 | 0.222 | 0.078 |
| 3 rd | 0.175 | 0.052 | 0.187 | 0.066 |
| 4 th | 0.28 | 0.083 | 0.21 | 0.074 |
| 5 th | 0.264 | 0.078 | 0.237 | 0.083 |
| All | 1 | 0.06 | | 0.070 |
| | Urban 2007-08 | | Urban 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share | Participation Rate |
| 1 st | 0.108 | 0.069 | 0.187 | 0.09 |
| 2 nd | 0.122 | 0.079 | 0.159 | 0.077 |
| 3 rd | 0.137 | 0.088 | 0.249 | 0.119 |
| 4 th | 0.268 | 0.172 | 0.178 | 0.086 |
| 5 th | 0.364 | 0.233 | 0.227 | 0.109 |
| All | 1 | 0.128 | | 0.096 |

The concentration curve in figure 4.4 clearly shows that the benefits from public health services for post-natal consultation are pro-rich as the concentration curve lies below the 45-degree line.

Figure 4.4: Concentration Curve for Public Health Services Utilization for Post-Natal Consultation in Pakistan (2010-11)



The Dominance test (table 4.16) shows the dominance of concentration curve for post-natal consultation against the Lorenz curve in Pakistan, and all the provinces. This shows that benefits weakly progressive at the national level and all regions except Balochistan. The negative sign of Dominance test against 45 degree line shows that benefits remain pro-rich in Pakistan as a whole as well as the province of Balochistan and Punjab in 2010-11.

Table 4.16: Dominance Test for Post-Natal Consultation (2010-11)

| | Postnatal Public Health Services | | | | | | |
|----------------------|----------------------------------|-------|-------|--------|-------|-----|-------------|
| | Pakistan | Urban | Rural | Punjab | Sindh | KPK | Balochistan |
| Against Lorenz Curve | + | + | + | + | + | + | |
| Against 45 Line | - | | | - | | | - |

Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

The Kakwani indices for all regions, except Balochistan are negative indicating that the benefits are progressive. This implies that public spending on post-natal health services can help close the welfare gap between the rich and poor and that the benefits from post-natal public health services are more equally distributed than the distribution of consumption in Pakistan. The concentration indices are however positive indicating that the benefits are more tilted towards richer income quintiles in absolute terms.

Table 4.17: Concentration Indices and Kakwani Indices of Utilization Incidence of Public Health Spending for Post-Natal Consultation (2010-11)

| Postnatal Public Services | | | | | | 95% Confidence Interval | |
|---------------------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T-ratio | Lower | Upper |
| Pakistan | 0.073 | 0.254 | -0.180 | 0.037 | -4.861 | -0.253 | -0.108 |
| Urban | 0.038 | 0.288 | -0.249 | 0.067 | -3.719 | -0.381 | -0.118 |
| Rural | 0.068 | 0.226 | -0.158 | 0.043 | -3.630 | -0.243 | -0.072 |
| Punjab | 0.111 | 0.262 | -0.151 | 0.055 | -2.768 | -0.259 | -0.044 |
| Sindh | -0.031 | 0.260 | -0.290 | 0.081 | -3.563 | -0.451 | -0.130 |
| KPK | 0.011 | 0.222 | -0.212 | 0.060 | -3.532 | -0.330 | -0.093 |
| Balochistan | 0.244 | 0.181 | 0.063 | 0.076 | 0.835 | -0.086 | 0.213 |

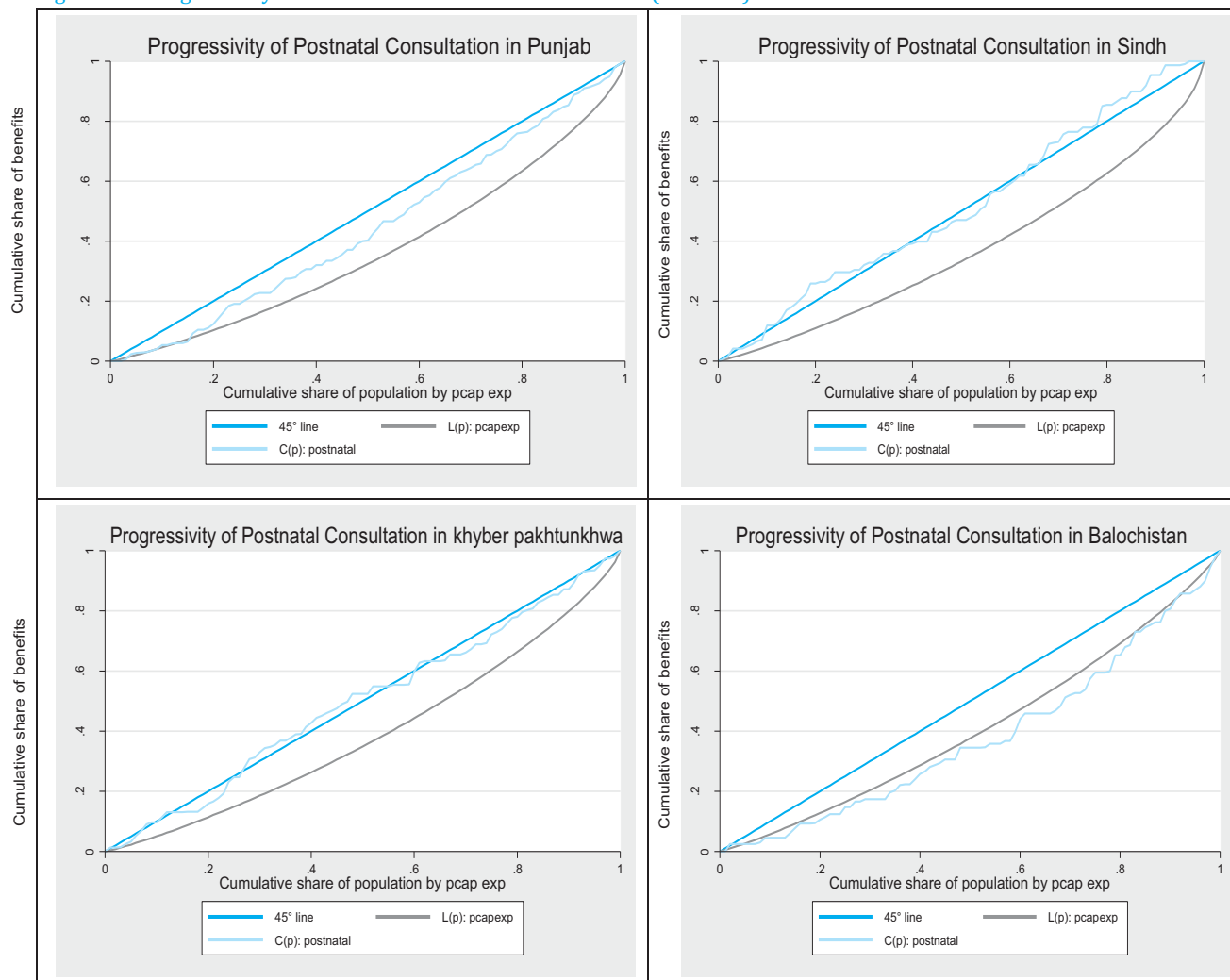
Table 4.18 shows the benefit incidence of public health services utilization for post-natal consultation by provinces. The results depict the same pro-rich pattern in the distribution of utilization incidence in 2007-08 with a relatively higher inequality in Punjab and Balochistan compared to Sindh and NWFP. In 2010-11, despite improvement in the utilization shares by poorer income groups, the distribution of utilization incidence in all provinces remain pro-rich with the exception of Sindh.

Table 4.18: Utilization Incidence of Public Health Services Utilization for Post-Natal Consultation in Pakistan by Provinces

| | Punjab 2007-08 | | Punjab 2010-11 | | Sindh 2007-08 | | Sindh 2010-11 | |
|-----------------|----------------|--------------------|----------------|--------------------|---------------------|--------------------|---------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1 st | 0.103 | 0.044 | 0.123 | 0.048 | 0.123 | 0.042 | 0.259 | 0.074 |
| 2 nd | 0.104 | 0.044 | 0.197 | 0.076 | 0.127 | 0.043 | 0.133 | 0.038 |
| 3 rd | 0.139 | 0.059 | 0.209 | 0.081 | 0.199 | 0.068 | 0.198 | 0.056 |
| 4 th | 0.251 | 0.107 | 0.233 | 0.09 | 0.249 | 0.085 | 0.264 | 0.075 |
| 5 th | 0.402 | 0.171 | 0.238 | 0.092 | 0.302 | 0.103 | 0.146 | 0.041 |
| All | 1 | 0.085 | | 0.078 | 1 | 0.068 | | 0.057 |
| | KPK 2007-08 | | KPK 2007-08 | | Balochistan 2007-08 | | Balochistan 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1 st | 0.174 | 0.07 | 0.16 | 0.088 | 0.169 | 0.047 | 0.106 | 0.042 |
| 2 nd | 0.118 | 0.047 | 0.268 | 0.146 | 0.06 | 0.017 | 0.151 | 0.06 |
| 3 rd | 0.207 | 0.083 | 0.17 | 0.093 | 0.179 | 0.05 | 0.159 | 0.063 |
| 4 th | 0.192 | 0.077 | 0.182 | 0.099 | 0.145 | 0.04 | 0.235 | 0.092 |
| 5 th | 0.309 | 0.124 | 0.22 | 0.121 | 0.447 | 0.124 | 0.347 | 0.137 |
| All | 1 | 0.08 | | 0.109 | 1 | 0.056 | | 0.079 |

The higher disparity in Punjab and Balochistan is also depicted by the plots of concentration curve in figure 4.5. In both provinces, 45-degree line dominates the concentration curve indicating pro-rich utilization. These utilization benefits do not appear to be progressive either, especially in Balochistan as the Lorenz curve and concentration curves lie extremely close to each other.

Figure 4.5: Progressivity of Postnatal Consultation in Provinces (2010-11)



With respect to the regional distribution of benefits, table 4.19 presents the provincial shares in total benefits received from health services utilization for post-natal care. The results show higher benefits going to Punjab followed by Sindh, NWFP and Balochistan. These shares are roughly consistent with their respective population shares. The share of rural areas in public health services utilization is slightly higher (at 54 per cent) than urban areas (46 per cent).

Table 4.19: Regional distribution of utilization of Public Health Services for Post-Natal Consultation

| Province/Region | 2007-08 | | 2010-11 | |
|-----------------|---------|--------------------|---------|--------------------|
| | Share | Participation Rate | Share | Participation Rate |
| Punjab | 0.599 | 0.085 | 0.536 | 0.122 |
| Sindh | 0.201 | 0.068 | 0.195 | 0.123 |
| NWFP | 0.164 | 0.08 | 0.178 | 0.157 |
| Balochistan | 0.036 | 0.056 | 0.091 | 0.209 |
| Urban | 0.456 | 0.128 | 0.475 | 0.209 |
| Rural | 0.544 | 0.060 | 0.525 | 0.100 |

4.6.2.1 Post-Natal and Pre-Natal Consultation by type of facility

Our data set allows us to further disaggregate pre-natal and post-natal consultation by type of facility. We classified the facilities into two types: basic facility that includes LHW and LHV and specialized facility that includes public hospital/RHC /BHU. An estimation of the distribution of benefits by facility indicates that the utilization of basic facilities is more pro-poor than specialized facilities. The concentration indices for pre and post natal consultation by type of facility are provided in Appendix C.

4.6.3 Hospital based Maternal Delivery

Results of UIA for hospital based maternal delivery reveal a clear pro-rich incidence of public spending. Table 4.20 shows that in 2007-08, the poorest quintile's utilization share at the national level was 13 per cent whereas the richest quintile's share was 32 per cent. A similar pattern was visible for both rural and urban areas. In 2010-11, there has been some improvement in the distribution of group shares, yet the distribution of utilization benefits remains pro-rich especially at the national level and in urban areas.

Generally a low participation of eligible women for hospital based public delivery services is observed among all consumption quintiles, especially in the lowest quintile. At national level, only 10 per cent and 14 per cent of the eligible women from 1st and 5th quintiles respectively are participating in public delivery services. Overall, 13 per cent of the eligible women utilize government hospital services for maternal delivery in Pakistan.

Table 4.20: Utilization Incidence of Public Health Services Utilization for Hospital based Maternal Delivery in Pakistan

| | Pakistan 2007-08 | | Pakistan 2010-11 | |
|-----------------|------------------|--------------------|------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate |
| 1 st | 0.126 | 0.077 | 0.148 | 0.098 |
| 2 nd | 0.163 | 0.099 | 0.212 | 0.14 |
| 3 rd | 0.157 | 0.095 | 0.209 | 0.138 |
| 4 th | 0.234 | 0.141 | 0.225 | 0.149 |
| 5 th | 0.32 | 0.193 | 0.207 | 0.137 |
| All | 1 | 0.121 | | 0.133 |
| | Rural 2007-08 | | Rural 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate |
| 1 st | 0.131 | 0.059 | 0.194 | 0.204 |
| 2 nd | 0.196 | 0.088 | 0.237 | 0.249 |
| 3 rd | 0.15 | 0.068 | 0.225 | 0.234 |
| 4 th | 0.241 | 0.108 | 0.168 | 0.177 |
| 5 th | 0.282 | 0.127 | 0.175 | 0.182 |
| All | 1 | 0.09 | | 0.209 |
| | Urban 2007-08 | | Urban 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate |
| 1 st | 0.134 | 0.135 | 0.158 | 0.079 |
| 2 nd | 0.173 | 0.174 | 0.215 | 0.107 |
| 3 rd | 0.209 | 0.21 | 0.197 | 0.098 |
| 4 th | 0.217 | 0.218 | 0.227 | 0.113 |
| 5 th | 0.267 | 0.268 | 0.203 | 0.101 |
| All | 1 | 0.201 | | 0.1 |

Figure 4.6 shows that concentration curve for hospital based maternal delivery services lies below the 45-degree line indicating that the benefits remain pro-rich in 2010-11. The concentration curve appears to dominate the Lorenz curve indicating that the distribution of utilization benefits from public spending on hospital based maternal health services are relatively equally distributed than consumption and therefore reduces the welfare gap between the rich and poor but raises the absolute gap (since benefits are pro-rich). These findings are confirmed for Pakistan as a whole by the tests of dominance depicted in table 4.21 that shows that the benefits are progressive everywhere with the exception of Balochistan. The benefits are however pro-rich in Pakistan, Punjab, and Balochistan.

Figure 4.6: Concentration Curve for Hospital based Maternal Delivery Services in Pakistan (2010-11)

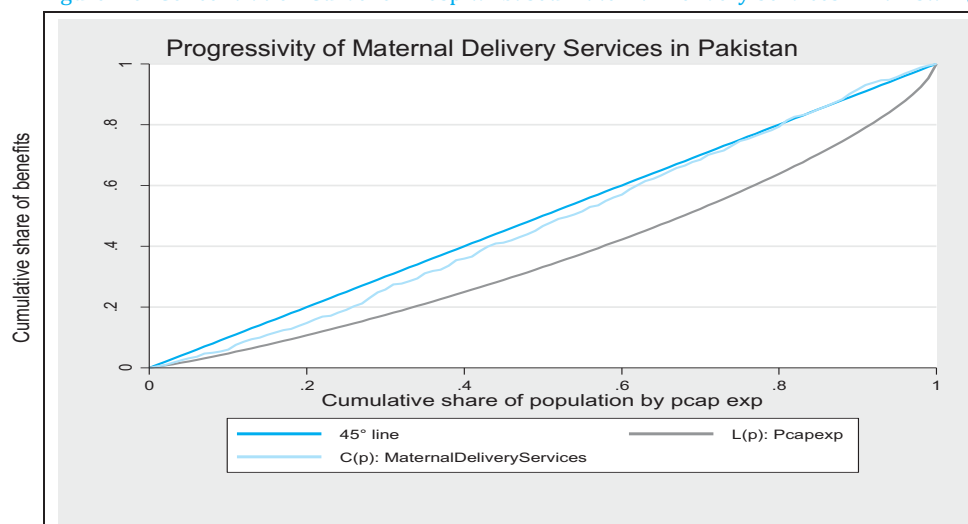


Table 4.21: Dominance Test for Hospital based Maternal Health Services (2010-11)

| | Maternal Delivery Health Services | | | | | |
|----------------------|-----------------------------------|-------|-------|--------|-------|-----|
| | Pakistan | Urban | Rural | Punjab | Sindh | KPK |
| Against Lorenz Curve | + | + | + | + | + | + |
| Against 45 Line | - | + | | - | + | - |

Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

At provincial level, higher disparities among consumption quintile are persistent in Punjab and Balochistan. This is evident from concentration indices depicted in table 4.22 and concentration curves plotted in figures 4.7. A clear pro-rich pattern can be seen especially in Punjab with concentration curve lying below the 45-degree line. The results from test of dominance confirms pro-rich bias in the distribution of utilization benefits in Punjab and Balochistan (45 degree line dominates the concentration curve in both cases). The test of dominance and Kakwani indices for Balochistan does not

allow us to infer that the utilization benefits are inequality reducing or weakly progressive. For Sindh, NWFP, and Punjab, both the test of dominance and Kakwani Indices predict that the utilization benefits are weakly progressive and help reduce income inequality.

Table 4.22: Concentration Indices and Kakwani Indices for Public Health Services Utilization for Hospital based Maternal delivery (2010-11)

| Maternal Delivery Services | | | | | | 95% Confidence Interval | |
|----------------------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T-ratio | Lower | Upper |
| Pakistan | 0.048 | 0.253 | -0.205 | 0.026 | -7.918 | -0.255 | -0.154 |
| Urban | -0.045 | 0.286 | -0.330 | 0.038 | -8.672 | -0.405 | -0.256 |
| Rural | 0.046 | 0.226 | -0.180 | 0.033 | -5.483 | -0.245 | -0.116 |
| Punjab | 0.081 | 0.261 | -0.180 | 0.038 | -4.783 | -0.254 | -0.106 |
| Sindh | -0.038 | 0.258 | -0.296 | 0.061 | -4.880 | -0.416 | -0.177 |
| KPK | 0.026 | 0.223 | -0.197 | 0.050 | -3.959 | -0.295 | -0.099 |
| Balochistan | 0.180 | 0.181 | -0.001 | 0.044 | -0.015 | -0.088 | 0.087 |

Figure 4.7: Progressivity of Hospital based Maternal Delivery Services in Provinces (2010-11)

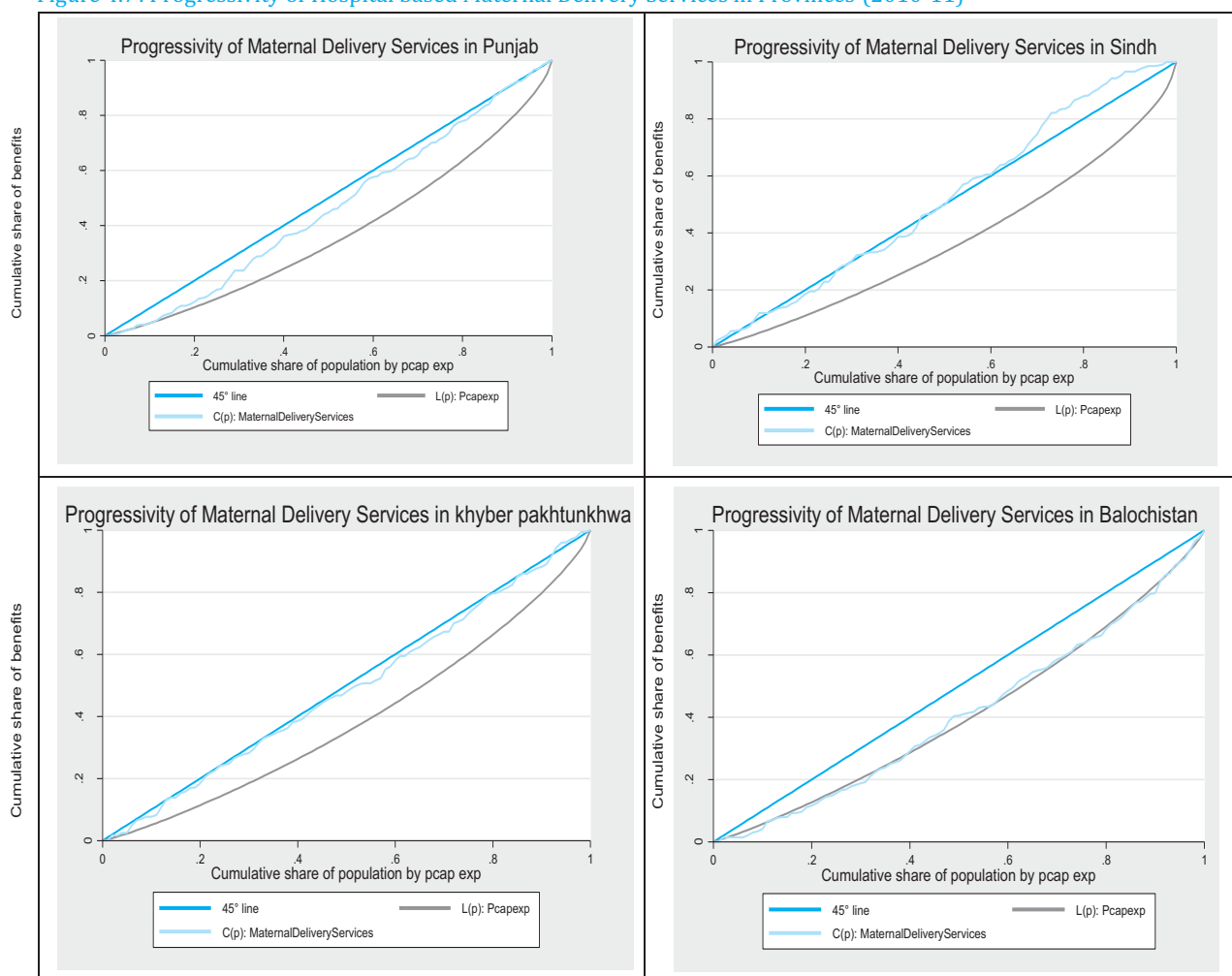


Table 4.23 shows a clear pro-rich bias in the distribution of public health services utilization for hospital based maternal delivery in all provinces especially in Punjab where the percentage share of poorest income quintile in total utilization benefits is around 12 per cent compared to 19 per cent in Sindh; 18 per cent in KPK and 20 per cent in Balochistan for the same income group. The utilization benefits from public health services for maternal delivery are relatively more equally distributed in KPK. This is also shown in the concentration curve for KPK in figure 4.7. Overall participation rate in public health services for hospital based maternal delivery is 11 per cent in Punjab; 12 per cent in Sindh; 16 per cent in KPK and 12 per cent in Balochistan. These shares by the poorest quintiles are relatively higher in 2010-11 compared to 2007-08; yet they remain much less than their group share in terms of population.

Table 4.23: Utilization Incidence of Public Health Services Utilization for Hospital based Maternal Delivery in Pakistan by Provinces

| | Punjab 2007-08 | | Punjab 2010-11 | | Sindh 2007-08 | | Sindh 2010-11 | |
|------------------|-----------------------|--------------------|-----------------------|--------------------|----------------------------|--------------------|----------------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.088 | 0.048 | 0.122 | 0.075 | 0.148 | 0.089 | 0.186 | 0.115 |
| 2nd | 0.101 | 0.055 | 0.238 | 0.145 | 0.216 | 0.131 | 0.201 | 0.124 |
| 3rd | 0.147 | 0.081 | 0.216 | 0.132 | 0.19 | 0.114 | 0.219 | 0.135 |
| 4th | 0.283 | 0.155 | 0.202 | 0.123 | 0.22 | 0.133 | 0.274 | 0.17 |
| 5th | 0.382 | 0.209 | 0.222 | 0.135 | 0.226 | 0.136 | 0.121 | 0.074 |
| All | 1 | 0.11 | | 0.122 | 1 | 0.121 | | 0.123 |
| | KPK 2007-08 | | KPK 2010-11 | | Balochistan 2007-08 | | Balochistan 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.182 | 0.143 | 0.184 | 0.145 | 0.202 | 0.131 | 0.116 | 0.122 |
| 2nd | 0.222 | 0.175 | 0.201 | 0.158 | 0.141 | 0.092 | 0.171 | 0.181 |
| 3rd | 0.185 | 0.146 | 0.195 | 0.152 | 0.082 | 0.053 | 0.198 | 0.205 |
| 4th | 0.182 | 0.143 | 0.216 | 0.169 | 0.14 | 0.091 | 0.199 | 0.207 |
| 5th | 0.229 | 0.18 | 0.204 | 0.159 | 0.435 | 0.281 | 0.316 | 0.33 |
| All | 1 | 0.157 | | 0.157 | 1 | 0.13 | | 0.209 |

Incidence results at regional level indicate that the share of rural areas in total health services utilization for hospital based delivery is 53 per cent against 47 per cent for urban areas. The overall participation rate for public health services for maternal delivery is quite low at 9 per cent in rural areas as against 20 per cent in urban areas.

Table 4.24: Regional distribution of Utilization of Public Health Services for Hospital based Maternal Delivery

| | 2007-08 | | 2010-11 | |
|-----------------|---------|--------------------|---------|--------------------|
| Province/Region | Share | Participation Rate | Share | Participation Rate |
| Punjab | 0.501 | 0.110 | 0.536 | 0.122 |
| Sindh | 0.233 | 0.121 | 0.195 | 0.123 |
| NWFP | 0.211 | 0.157 | 0.178 | 0.157 |
| Balochistan | 0.055 | 0.130 | 0.091 | 0.209 |
| Urban | 0.465 | 0.201 | 0.475 | 0.209 |
| Rural | 0.535 | 0.09 | 0.525 | 0.100 |

4.6.4 Tetanus Toxoid Injection for Pregnant Women

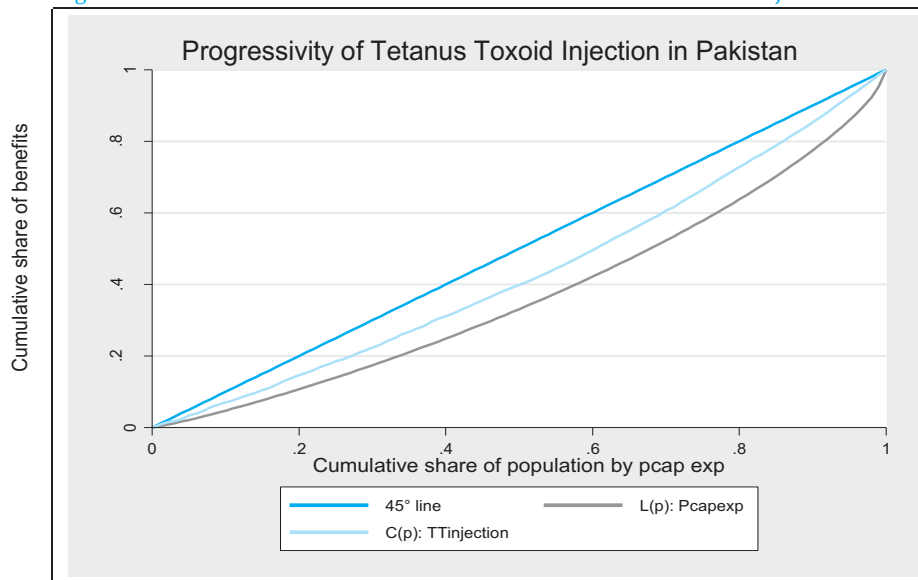
In case of Tetanus Toxoid Injection, the benefits from public health services utilization are also pro-rich and the distribution of utilization worsened in 2010-11 with the share of poorer income groups declining at the national and regional level in 2010-11. Table 4.25 shows that the share of poorest income groups in total public health services utilization is currently 15 per cent compared to 27 per cent for richest income group with a similar pattern observed for rural and urban areas. Overall participation rate in this public health service is significantly higher than other services at 59 per cent.

Table 4.25: Utilization Incidence of Public Health Services for Tetanus Toxoid Injection for Mothers in Pakistan

| | Pakistan 2007-08 | | Pakistan 2010-11 | |
|-----------|------------------|--------------------|------------------|--------------------|
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.154 | 0.445 | 0.145 | 0.429 |
| 2nd | 0.177 | 0.511 | 0.166 | 0.486 |
| 3rd | 0.189 | 0.547 | 0.185 | 0.544 |
| 4th | 0.222 | 0.643 | 0.232 | 0.682 |
| 5th | 0.258 | 0.748 | 0.273 | 0.803 |
| All | 1 | 0.579 | | 0.589 |
| | Rural 2007-08 | | Rural 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.159 | 0.555 | 0.154 | 0.403 |
| 2nd | 0.17 | 0.595 | 0.161 | 0.423 |
| 3rd | 0.196 | 0.685 | 0.179 | 0.468 |
| 4th | 0.218 | 0.76 | 0.228 | 0.598 |
| 5th | 0.257 | 0.897 | 0.278 | 0.728 |
| All | 1 | 0.699 | | 0.524 |
| | Urban 2007-08 | | Urban 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share | Participation Rate |
| 1st | 0.159 | 0.424 | 0.146 | 0.541 |
| 2nd | 0.18 | 0.478 | 0.183 | 0.679 |
| 3rd | 0.194 | 0.516 | 0.203 | 0.752 |
| 4th | 0.211 | 0.561 | 0.217 | 0.81 |
| 5th | 0.256 | 0.681 | 0.249 | 0.914 |
| All | 1 | 0.532 | | 0.739 |

The concentration curve in figure 4.8 clearly shows a pro-rich pattern as concentration curve (CC) lies below 45-degree line. The utilization incidence seems to be weakly progressive as CC curve lies above the Lorenz Curve.

Figure 4.8: Concentration Curve for Utilization Incidence of Tetanus Injection in Pakistan (2010-11)



The results of dominance test in table 4.26 and those of Kakwani Indices in table 4.27 confirm the progressivity of utilization incidence of Tetanus injection in Pakistan. However the incidence is pro-rich in all provinces and at the national level. The test of dominance (table 4.26) confirms that the utilization incidence of this service is pro-rich in all provinces and weakly progressive in all provinces except Balochistan.

Table 4.26: Dominance Test for Concentration Curve for Tetanus Injection (2010-11)

| TT injection | | | | | | | |
|----------------------|----------|-------|-------|--------|-------|-----|-------------|
| | Pakistan | Urban | Rural | Punjab | Sindh | KPK | Balochistan |
| Against Lorenz Curve | + | + | + | + | + | + | - |
| Against 45 Line | - | - | - | - | - | - | - |

Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

Table 4.27: Concentration Indices and Kakwani Indices for Utilization Incidence of Tetanus Injections for Mothers (2010-11)

| TT injection | | | | | | 95% Confidence Interval | |
|--------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T-ratio | Lower | Upper |
| Pakistan | 0.136 | 0.253 | -0.118 | 0.011 | -10.354 | -0.140 | -0.095 |
| Urban | 0.099 | 0.287 | -0.188 | 0.014 | -13.115 | -0.216 | -0.160 |
| Rural | 0.129 | 0.226 | -0.098 | 0.016 | -6.233 | -0.128 | -0.067 |
| Punjab | 0.104 | 0.262 | -0.158 | 0.014 | -11.126 | -0.185 | -0.130 |
| Sindh | 0.181 | 0.258 | -0.077 | 0.023 | -3.394 | -0.122 | -0.032 |
| KPK | 0.128 | 0.223 | -0.095 | 0.020 | -4.689 | -0.134 | -0.055 |
| Balochistan | 0.322 | 0.181 | 0.141 | 0.045 | 3.157 | 0.053 | 0.229 |

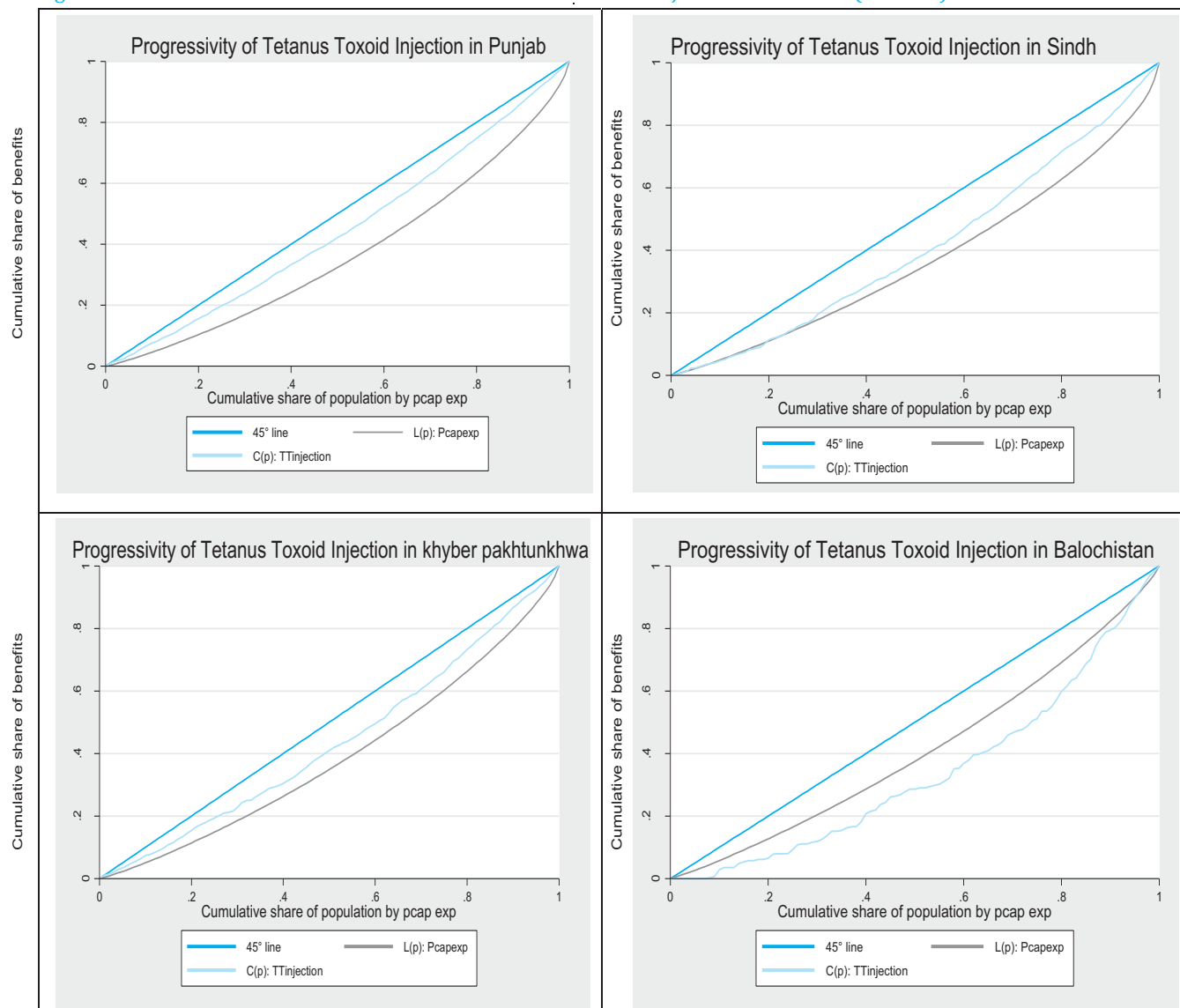
Table 4.28: Utilization Incidence of Public Health Services for Tetanus Injection in Pakistan by Provinces

| | Punjab 2007-08 | | Punjab 2010-11 | | Sindh 2007-08 | | Sindh 2010-11 | |
|-----------|----------------|--------------------|----------------|--------------------|--------------------|--------------------|---------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.146 | 0.462 | 0.154 | 0.536 | 0.178 | 0.446 | 0.113 | 0.264 |
| 2nd | 0.179 | 0.568 | 0.178 | 0.615 | 0.17 | 0.428 | 0.171 | 0.401 |
| 3rd | 0.199 | 0.631 | 0.19 | 0.659 | 0.179 | 0.45 | 0.184 | 0.429 |
| 4th | 0.228 | 0.722 | 0.224 | 0.775 | 0.198 | 0.497 | 0.245 | 0.575 |
| 5th | 0.249 | 0.789 | 0.253 | 0.876 | 0.275 | 0.689 | 0.287 | 0.665 |
| All | 1 | 0.634 | | 0.692 | 1 | 0.502 | | 0.467 |
| | KPK 2007-08 | | KPK 2010-11 | | Balucistan 2007-08 | | Balochistan 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate |
| 1st | 0.197 | 0.599 | 0.155 | 0.4 | 0.098 | 0.117 | 0.066 | 0.058 |
| 2nd | 0.197 | 0.599 | 0.15 | 0.386 | 0.164 | 0.194 | 0.131 | 0.116 |
| 3rd | 0.192 | 0.586 | 0.19 | 0.489 | 0.191 | 0.227 | 0.171 | 0.149 |
| 4th | 0.181 | 0.547 | 0.237 | 0.612 | 0.187 | 0.221 | 0.23 | 0.201 |
| 5th | 0.232 | 0.705 | 0.269 | 0.69 | 0.36 | 0.425 | 0.401 | 0.351 |
| All | 1 | 0.607 | | 0.516 | 1 | 0.237 | | 0.175 |

At the provincial level, table 4.28 shows a pro-rich bias in the distribution of utilization of Tetanus injection in all provinces and the distribution worsened in almost all provinces. The overall participation rate in public provision of this service is highest in Punjab at 69 per cent and lowest in Balochistan at 18 per cent.

Figure 4.30 show the concentration curves versus the 45-degree line and Lorenz curve for utilization incidence of Tetanus Injection. The figure shows that the utilization benefits from Tetanus injection are relatively equally distributed in KPK. In other provinces, the utilization benefits are pro-rich. In all provinces except in Balochistan, the utilization benefits are progressive in the sense that they are relatively equally distributed than consumption.

Figure 4.9: Concentration Curve for Utilization Incidence of Tetanus Injection in Provinces (2010-11)



In terms of regional distribution from benefits, table 4.29 shows that provincial shares are roughly concomitant with their population shares. The share of rural areas (62 per cent) in total benefits is higher than that of urban areas (38 per cent).

Table 4.29: Regional Distribution of Utilization of Tetanus Injection

| | 2007-08 | | 2010-11 | |
|-----------------|----------------|--------------------|----------------|--------------------|
| Province/Region | Share by Group | Participation Rate | Share by Group | Participation Rate |
| Punjab | 0.606 | 0.634 | 0.685 | 0.692 |
| Sindh | 0.202 | 0.502 | 0.166 | 0.467 |
| NWFP | 0.170 | 0.607 | 0.132 | 0.516 |
| Balochistan | 0.021 | 0.237 | 0.017 | 0.175 |
| Urban | 0.338 | 0.699 | 0.378 | 0.739 |
| Rural | 0.662 | 0.532 | 0.622 | 0.524 |

4.6.5 Child Immunization Services

Table 4.30 shows the distribution of utilization benefits of immunization services in Pakistan. The utilization incidence is slightly pro-rich but overall the distribution is relatively equal compared to other services: the percentage share of bottom income quintile in total benefits is 18 in 2010-11 compared to 23.5 per cent for the top income quintile. These shares are very close to their population shares. The overall participation rate is 69 per cent with a higher participation in urban areas compared to rural areas.

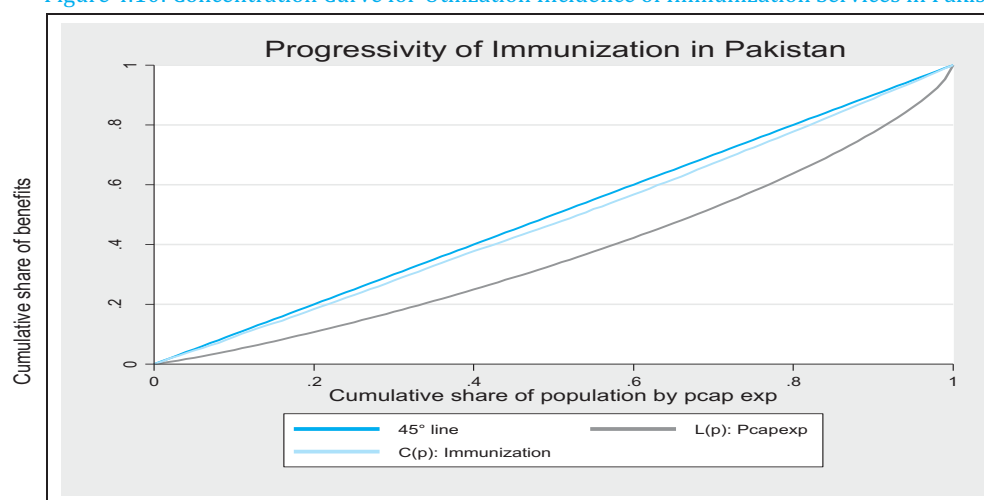
Table 4.30: Utilization Incidence of Immunization Services in Pakistan

| | Pakistan 2007-08 | | Pakistan 2010-11 | |
|-----------|------------------|--------------------|------------------|--------------------|
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.174 | 0.563 | 0.184 | 0.636 |
| 2nd | 0.186 | 0.604 | 0.193 | 0.668 |
| 3rd | 0.194 | 0.629 | 0.189 | 0.653 |
| 4th | 0.211 | 0.684 | 0.21 | 0.726 |
| 5th | 0.235 | 0.761 | 0.223 | 0.769 |
| All | 1 | 0.648 | | 0.691 |
| | Rural 2007-08 | | Rural 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.177 | 0.546 | 0.186 | 0.617 |
| 2nd | 0.181 | 0.559 | 0.198 | 0.656 |
| 3rd | 0.196 | 0.605 | 0.187 | 0.617 |
| 4th | 0.21 | 0.645 | 0.208 | 0.69 |

| | | | | |
|------------------|----------------------|--------------------|----------------------|--------------------|
| 5th | 0.236 | 0.726 | 0.221 | 0.731 |
| All | 1 | 0.616 | | 0.662 |
| | Urban 2007-08 | | Urban 2010-11 | |
| Quintiles | Share by Group | Participation Rate | Share by Group | Participation Rate |
| 1st | 0.183 | 0.671 | 0.18 | 0.688 |
| 2nd | 0.189 | 0.689 | 0.197 | 0.745 |
| 3rd | 0.194 | 0.71 | 0.201 | 0.764 |
| 4th | 0.217 | 0.792 | 0.211 | 0.799 |
| 5th | 0.216 | 0.789 | 0.211 | 0.799 |
| All | 1 | 0.73 | | 0.759 |

The concentration curve in figure 4.10 shows a slightly pro-rich pattern, but the concentration curve is tightly located with 45-degree line indicating that the distribution of utilization benefits is relatively equal. The concentration curve lies clearly above the Lorenz curve indicating that the utilization incidence of child immunization services are progressive.

Figure 4.10: Concentration Curve for Utilization Incidence of Immunization Services in Pakistan (2010-11)



At the provincial level, the concentration curve (CC) plots (figure 4.11) show that benefits are relatively equally distributed in all provinces with CC curves lying close to the 45-degree line. The test of dominance results in table 4.31 confirms that utilization incidence of immunization services is weakly progressive in all provinces and slightly pro-rich in all provinces except KPK.

Figure 4.11: Progressivity of Immunization in Provinces (2010-11)

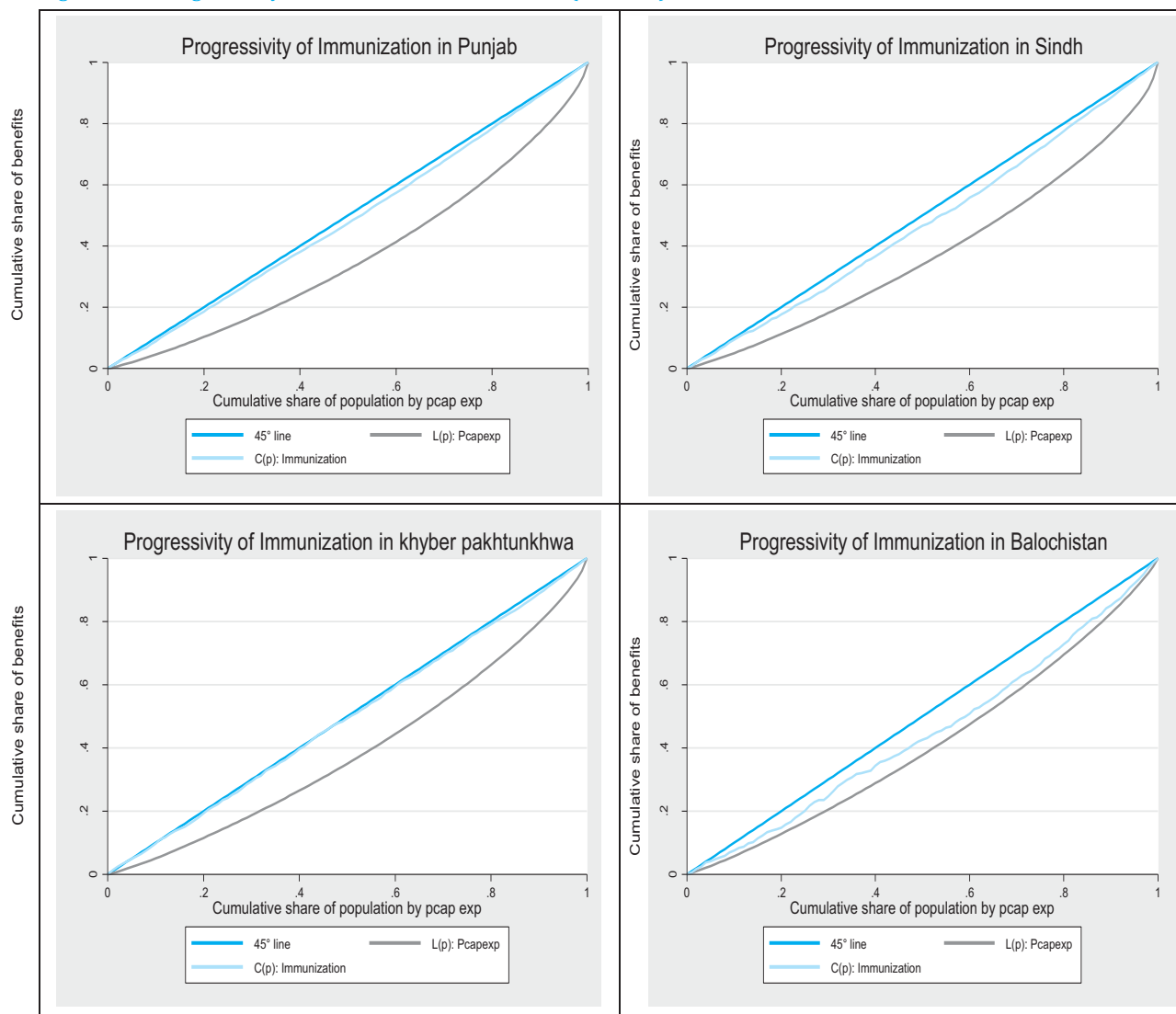


Table 4.31: Test of Dominance of Concentration Curve for Benefits from Immunization Services (2010-11)

| | Immunization | | | | | | |
|----------------------|--------------|-------|-------|--------|-------|-----|-------------|
| | Pakistan | Urban | Rural | Punjab | Sindh | KPK | Balochistan |
| Against Lorenz Curve | + | + | + | + | + | + | + |
| Against 45 Line | - | - | - | - | - | - | - |

Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

The weak progressivity of benefits from public health services is further confirmed from negative values of Kakwani Indices indicating that the value of the concentration index is less than that of Gini Index implying that the benefits from immunization services are more equally distributed than income/consumption.

Table 4.32: Concentration Indices and Kakwani Indices for Utilization Incidence of Immunization Services (2010-11)

| Immunization | | | | | | 95% Confidence Interval | |
|--------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T-ratio | Lower | Upper |
| Pakistan | 0.040 | 0.252 | -0.213 | 0.008 | -25.217 | -0.229 | -0.196 |
| Urban | 0.029 | 0.290 | -0.260 | 0.014 | -18.025 | -0.289 | -0.232 |
| Rural | 0.033 | 0.222 | -0.189 | 0.009 | -20.524 | -0.207 | -0.171 |
| Punjab | 0.031 | 0.264 | -0.232 | 0.011 | -20.595 | -0.254 | -0.210 |
| Sindh | 0.051 | 0.247 | -0.195 | 0.019 | -10.388 | -0.233 | -0.158 |
| KPK | 0.013 | 0.221 | -0.209 | 0.015 | -13.624 | -0.239 | -0.179 |
| Balochistan | 0.111 | 0.177 | -0.066 | 0.026 | -2.572 | -0.118 | -0.015 |

Table 4.33 shows the distribution of utilization of immunization at the provincial level. As evident from the distribution of share, the distribution of utilization is slightly pro-rich in Punjab, Sindh and Balochistan. It is pro-poor in KPK. The overall participation rate is higher in Punjab and KPK followed by Sindh and Balochistan.

Table 4.33: Utilization Incidence of Public Health Services for Child Immunization in Pakistan by Provinces

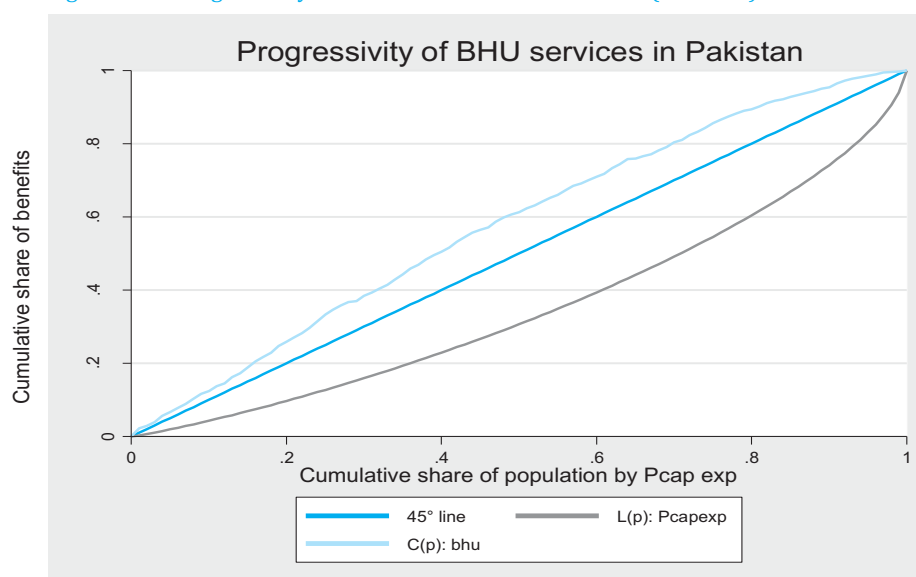
| | Punjab 2007-08 | | Punjab 2010-11 | | Sindh 2007-08 | | Sindh 2010-11 | |
|-----------|----------------|--------------------|----------------|--------------------|---------------------|--------------------|---------------------|--------------------|
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Shar | Participation Rate |
| 1st | 0.169 | 0.57 | 0.186 | 0.67 | 0.161 | 0.481 | 0.176 | 0.603 |
| 2nd | 0.185 | 0.625 | 0.194 | 0.7 | 0.172 | 0.508 | 0.19 | 0.651 |
| 3rd | 0.2 | 0.674 | 0.194 | 0.698 | 0.199 | 0.589 | 0.191 | 0.648 |
| 4th | 0.213 | 0.719 | 0.21 | 0.755 | 0.212 | 0.634 | 0.21 | 0.745 |
| 5th | 0.232 | 0.784 | 0.216 | 0.778 | 0.256 | 0.755 | 0.225 | 0.765 |
| All | 1 | 0.675 | | 0.72 | 1 | 0.594 | | 0.682 |
| | KPK 2007-08 | | KPK 2010-11 | | Balochistan 2010-11 | | Balochistan 2010-11 | |
| Quintiles | Share | Participation Rate | Share | Participation Rate | Share | Participation Rate | Shar | Participation Rate |
| 1st | 0.212 | 0.698 | 0.194 | 0.643 | 0.193 | 0.542 | 0.147 | 0.351 |
| 2nd | 0.213 | 0.701 | 0.201 | 0.666 | 0.187 | 0.528 | 0.19 | 0.467 |
| 3rd | 0.198 | 0.652 | 0.198 | 0.657 | 0.188 | 0.522 | 0.166 | 0.395 |

| | | | | | | | | |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|
| 4th | 0.178 | 0.585 | 0.197 | 0.652 | 0.202 | 0.565 | 0.219 | 0.524 |
| 5th | 0.199 | 0.656 | 0.21 | 0.694 | 0.231 | 0.647 | 0.272 | 0.647 |
| All | 1 | 0.658 | | 0.662 | 1 | 0.561 | | 0.477 |

4.6.6 Basic Health Units (BHUs)

The results for utilization incidence analysis of Basic Health Units (BHUs) show that the utilization is both pro-poor as well as progressive at the national level. The Concentration Curve as shown in figure 4.12 lies about the Lorenz curve as well the 45 degree line.

Figure 4.12: Progressivity of Basic Health Units in Pakistan (2010-11)



A disaggregated analysis of utilization of BHUs by rural urban divisions shows that these services are more pro-poor in urban than in rural areas. This can also be inferred through the values of concentration indices given in table 4.34. Negative sign of these indices indicate pro-poor distribution. The absolute value of concentration indices is much higher for urban areas than in rural areas. A plausible explanation for this result could be the fact that since rural areas are underequipped with health facilities, there are few alternatives to BHUs. In urban areas, there are many other facilities available especially for those who can pay. For poorer income groups though, BHUs still remain the least expensive option in urban areas.

Figure 4.13: Progressivity of BHUs Utilization by Rural Urban Divisions in 2010-11

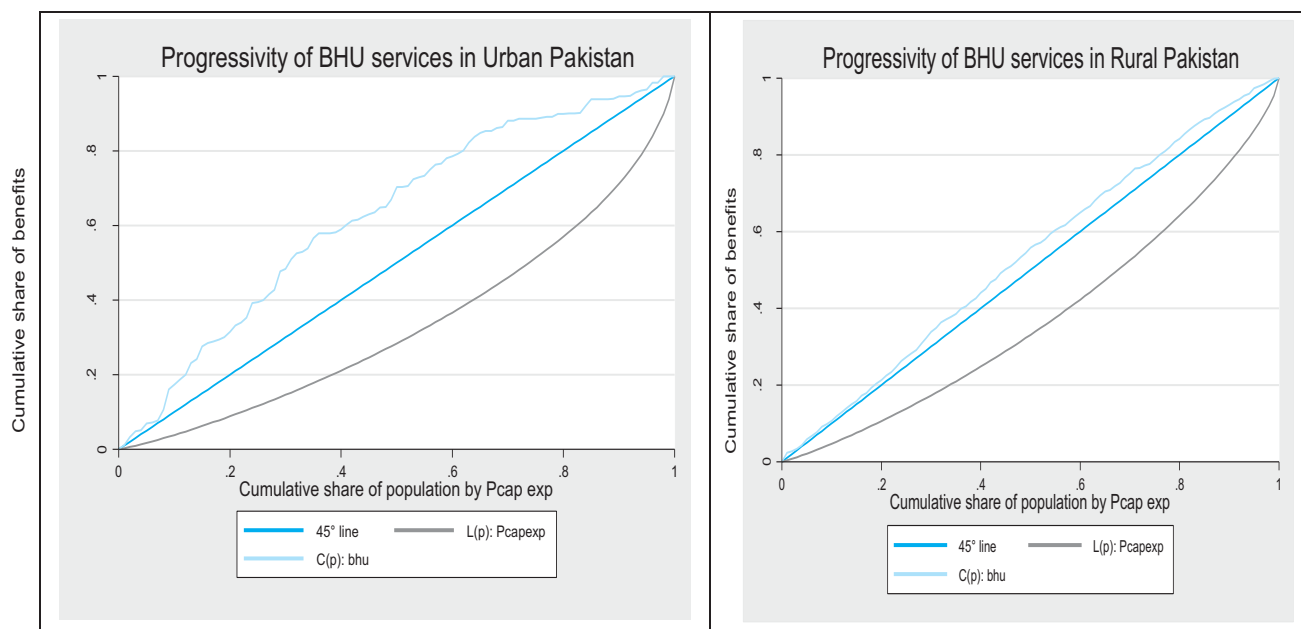


Table 4.34 Concentration Indices and Kakwani Indices for Utilization of Basic Health Units (BHUs)

| BHU Services | | | | | | 95% Confidence Interval | |
|--------------|---------------------|------------------|---------------|----------|---------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | t | Lower | Upper |
| Pakistan | -0.154 | 0.295 | -0.450* | 0.025 | -17.658 | -0.499 | -0.400 |
| Urban | -0.253 | 0.334 | -0.586* | 0.055 | -10.644 | -0.694 | -0.478 |
| Rural | -0.066 | 0.251 | -0.317* | 0.027 | -11.770 | -0.370 | -0.264 |
| Punjab | -0.157 | 0.300 | -0.457* | 0.035 | -13.019 | -0.526 | -0.388 |
| Sindh | -0.014 | 0.304 | -0.318* | 0.061 | -5.213 | -0.438 | -0.198 |
| KPK | -0.198 | 0.262 | -0.460* | 0.044 | -10.570 | -0.546 | -0.374 |
| Balochistan | 0.031 | 0.198 | -0.168* | 0.044 | -3.840 | -0.254 | -0.081 |

The utilization incidence analysis of BHU services by provinces and the related concentration curves depicted in figure 4.14 show that the utilization incidence of these services is clearly progressive in all provinces. They are clearly pro-poor in Punjab and KPK. In rest of the provinces, it is not clear simply by looking at these curves whether the utilization incidence is pro-poor or pro-rich. The result of the dominance test given in table 4.35 shows that the distribution of benefits from BHU services is pro-poor at the national level and in all provinces except Sindh and Balochistan.

Figure 4.14: The Progressivity of Utilization Incidence of BHUs across Provinces in Pakistan

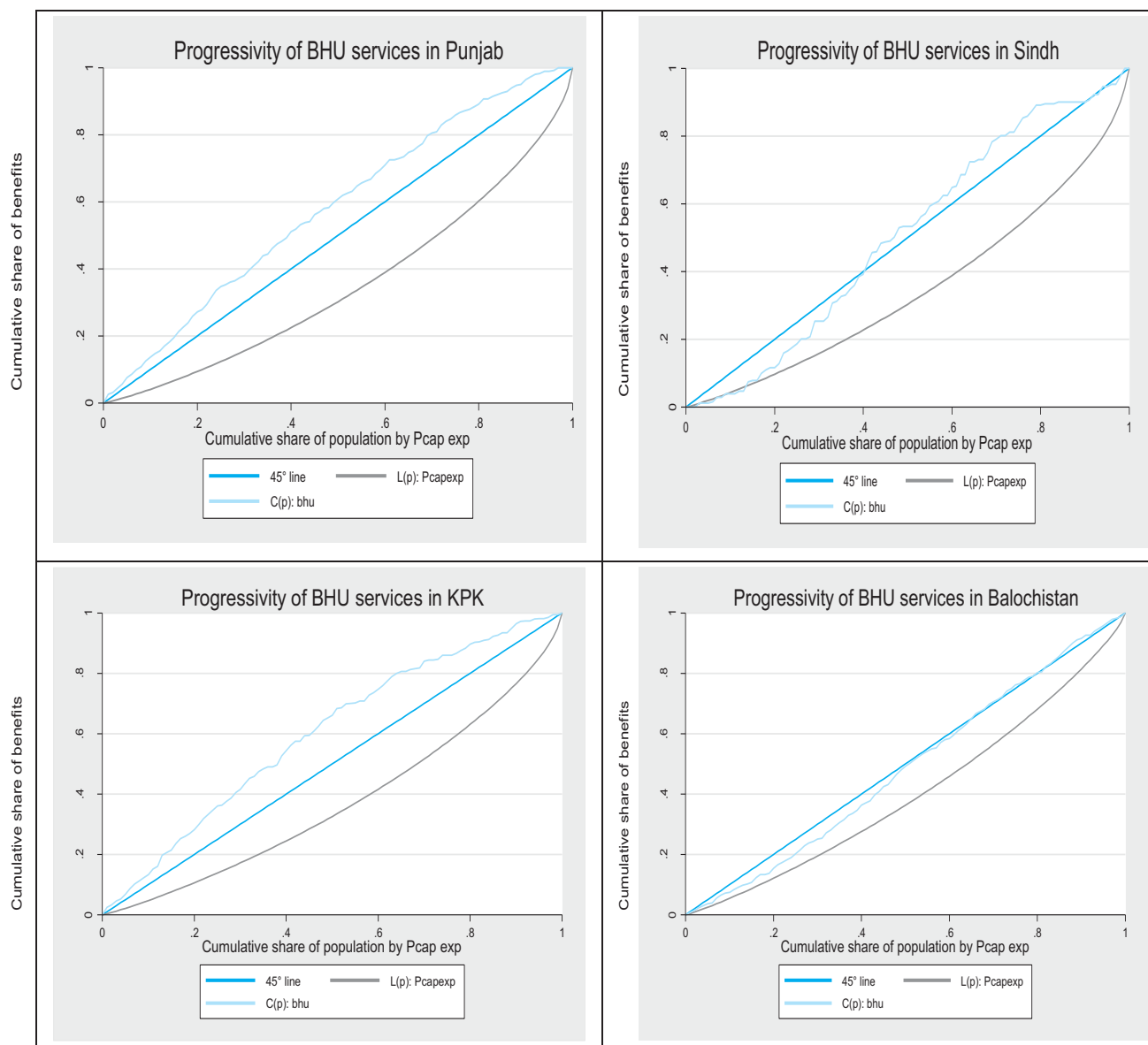


Table 4.35: Dominance Test for Utilization Incidence of BHU services (2010-11)

| | BHU Services | | | | | | |
|----------------------|--------------|-------|-------|--------|-------|------|-------------|
| | Pakistan | Urban | Rural | Punjab | Sindh | NWFP | Balochistan |
| Against Lorenz Curve | + | + | + | + | + | + | + |
| Against 45 Line | + | + | + | + | - | + | |

Note: Dominance Test: - indicate the 45 degree line/Lorenz curve dominates the Concentration curve.

+ indicate Concentration curve dominates 45 degree line/Lorenz curve. Blank indicate non-dominance.

Dominance is rejected if there is at least one significant difference in one direction and no significant difference in the other, with comparisons at 19 quintiles and 5% significant level.

4.6.7 Family Planning Units (FPUs)

The concentration curve for family planning utilization in Pakistan shows that the utilization incidence is progressive but there is no strong evidence of its being pro-poor. The concentration curve for Pakistan as a whole is very tightly located with the 45-degree line of equality. The magnitude of the concentration indices provided in table 4.36 is very small and they are not statistically significant. The same results hold more or less at the regional level except for Sindh where the benefits turn out to be pro-rich (figure 4.16).

Figure 4.15: Concentration Curve for Family Planning Utilization Services in Pakistan (2010-11)

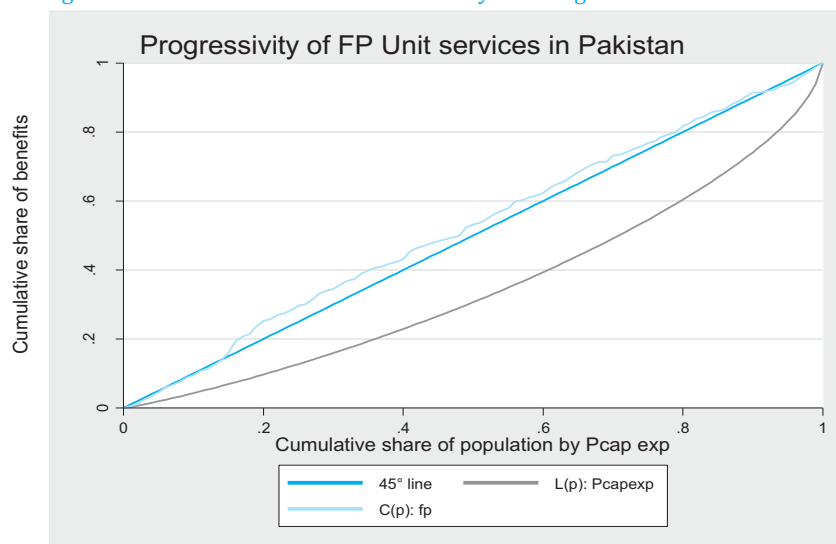


Figure 4.16: Progressivity of FP Unit Services by Rural Urban Divisions (2010-11)

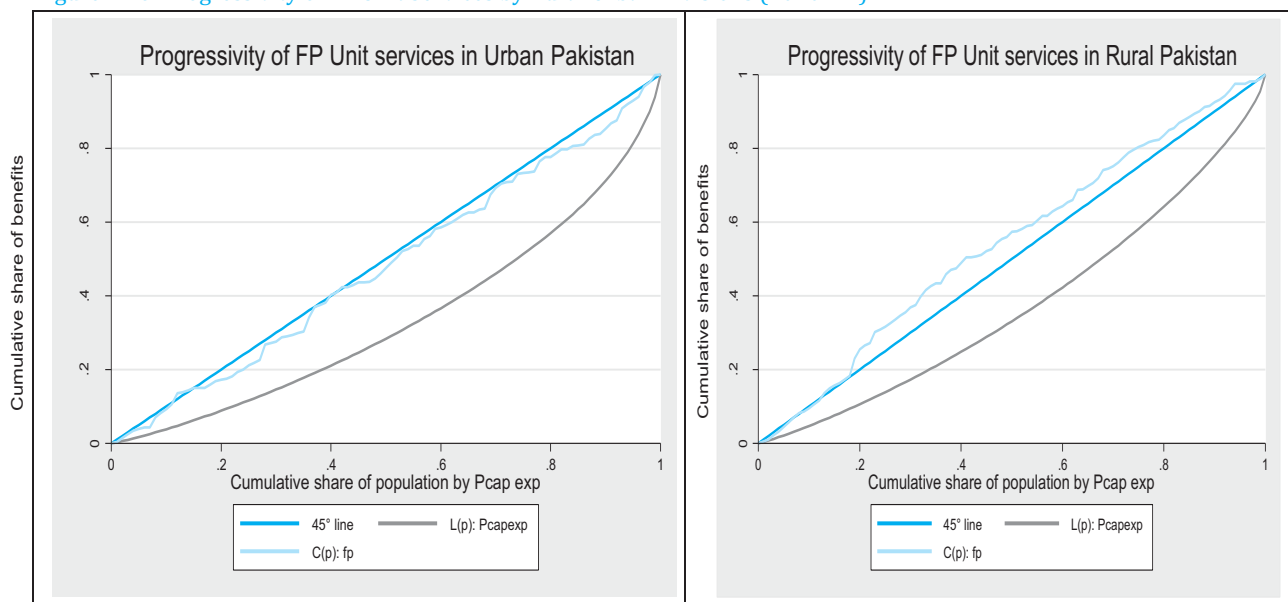


Figure 4.17: Progressivity of Family Planning Services by Provinces (2010-11)

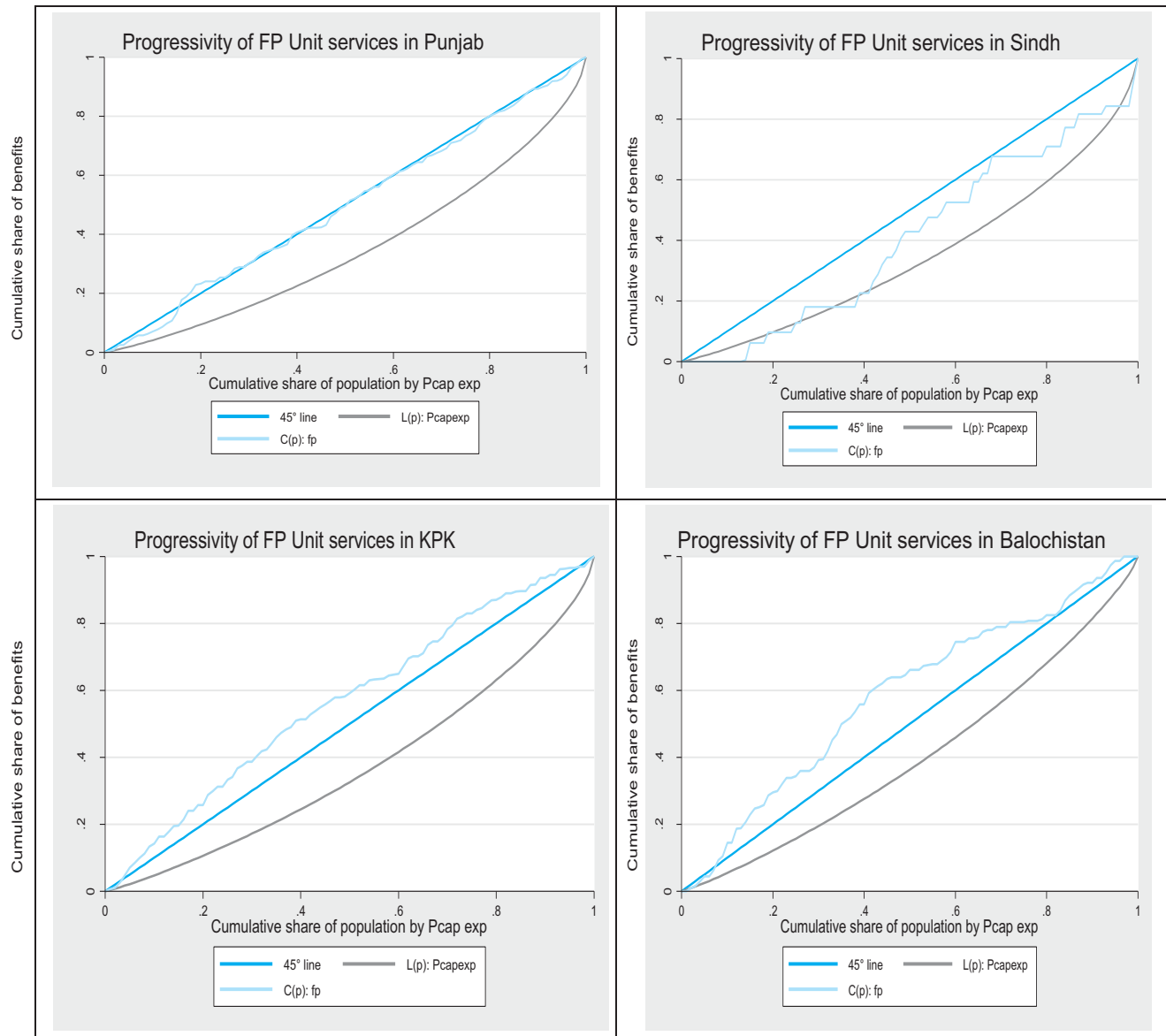


Table 4.36: Concentration Indices and Kakwani Indices for Utilization Incidence of Family Planning Services (2010-11)

| FP Unit Services | | | | | | 95% Confidence Interval | |
|------------------|---------------------|------------------|---------------|----------|--------|-------------------------|--------|
| | Concentration Index | Gini Coefficient | Kakwani Index | Std.Err. | T | Lower | Upper |
| Pakistan | -0.045 | 0.295 | -0.340* | 0.037 | -9.262 | -0.412 | -0.268 |
| Urban | 0.039 | 0.334 | -0.294* | 0.069 | -4.257 | -0.430 | -0.158 |
| Rural | -0.085 | 0.251 | -0.336* | 0.041 | -8.196 | -0.417 | -0.256 |
| Punjab | 0.010 | 0.300 | -0.290* | 0.055 | -5.282 | -0.398 | -0.182 |
| Sindh | 0.187 | 0.304 | -0.117 | 0.132 | -0.887 | -0.377 | 0.143 |
| NWFP | -0.131 | 0.262 | -0.393* | 0.044 | -9.005 | -0.480 | -0.307 |
| Balochistan | -0.164 | 0.198 | -0.362* | 0.075 | -4.813 | -0.511 | -0.213 |

4.6.8 Summary of Key Findings and Conclusion

We focus on seven MNCH related health services: i) pre-natal consultation ii) post natal consultation iii) hospital based maternal delivery iv) Tetanus Toxoid injections for pregnant women and v) child immunization services vi) Basic Health Units vii) Family Planning Units (FPU). These services are selected because data on the utilization of these services by type of facility (public vs. private) is readily available in micro level nationally representative household data from the Pakistan Living Standards and Measurement Survey (PSLM). We use both PSLM 2007-08 and recently available 2010-11 data. This allows us to compare the distribution of benefits over these time periods.

Our analysis yields some interesting results.

- We find that in 2007-08, the distribution of benefits from all MNCH related health services that we analysed in our study was pro-rich in varying degrees. In specific terms, the share of benefits received by low income groups was less than their share in total population. In contrast, the share of benefits received by high income groups was higher than their respective population shares. The distribution of benefits improved and became pro-poor in many services in 2010-11. This is a positive trend and could be due to many reasons such as the expansion of publicly funded basic health care programmes like the National Programme for Family Planning and Primary Health Care; Expanded Programme of Immunization; Lady Health Worker Programme; and National Maternal Neonatal and Child Health (MNCH) Programme.
- For some services such as post-natal consultation; hospital based maternal delivery; and tetanus toxoid injection for pregnant women, the utilization incidence of public spending remains pro-rich in 2010-11. This is an important finding because, in general, due to higher fertility rates and greater burden of diseases among the poor, the potential users that qualify for MNCH related services are likely to be high amongst poor income groups. Moreover, because of subsidized health services in public health facilities, it is expected that poor income groups would use these facilities more than higher income groups.
- The utilization of Basic Health Units (BHUs) is clearly found to be pro-poor suggesting that increasing the provision of basic health facilities can potentially address the goals of achieving equity in health care and reducing poverty. This finding appears to be consistent with international evidence that shows that in most developing countries, the incidence of public health spending on primary health care facilities is pro-poor whereas that on tertiary care such as hospital services is pro-rich³⁸.
- The extent of inequality in the distribution of benefits is higher in some services than in others. In 2007-08, the distribution of benefits from services for post-natal consultation was the most pro-rich followed by hospital based maternal delivery and pre-natal consultation. In 2010-11, the distribution of benefits from prenatal services improved markedly and now shows a pro-poor orientation. The distribution of benefits from post-natal services and maternal delivery also improved in 2010-11 but still remains pro-rich in most regions. Interestingly, the distribution of benefits from TT injections worsened in 2010-11. The distribution of benefits from immunization services remained, by and large, relatively equal.

³⁸ See e.g. O'Donnell et al. (2007) and World Bank 2004.

- At the provincial level, we find that the extent of inequality in the distribution of benefits is much higher in Balochistan and to some extent in Punjab compared to the rest of the two provinces. The plausible reasons for this finding are discussed in section 5.
- In terms of progressivity, our findings indicate that the utilization incidence of almost all MNCH related services is progressive in Pakistan at the national and provincial level. This indicates that the benefits in terms of utilization of MNCH related public services are more equally distributed than the distribution of income implying that investment in MNCH related public health services can help reduce income inequality.
- Finally, our estimates of overall participation rate of MNCH related public health services indicate that the overall uptake of these services is low particularly for hospital based maternal delivery, post natal and prenatal consultation. For prenatal consultation, only 26 per cent of the total women who qualified for the service utilized public health facility in 2010-11. For postnatal consultation, this ratio is as low as 8 per cent. For hospital based maternal delivery, only 13 per cent of women who qualified for this service actually used it. The low participation could either be due to low overall demand for health services owing to economic, cultural, and religious factors or due to low demand for public health services in particular.

Table 4.37: Trends in Concentration Indices for the Distribution of Benefits from Public Health Services Utilization for MNCH in Pakistan (2007-08 and 2010-11)

| | Prenatal | | Postnatal | | Maternal Delivery | | TT injection | | Immunization | |
|-------------|--------------|--------|--------------|--------------|-------------------|-------------|--------------|--------------|--------------|--------------|
| | 07-08 | 10-11 | 07-08 | 10-11 | 07-08 | 10-11 | 07-08 | 10-11 | 07-08 | 10-11 |
| Pakistan | 0.065 | -0.048 | 0.261 | 0.073 | 0.188 | 0.048 | 0.109 | 0.136 | 0.061 | 0.04 |
| Urban | 0.056 | -0.139 | 0.276 | 0.038 | 0.133 | -0.045 | 0.099 | 0.099 | 0.038 | 0.029 |
| Rural | 0.037 | -0.011 | 0.181 | 0.068 | 0.154 | 0.046 | 0.096 | 0.129 | 0.059 | 0.033 |
| Punjab | 0.12 | -0.09 | 0.293 | 0.111 | 0.309 | 0.081 | 0.105 | 0.104 | 0.065 | 0.031 |
| Sindh | 0.028 | -0.029 | 0.222 | -0.031 | 0.073 | -0.038 | 0.096 | 0.181 | 0.097 | 0.051 |
| KPK | 0.035 | 0.039 | 0.148 | 0.011 | 0.039 | 0.026 | 0.023 | 0.128 | -0.028 | 0.013 |
| Balochistan | 0.137 | 0.084 | 0.257 | 0.244 | 0.201 | 0.18 | 0.238 | 0.322 | 0.044 | 0.111 |

Note: Positive values of concentration indices indicate pro-rich distribution. Negative values indicate pro-poor distribution.

5 Policy Recommendations and a Way Forward

5.1 Policy Insights from Utilization Incidence Analysis

Based upon our empirical findings from Utilization Incidence Analysis, as present above, we recommend the following policies:

5.1.1 *Expand basic reproductive health facilities*

Our findings indicate that the distribution of benefits from public health spending on some MNCH related services such as post-natal consultation and hospital based maternal delivery are pro-rich. This could be due to both demand side factors such as inability to pay for access costs which are higher especially for maternal delivery; or due to supply side factors such as inadequate availability of emergency obstetric care especially in remote rural areas where majority of the poor reside. The government can achieve equity by expanding the availability of basic reproductive health facilities such as trained midwives and lady health workers across rural and urban areas. The national MNCH programme, that aims to increase the proportion of deliveries by skilled birth attendants, can go a long way - if implemented effectively – in achieving equity in maternal health outcomes.

5.1.2 *Increase resource allocation for MNCH in hospital based services*

Hospital based facilities for obstetric care and other MNCH related services need to be expanded as well. At present budgetary allocations for MNCH within hospital based services is extremely meagre: disaggregated data on budgetary allocations obtained from PIFRA (Project to Improve Financial Reporting and Auditing) in Pakistan shows that only 0.1 per cent of the total budget for hospital services was allocated for MNCH related services in 2010-11.

5.1.3 *Improve targeting of hospital based maternal services*

Since hospital based maternal delivery is found to be pro-rich, public spending on these services need to be targeted effectively towards the poor. This can be accomplished, for example, through a voucher scheme that provides free or subsidized treatment to women below the poverty line. One such program called Chiranjeevi Scheme was implemented effectively in the Indian state of Gujarat. Evaluation of this scheme showed that this voucher program was effective in reducing financial barriers for the poor and in averting substantial number of maternal and neo-natal deaths³⁹. Similarly, Sri Lanka that had an unacceptably high MMR of more than 500 maternal deaths per 100,000 live births in 1950s, was able to achieved dramatic reductions in its MMR though political will to invest in MNCH; provision of free services to those who were not able to pay; expansion of coverage of skilled birth attendants and expansion of emergency obstetric care. It is important to note that the country first focussed on expanding primary health care facilities first and then moved towards hospital based care⁴⁰. Pakistan has also recently introduced a health insurance scheme for the poor through Benazir Income Support Programme (BISP) which seems to be a step in this direction.

³⁹ See e.g Bhat et al. (2007).

⁴⁰ See e.g. Pathmanathan et al (2003).

5.1.4 Continue to expand Basic Health Units (BHUs)

Our findings indicate that the distribution of utilization from Basic Health Units (BHUs) turn out to be pro-poor. This is consistent with evidence from other developing countries that shows that public spending on basic health services is pro-poor whereas that on curative hospital care is pro-rich⁴¹. At present, government spending on health care in Pakistan is heavily tilted towards specialized hospital care while leaving little resources for basic health facilities. While curative health care is relatively expensive thereby justifying higher budgetary allocations, additional resources may be mobilized allowing for more spending on basic health facilities. However, rather than spending this additional allocation for expansion of public health care facilities, the governments at provincial level may consider providing conditional health insurance or vouchers that enable low income households to procure these services from public as well as private sector. This can increase the efficiency as well as equity of public health spending.

5.1.5 Increase budgetary allocations and improve targeting of public health subsidies in Balochistan

Our empirical findings indicate that the extent of inequality in the distribution of public health benefits is higher in Balochistan with benefits from most services captured by the rich rather than the poor. This could be an indication of poor governance and institutional failure in public service delivery. It could also be due to deteriorating law and order situation and sparse availability of public health services due to which poor people especially those who live in remote areas are not able to bear access costs related to transportation (Balochistan is the largest province in terms of area and has low population density). PSLM 2007-08 data shows that 47 per cent of the households interviewed in Balochistan did not have access to public health care services. This can be addressed by the province through increasing its overall allocation for health services. This may not be very cost effective - given the peculiar terrain and low population density in Balochistan - but at the same time may have huge dividends in terms of achieving equity and reducing poverty. Balochistan has one of the worst health indicators⁴² and on the basis of equity, more resources per capita need to be allocated for health services in this province. At the same time, it is equally important to improve the law and order situation in the province and improve governance of public services delivery so as to target these resources effectively towards the poor.

5.1.6 Demand side interventions must accompany the expansion in supply of public health services

Finally our findings reveal an extremely low overall participation in public health services utilization particularly for prenatal consultation; postnatal consultation; and hospital based maternal delivery. This underscores the need for demand side interventions that help boost the overall uptake of these services. These interventions could range from raising awareness and increasing literacy to improving the quality of public health services delivery.

⁴¹ O'Donnell et al. (2007) and World Bank 2004.

⁴² According to Pakistan Living Standards Measurement Survey (2007-08), infant mortality is highest in Baluchistan. Pakistan Demographic and Health Survey (2006-07) indicates that maternal mortality ratio in Baluchistan is 785 per 100,000 which is significantly higher than other provinces.

5.2 General Recommendations

5.2.1 Increase overall budgetary allocations for health

The overall budgetary allocation for health is quite low compared to other developing countries, particularly in South Asian region, that are at similar stages of development and have an epidemiological and demographic profile that is similar to or even better than Pakistan. As percentage of GDP, public spending on health has never exceeded 0.7 per cent and this percentage has been dwindling over time. In other countries of the region such as India and Bangladesh, the corresponding percentage is 1.2 and 1.3 per cent respectively and has remained at this level between 2008 and 2010.⁴³ No doubt, Pakistan is seriously off track in achieving the MDG Goal 4 of reducing 'Infant Mortality Rate' and lagging on 'Under-Five Mortality Rate' and 'Maternal Mortality rate.'⁴⁴

Public spending on health is considered as pro-poor in Pakistan and is monitored and reported under the Poverty Reduction Strategy Programme (PRSP). Although poverty reduction has been an overarching goal of successive governments in Pakistan, the contribution of these successive governments in financing health of its population remains extremely limited. Around 72 per cent of the total health expenditure is financed by private sources out of which 92 per cent are out of pocket expenses.⁴⁵ This feature of health care finance in Pakistan puts many households, especially those belonging to marginalized groups, into a vulnerable situation. A sudden illness, accident or medical emergency can push many households - especially those who do not have any assets to fall back upon - below the poverty line. According to a study conducted by the Planning Commission⁴⁶, economic shocks related to health care expenditure are the most common shocks faced by households in Pakistan. Under this scenario, the overall budgetary allocation for health needs to be increased both in an effort to reduce poverty and vulnerability and to achieve equity in health outcomes.

5.2.2 Increase efficiency and equity in public health sector spending

In terms of existing pattern of allocation of health sector budget across regions and across sectors, there is considerable room to improve the efficiency and equity of these allocations. To improve efficiency, public spending needs to be allocated for those interventions and subsectors that matter most and have the biggest impact on mortality rates. Maternal and perinatal conditions have been identified as one of the leading causes of mortality in Pakistan⁴⁷ but attract less than 0.2 per cent of the total budgetary allocations on health⁴⁸. The chunk of the budget is spent on specialized hospital and curative care (71.75 percent). Although hospital care is important to treat maternal and perinatal conditions, yet existing allocations within hospital care shows a meager amount being allocated for MNCH related services. Disaggregated data on budgetary allocations obtained from PIFRA (Project to Improve Financial Reporting and Auditing), shows that out of a total of Rs. 905 million budgeted by the

⁴³ World Bank, World Development indicators.

⁴⁴ See e.g. Millennium Development Goals Report prepared by Planning Commission of Pakistan

⁴⁵ National Health Accounts of Pakistan, 2007-08.

⁴⁶ See Government of Pakistan (2007).

⁴⁷ See e.g. Pakistan Demographic and Health Survey (2006-07) and Draft National Health Policy of Pakistan (2009).

⁴⁸ Poverty Reduction Strategy Paper (PRSP) – II Period Progress Report FY 2008/09 – FY 2010/11

Ministry of Health for hospital care in 2010-11, MNCH receives Rs 0.9 million which is 0.1 percent of the total allocation for hospital care.

Infectious diseases such as diarrhea, pneumonia and ARI are other leading causes of mortality especially among children under five years of age.⁴⁹ These diseases can be prevented through basic public health measures aimed at improving nutrition; creating awareness on hygiene and other public health matters; immunization programmes; and improving sanitary conditions etc.⁵⁰ According to Poverty Reduction Strategy Programme (PRSP), currently around 20 percent of the total budget on health sector is devoted to “Health Facilities and Preventive Measures.” This category includes primary health care facilities such as rural health centres, basic health units, dispensaries, first aid posts, mother and child health centres, programmes such as Lady Health Worker Programme; Malaria Control Programme; Tuberculosis and HIV/AIDS Control Programme; National Maternal and Child Health Programme; the Expanded Programme on Immunisation; Food and Nutrition Programme. Our empirical findings from Utilization Incidence Analysis show that poor tend to use basic health facilities such as basic health unit (BHU) more than the rich. Increasing budgetary allocations on this category is therefore likely to enhance both efficiency as well as equity in public health spending.

5.2.3 Integrate MNCH programmes into income support programmes

The social protection initiatives in Pakistan can be strengthened by integrating MNCH and other programs aimed at addressing nutritional deficiencies, with the income support programs. The social health protection initiatives implemented through Benazir Income Support Programme (BISP) have been designed to address MNCH as well. Integrating MNCH related programmes with income support programmes can potentially increase the effectiveness of all programmes involved. Such integrated programmes are effectively run in developed countries like U.S through basic and primary health care units.

Malnourishment is a serious problem in Pakistan and is often linked to socio-economic deprivation. A carefully designed social protection measure, aimed at improving the nutrition of women and children along with the provision of affordable health care services, can not only reduce poverty but is also likely empower women and address her nutritional needs through its implementation design. These health and nutrition programmes can be implemented through the Basic Health Units (BHUs). Pregnant women can visit the nearest Basic Health Unit, which can benchmark their health indicators and start providing them vouchers for food supplements. These vouchers can be exchanged for staple foods such as wheat, pulses, milk, and eggs at designated stores who can surrender those vouchers to the public health agency for cash compensation. This can ensure delivery of food items to households at affordable cost in a dignified manner and for intended purposes only. The nutritional interventions for mothers can continue until weaning thereby encouraging breastfeeding and subsequent birth control. As soon as the mother stops breastfeeding, the baby may qualify for vouchers up till the age of 5.

Such programs can also be used to provide an opportunity to raise awareness; deliver EPI; health related education; and family counselling services at the BHU level. Since the incentive (vouchers) for showing

⁴⁹ See e.g. Pakistan Journal of Medical Association (2009) and Pakistan Demographic and Health Survey (2006-07)

⁵⁰ See e.g. Bhutta et al. (2008).

up is in place, the costs of delivering and monitoring EPI from door to door can be reduced. The maintenance of health records at local BHU can help in tracking those who do not complete immunization and can be approached by social mobilizers or mobile teams. The implementation design of such a broad based programme may further increase the effectiveness of BHUs in delivering preventive health care in Pakistan.

5.2.4 Promote equity in regional allocation of public health resources

In terms of regional allocation of health sector budget, more resources need to be allocated towards regions that have poor health indicators and where the ability to pay for health care is low. After the recent enactment of National Finance Commission (NFC) award, health is now a provincial subject in Pakistan. Within provinces, there are significant spatial disparities. For instance, in Punjab, the southern districts have higher poverty and poor human development indicators. In order to achieve equity, provinces should take district level poverty and human development indicators while distributing resources at the inter-provincial level. Regions that show poorer health status and a greater proportion of marginalized population should receive more funds per capita than others.

5.3 A Way Forward: Future Directions for Research

By highlighting some critical issues in health care finance for MNCH in Pakistan, the present study can be seen as paving way for future research in this area. It creates some questions that can be addressed in future studies in this area. For instance, now that we know that benefits from public health services for many MNCH in Pakistan are unequally distributed in favour of high income groups, as a next step, it would be worthwhile to investigate the major factors that lie behind such a pro-rich pattern. Is it because of poor health seeking behaviour in general among low income households (that may be due to low literacy and awareness and higher opportunity cost of seeking care)? Is it because poor income groups opt more for private health care services rather than public? Or is it because of low availability of health care services in regions where majority of the poor reside? These are important questions, the answers to which can be sought through a decomposition analysis of the factors contributing to inequality in the distribution of benefits from public health subsidies on MNCH in Pakistan.

References

- Acharya, D., Vaidyanathan, G., Muraleedharan, V.R., Dheenadayalan, D.S and Dash, U. (2011) "Do the Poor Benefit from Public Spending on Healthcare in India?: Results from Benefit (Utilisation) Incidence Analysis in Tamil Nadu and Orissa". CREHS (Consortium for Research on Equitable Health Systems).
- Akram, M and Khan, F.J. (2007a) "Health Care Services and Government Spending in Pakistan". Pakistan Institute of Development Economics (PIDE) Working Paper No.32.
- Akram, M and Khan, F.J. (2007b) "Public Provision of Education and Government Spending in Pakistan". Pakistan Institute of Development Economics (PIDE) Working Paper No. 40.
- Alabi, R.A., Adams, O.O., Chime, C.C., Abu, S.O., Aiguomudu and Eidith, E (2010) "Marginal Benefit Incidence Analysis of Public Spending in Nigeria". Poverty and Economic Policy Research Network (PEP), 8th PEP General Meeting Dakar, Senegal.
- Anand, Sudhir. 2002. "The Concern for Equity in Health," Harvard Center for Population and Development 2002 Working Paper Series. Volume 12, number 1. February 2002.
- Anand, Sudhir, Fabienne Peter and Amartya Sen (2004) "Public Health, Ethics and Equity." Oxford University Press.
- Araar, A. and Duclos, JY. (2012) User Manual, DASP (Distributive Analysis Stata Package) 2.2. PEP, CIRPEE and World Bank.
- Arif, G.M., Saman Nazir, Maryam Naeem Satti, and Shujaat Farooq (2012) "Malnutrition in Pakistan: Trends and Determinants." Pakistan Institute of Development Economics. <http://www.pide.org.pk/pdf/Working%20Paper/Child%20Malnutrition%20.pdf>
- Ataguba, J and McIntyre, D. (2009) "Financing and Benefit Incidence in the South African Health System: Preliminary Results". Health Economics Unit Working Paper No.01. ISBN 978-0-7992-2394-1.
- Baru, Rama, Arnab Acharya, Sanghmitra Acharya, A K Shiva Kumar, K Nagaraj (2010) "Inequities in Access to Health Services in India: Caste, Class and Region." Economic and Political Weekly. September 18, 2010. Vol xlv no 38.
- Bhattacharya, P.C and Chikwama, C. (2011) "Inequalities in Child Mortality in India." Asian Population Studies, 7:3, 243-261.
- Bhattacharya, Govind (2009) "Intra-State Disparity in Government Expenditure: An Analysis." Economic and Political Weekly. June 27, 2009. Volume xlv. Nos. 26 & 27
- Bhat et al (2007) "Maternal Health Financing in Gujarat: Preliminary Results from a Household Survey of Beneficiaries under Chiranjeevi Scheme." Indian Institute of Management: Ahmedabad.

- Bhuiya, A., Hanifi, S.M.A., Urni, F and Mahmood, S. S. (2009) "Three Methods to Monitor Utilization of Healthcare Services by the Poor". *International Journal for Equity in Health*, 8:29 doi:10.1186/1475-9276-8-29.
- Bhutta, Zulfiqar et al (2008) "What works? Interventions for Maternal and Child Undernutrition and Survival." *The Lancet*, Volume 371, Issue 9610, Pages 417 - 440, February 2008
- Bidani, B and Ravallion, M. (1997) "Decomposing Social Indicators Using Distributional Data." *Journal of Econometrics*, 77:1 (125-39).
- Borghi, J et al. (2006) "Maternal Survival 4: Mobilising Financial Resources for Maternal Health". *Lancet*, 368: 1457-65. 10.1016/S0140-6736(06) 69383-5.
- Braveman, Paula and Eleuther Tarimo (2002) "Social Inequalities in Health within Countries: Not Only an Issue for Affluent Nations." *Social Science and Medicine*. 54(2002). 1621-1635.
- Castro-Leal, Florencia, Julia Dayton, Lionel Demery, and Kalpana Mehra (2000) "Public Spending on Health Care in Africa: Do the Poor Benefit?" *Bulletin of the World Health Organization*, vol. 78, no. 1 (January 2000), pp. 66-74.
- Cheema, Iftikhar Ahmad. 2010. "Tracing the Spatial Dimensions of Poverty in Pakistan." *Oxford Policy Management Working Paper* 2010-02.
- Chuma, J., Maina, T and Ataguba, J. (2012) "Does the Distribution of Health Care Benefits in Kenya Meet the Principles of Universal Coverage?" *Bio Med Central (BMC) Public Health*, 12:20 doi: 10.1186/1471-2458-12-20.
- Committee on Population Health and Health Security, Canada (2004) "Reducing Health Disparities – Roles of the Health Sector." Discussion Paper. Prepared by the Health Disparities Task Group of the Federal/Provincial/Territorial Advisory Committee on Population Health and Health Security.
- Davoodi, H.R., Tiongson, E.R and Asawanuchit, S.S. (2003) "How Useful are Benefit Incidence Analyses of Public Education and Health Spending?". *International Monetary Fund (IMF) Working Paper* No.227.
- Davoodi, H.R., Tiongson, E.R and Asawanuchit, S.S. (2010) "Benefit Incidence of Public Education and Health Spending Worldwide: Evidence from a New Database". *Poverty and Public Policy*, 2:2(5 -52).
- Demery, L., Chao, S., Bernier, R and Mehra, K. (1995) "The Incidence of Social Spending in Ghana". *The World Bank, Poverty and Social Policy Department (PSP) Discussion Paper* No. 19704.
- Demery, L and Gaddis, I. (2009) "Social Spending, Poverty and Gender Equality in Kenya: A Benefit Incidence Analysis". Draft.
- Demery, L. (2000) "Benefit Incidence: A Practitioner's Guide". *The World Bank, Poverty and Social Development Group, Africa Region*.

Demery, L. (2003) "Analyzing the Incidence of Public Spending". In Bourguignon, F and Luiz, A.P.S (eds), *The Impact of Economic Policies on Poverty and Income Distribution: Evaluation Techniques and Tools*, 41–68. New York: World Bank and Oxford University Press.

Diderichsen, Fin (2004) "Resource Allocation for Health Equity: Issues and Methods." World Bank. Health, Nutrition and Population Discussion Paper.

Doorslaer, Van E; Wagstaff A.; F. Rutter (1993) "Equity in the Finance and Delivery of Health Care." New York, NY: Oxford University Press.

Evans, Timothy; Whitehead, Margaret; Diderichsen, Finn; Bhuiya Abbas; and Meg Wirth (2001) "Challenging Inequities in Health: From Ethics to Action." Oxford University Press. 2001. New York.

Fikree, F.F., Mir, A.M and Huq, I. (2006) "She may Reach a Facility but will Still Die!: An Analysis of Quality of Public Sector Maternal Health Services, District Multan, Pakistan". *Journal of Pakistan Medical Association*. 56:156.

Folland, Sherman, Allen C. Goodman, and Miron Stano (2010) "The Economics of Health and Health Care." Sixth Edition. Pearson Publishers. New Jersey.

Freedman, L., Wirth, M., Waldman, R., Chowhdury, M and Rosenfield, A. (2003) Background Paper of the Task Force on Child Health and Maternal Health. Millennium Project. Commissioned by the UN Secretary General and supported by the UN Development Group. <http://www.unmillenniumproject.org/documents/tf04apr18.pdf>

Gaddah, M and Munro, A. (2011) "The Progressivity of Health Care Services in Ghana". National Graduate Institute for Policy Studies (GRIPS) Discussion Paper 11-14.

Gasparini, L.C and Panadeiros, M. (2004) "Argentina: Assessing Changes in Targeting Health and Nutrition Policies". Health, Nutrition and Population (HNP) Discussion Paper. Reaching the Poor Program Paper No. 1.

Glick, P and Razakamanantsoa, M. (2002) "The Distribution of Social Services in Madagascar, 1993-99". Strategies and Analysis for Growth and Access (SAGA) Working Paper.

Glick, P., Saha, R and Younger, S.D. (2004) "Integrating Gender into Benefit Incidence and Demand Analysis." Cornell Food and Nutrition Policy Program (CFNPP) working paper No.167. <http://www.cfnpp.cornell.edu/info/workpap.html>

Government of India (2005). "National Health Accounts of India: 2004-05." Ministry of Health and Family Welfare, Government of India.

Government of Pakistan (2002). "Pakistan Integrated Household Survey (2001-02) Report." Pakistan Bureau of Statistics

Government of Pakistan (2003) "Expanded Programme on Immunization: Financial Sustainability Plan". Ministry of Health.

Government of Pakistan (2007) "Social Protection Strategy, 2007." Planning Commission, Government of Pakistan.

Government of Pakistan (2007-08). "National Health Accounts Pakistan 2007-08."Government of Pakistan, Statistics Division. Pakistan Bureau of Statistics

Government of Pakistan (2008) Poverty Reduction Strategy Paper (PRSP)-2008 "Primary Healthcare Services in the Rural Punjab: A Public Private Partnership", Chief Minister's Initiative for Primary Healthcare.

Government of Pakistan (2008) "Pakistan Social & Living Standards Measurement Survey (2007-08) Report." Pakistan Bureau of Statistics

Government of Pakistan (2011) "Economic Survey of Pakistan. Ministry of Finance, Islamabad.

Gwatkin, D.R., Rutstein, S., Johnson, K., Suliman, E., Wagstaff, A and Amouzou, A. (2007) "Socioeconomic Differences in Health, Nutrition and Population within Developing Countries. The World Bank, Country Reports on HNP (Health, Nutrition and Population) and Poverty.

Hasan, Q., Bosan, A.H and Bile, K.M. (2010) "A Review of EPI Progress in Pakistan towards Achieving Coverage Targets: Present Situation and the Way Forward". Eastern Mediterranean Health Journal La Revue de Santé de la Méditerranée orientale, Vol: 16. Household Integrated Economic Survey (2007 -08) Report.

Gupta, S., Verhoeven, M and Tiongson, E.R. (2003) "Public Spending on Health Care and the Poor." Health Economics, 12: 685-96.

Halasa, Y., Nassar, H and Zaky, H. (2010) "Benefit Incidence Analysis of Government Spending on Ministry of Health Outpatient Services in Jordan". Eastern Mediterranean Health Journal, 16:5(467-473).

Heltberg, R., Simler, K and Trap, F. (2003) "Public Spending and Poverty in Mozambique". Food Consumption and Nutrition Division (FCND) Discussion Paper No. 167.

Houweling, T.A.J., Kunst, A.E., Looman. C.W.N and Mackenbach, J.P. (2005) "Determinants of Under-5 Mortality among the Poor and the Rich: A Cross-national Analysis of 43 Developing Countries". International Journal of Epidemiology, 34:1257-1265.

Hovhannisyan, S. (2006) "Benefit Incidence Analysis in Armenia". Armenian International Policy Research Group Working paper No. 04.

Jamal, Haroon (2009) 'Estimation of Multidimensional Poverty in Pakistan'. Social Policy and Development Centre (SPDC) Research Report # 79.

Kamgnia, B. D. (2008) "Distribution Impact of Public Spending in Cameroon: The Case of Health Care". African Economic Research Consortium (AERC) Research Paper No.179.

Khatib, R and Mataria, A. (2010) "Equity in Health Care in the Occupied Palestinian Territory: A Benefit Incidence Analysis". Economic Research Forum Working Paper No.564.

Kerber, K.J., Graft-Johnson, J.E., Bhutta, Z.A., Okong, P., Starrs, A and Lawn, J.E. (2007) "Continuum of Care for Maternal, Newborn, and Child Health: From Slogan to Service Delivery". *Lancet*, 370: 1358-69.

Lanjouw, P., Menno, P., Fadia, S., Han een, S and Robert, S. (2001) "Poverty, Education and Health in Indonesia: Who Benefits from Public Spending?" The World Bank, Policy Research Working Paper No. 2739.

Lanjouw, P and Ravallion, M. (1999) "Benefit Incidence, Public Spending Reforms, and the Timing of Program Capture". *The World Bank Economic Review*, 13:2(257 -73).

Lawn, J.E., Cousens, S., Zupan, J and the Lancet Neonatal Survival Steering Team (2005) "Neonatal Survival 1: 4 Million Neonatal Deaths: When? Where? Why?" *Lancet*, 365: 891-900.

Limwattananon, S., Vongmongkol, V., Prakongsai, P., Patcharanarumol, W., Hanson, K., Tangcharoensathien, V and Mills, A. (2011) "The Equity Impact of Universal Coverage: Health Care Finance, Catastrophic Health Expenditure, Utilization and Government Subsidies in Thailand". Consortium for Research on Equitable Health Systems (CREHS).

Lassibille, G and Tan, J. (2007) "Benefit Incidence Analysis in Education". *Journal of Education Finance*, 33:2 (170-182).

Makawia, S., Macha, J., Ally, M and Borghi, J. (2010) "An Assessment of the Distribution of Health Service Benefits in Tanzania". Strategies for Health Insurance for Equity in Less Developed Countries (SHIELD) Work Package 3 Report.

Mangham, L. (2006) "Who Benefits from Public Spending on Healthcare in Malawi?: An Application of Benefit Incidence Analysis to the Health Sector." *Malawi Medical Journal*, 18:60 -65.

Mogues, T., Petracco, C and Randriamamonjy, J. (2011) "The Wealth and Gender Distribution of Rural Services in Ethiopia: A Public Expenditure Benefit Incidence Analysis." International Food Policy Research Institute (IFPRI) Discussion Paper No. 01057.

Murray C.J; Gakidou EE; and J. Frenk (1999) "Health Inequalities and Social Group Differences: What should we measure?" *Bulletin of the World Health Organization*, 1999; 77:537-43.

Murray, Christopher J.L and Julio Frenk (2000) "A Framework for Assessing the Performance of Health System." *Bulletin of the World Health Organization*." Vol. 78, #6 June 2000.

National Institute of Population Studies (NIPS) (2008) "Pakistan Demographic and Health Survey, 2007-08." Macro International Inc.

Nishtar S. Health Indicators of Pakistan (2007) – Gateway Paper II. Islamabad, Pakistan: Heartfile.

Nishtar, Sania (2010) "Choked Pipes: Reforming Pakistan's Mixed Health System." Oxford University Press. Oxford, U.K.

Norwegian Embassy for Development Co-operation (NORAD) (2007) The Global Campaign for the Health Millennium Development Goals 4, 5 and 6, 2007. <http://www.norad.no/en/thematic-areas/health-and-aids/maternal-child-and-womens-health/global-campaign-for-the-health-mdgs;jsessionid=C819D9BD6FF8C00AFFFDAD9E2059CBF6>

O' Donnell, Owen; Van Doorslaer; Adam Wagstaff; and Magnus Lindelow, M. (2008) "Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and their Implementation". The World Bank, Washington. DOI: 10.1596/978-0-8213-6933-3.

O'Donnell, O et al. (2007) "The Incidence of Public Spending on Healthcare: Comparative Evidence from Asia". The World Bank Economic Review, 21:1(93 -123). doi: 10.1093/wber/lhl009.

Onwujekwe, O., Uzochukwu, B and Onoka, C. (2011) "Benefit Incidence Analysis of Priority Public Health Services and Financing Incidence Analysis of Household Payments for Healthcare in Enugu and Anambra States, Nigeria". Health Policy Research Group, University of Nigeria.

Pathmanathan I et al (2003) "Investing in Maternal Health: Learning from Malaysia and Sri Lanka." World Bank: Washington DC.

Pan American Health Organization (PAHO) 2001. "Equity and Health: Views from the Pan American Sanitary Bureau". PAHO, Washington D.C.

Priya, Ritu (2005) "Public Health Services in India: A Historical Perspective" in L V Gangolli, R Duggal, A Shukla (ed.). Review of Health Care in India, Centre for Enquiry into Health and Allied Themes, Mumbai.

Rajkumar, Andrew Sunil and Vinaya Swaroop. 2008. "Public Spending and Outcomes: Does Governance Matter?" Journal of Development Economics. 86 (2008). 96-111.

Research and Advocacy Fund. "Maternal and Newborn Health: The Policy Context in Pakistan"

<http://rafpakistan.org/userfiles/MNH-PolicyContextPakistan.pdf>

Sabih, F., Bile, K.M., Buehler, W., Hafeez, A., Nishtar, S and Siddiqi, S. (2010) "Implementing the District Health System in the Framework of Primary Health Care in Pakistan: Can the Evolving Reforms Enhance the Pace towards the Millennium Development Goals?". Eastern Mediterranean Health Journal. Vol. 16.

Sabir, M. (2003) "Gender and Public Spending on Education in Pakistan: A Case Study of Disaggregated Benefit Incidence. Paper No.48, presented at conference of Social Policy Development Centre (SPDC).

- Sahn, D.E and Younger, S.D. (2000) "Expenditure Incidence in Africa: Microeconomic Evidence." *Fiscal Studies*, 21:329-347.
- Sakellariou, C and Patrinos, H.A. (2004) "Incidence Analysis of Public Support to the Private Education Sector in Cote d'Ivoire". World Bank Policy Research Working Paper No.3231.
- Selowsky, M. (1979) "Who Benefits from Government Expenditure?: A Case Study of Colombia. New York, Oxford University Press.
- Sen, Amartya (1999) "Development as Freedom. Oxford University Press.
- Siddiqi, S; I.U Haq; A Ghaffar; T. Akhtar; R. Mahaini (2004) "Pakistan Maternal and Child Health Policy: Analysis, Lessons and the Way Forward." *Health Policy* 69 (2004) 117 -130.
- Syntyche, N.D., Ndang, T.S and Anatole, T.M. (2007) "Who Benefits From Social Expenditures in Chad?: An Incidence Analysis Using Survey Data". PMMA Working Paper No. 11.
- United Nations Fund for Population (2009) "Focus on 5: Women's Health and the MDGs". <http://www.unfpa.org/public/publications/pid/3888>
- United Nations Development Programme (2003) 'Pakistan National Human Development Report'. UNDP, Pakistan
- Van de Walle, D. (1992) "The Distribution of the Benefits from Social Services in Indonesia, 1978-87". Policy Research Working Paper No. 871, the World Bank, Country Economics Department.
- Van de Walle, D. (1996) "Assessing the Welfare Impacts of Public Spending". The World Bank, Policy Research Working Paper No. 1670.
- Wagstaff, Adam (2010) "Benefit Incidence Analysis are Government Health Expenditures More Pro-rich Than We Think?". Policy Research Working Paper No. 5234.
- World Bank (2004) "World Development Report 2004: Making Services Work for the Poor." The World Bank.
- World Health Organization (2005b) "World Health Report 2005: Making Every Mother and Child Count." WHO.
- World Health Organization and UNICEF (2010) "Countdown to 2015 Decade report (2000-2010): Taking stock of maternal, newborn and child survival". ISBN 978 92 4 159957 3.
- Younger, S.D. (2000) "The Incidence of Public Services and Subsidies in Peru: Evidence from Household Surveys". Cornell University Food and Nutrition Poverty Program.
- Zere, E., Moeti, M., Kirigia, J., Mwase, T and Kataika, E. (2007) "Equity in Health and Healthcare in Malawi: Analysis of Trends". *Bio Med Central (BMC) Public Health*, 7:78. doi:10.1186/1471-2458-7-78

Van de Walle, D. (1998) "Public Spending and the Poor: What We Know, What We Need to Know". Banco Mundial (mimeo).

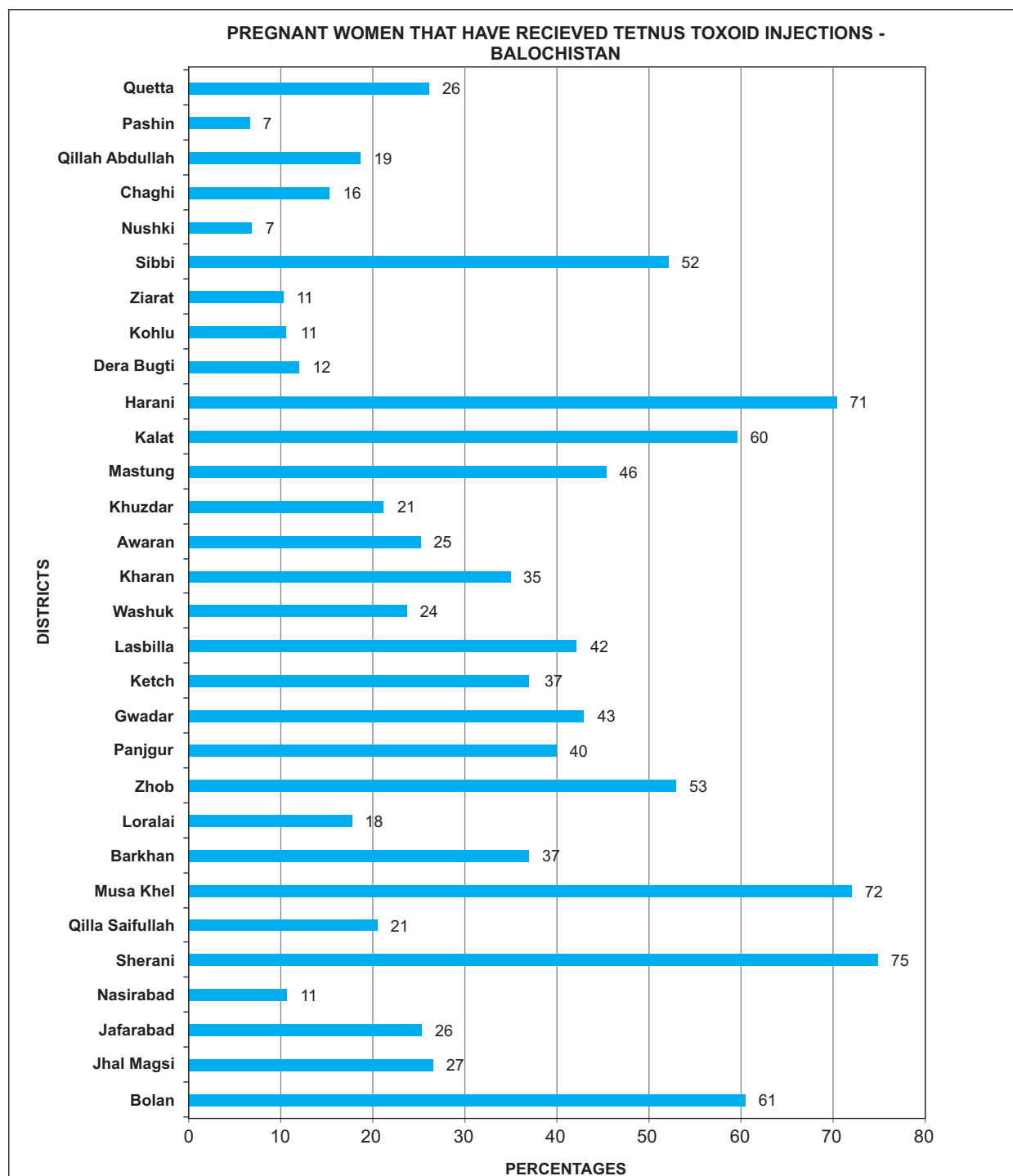
World Bank 2004. World Development Report 2004. Oxford University Press.

World Bank. 1995. "Philippines Public Expenditure Management for Sustained and Equitable Growth". Report No. 14680-PH.

World Health Organization (2008) "Country Case Study: Pakistan's Lady Health Worker Programme". GHWA Task Force on Scaling Up Education and Training for Health Workers. http://www.who.int/workforcealliance/knowledge/resources/casestudy_pakistan/en/index.html

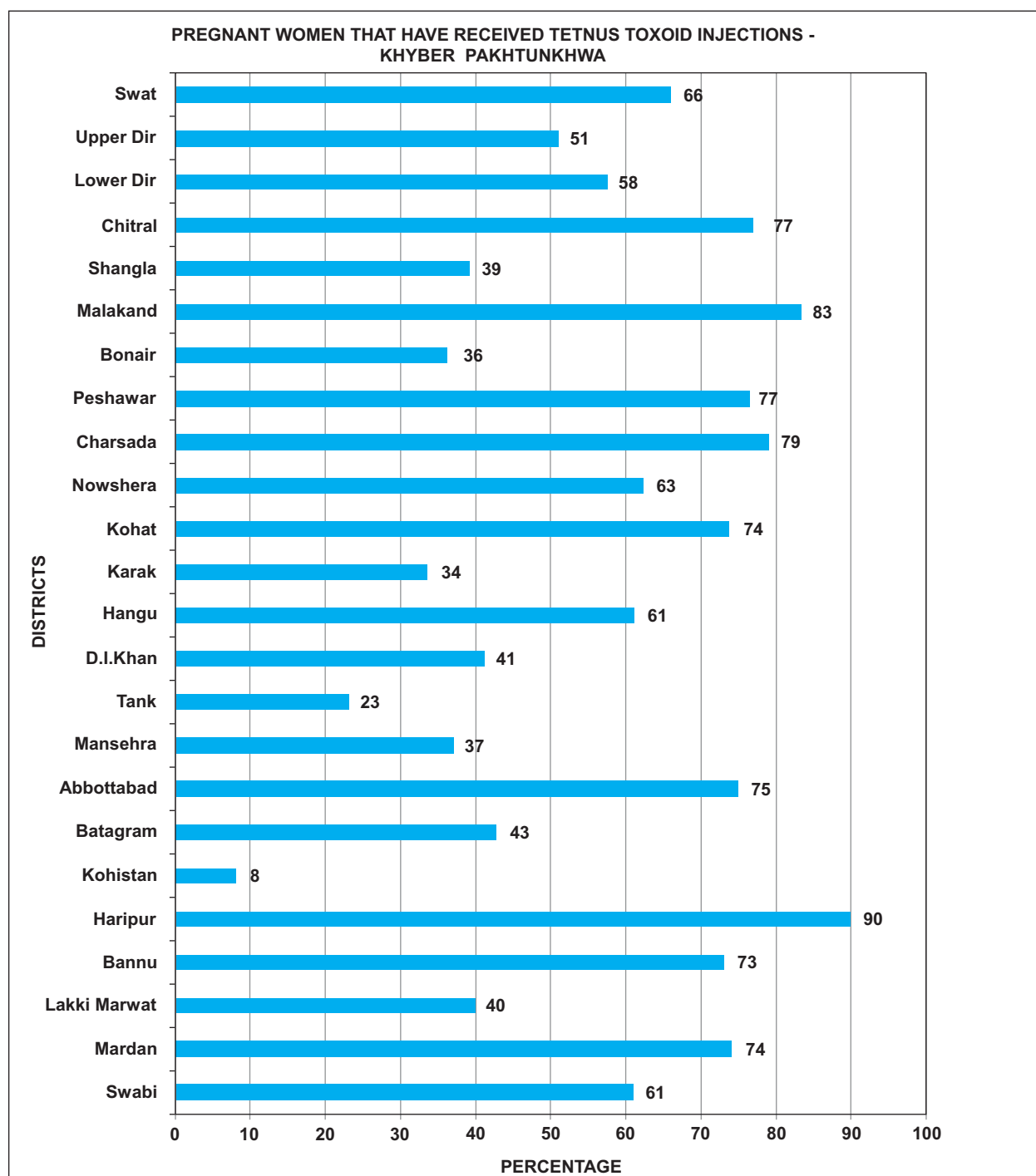
Appendix A

Figure A.32: Appendix



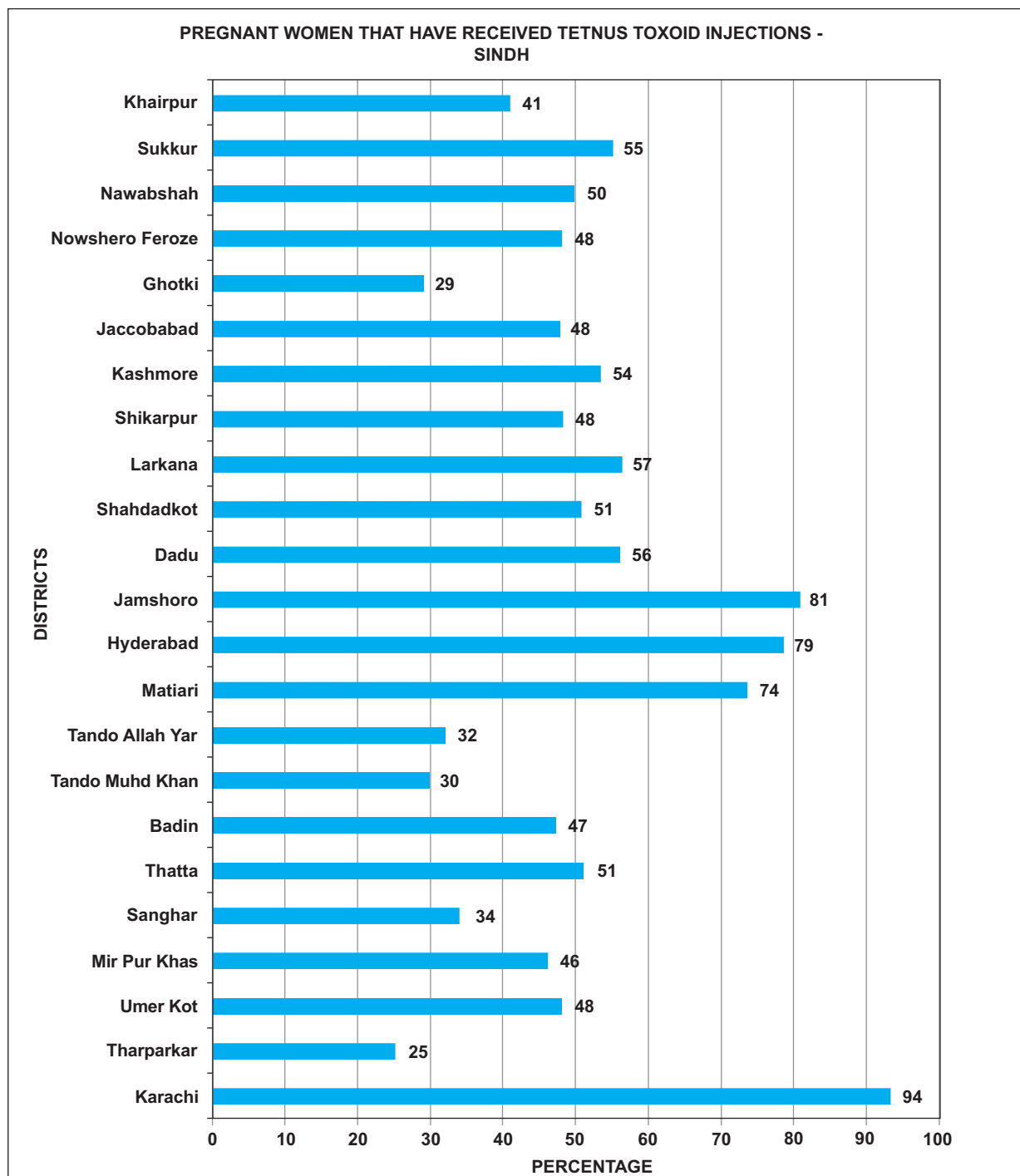
Source: PSLM 2010

Figure A.33: Appendix



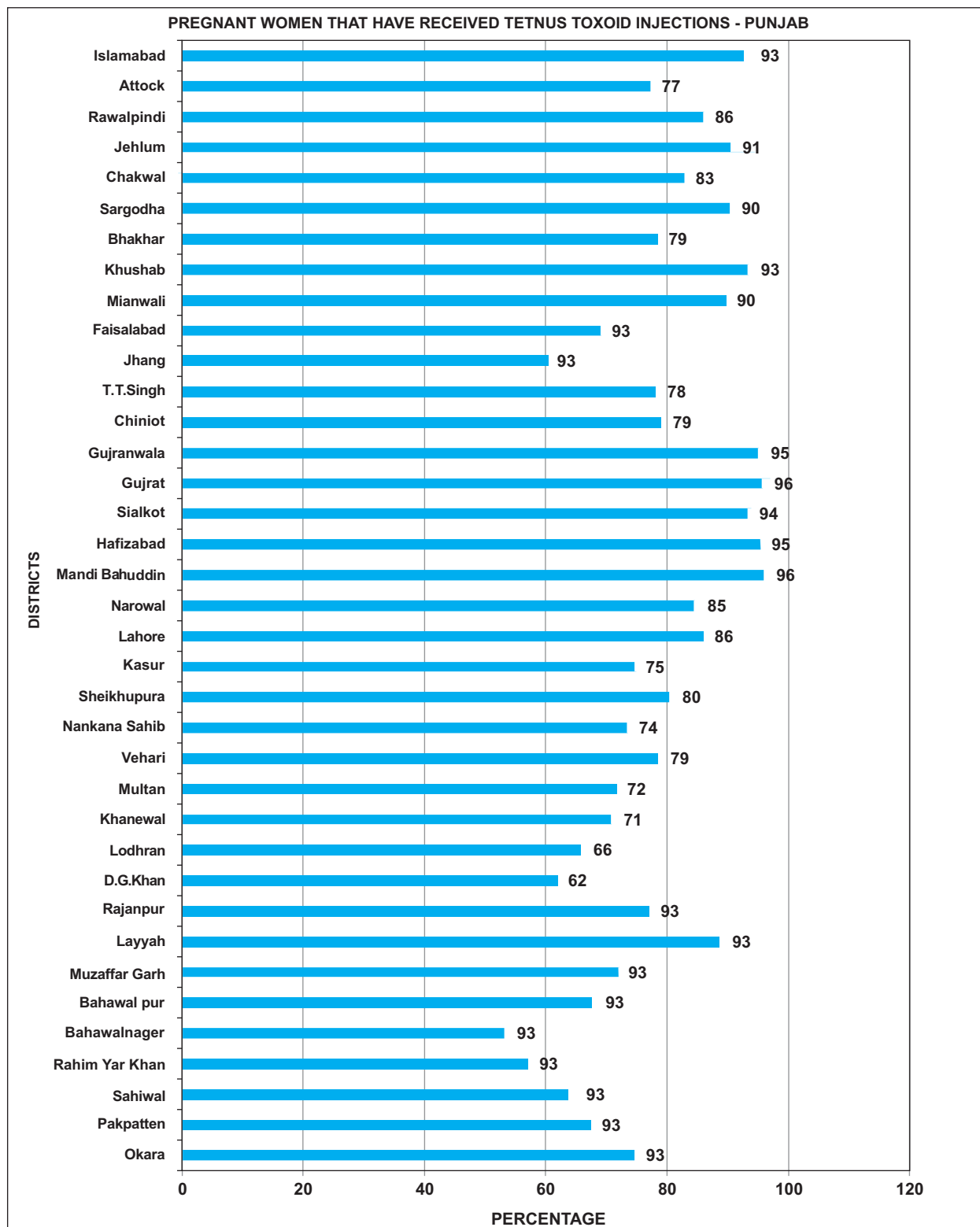
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Figure A.34: Appendix



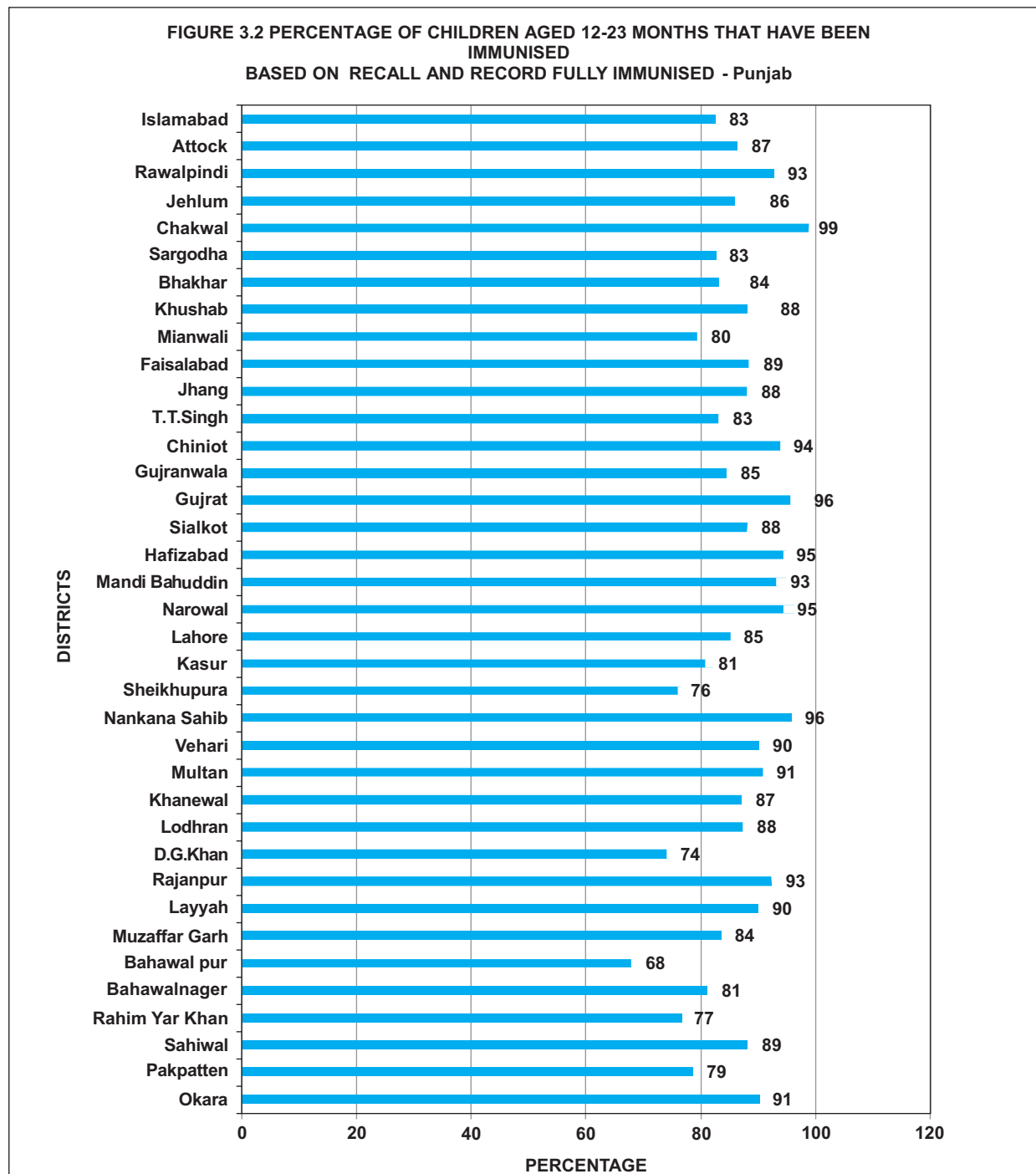
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Figure A35: Appendix



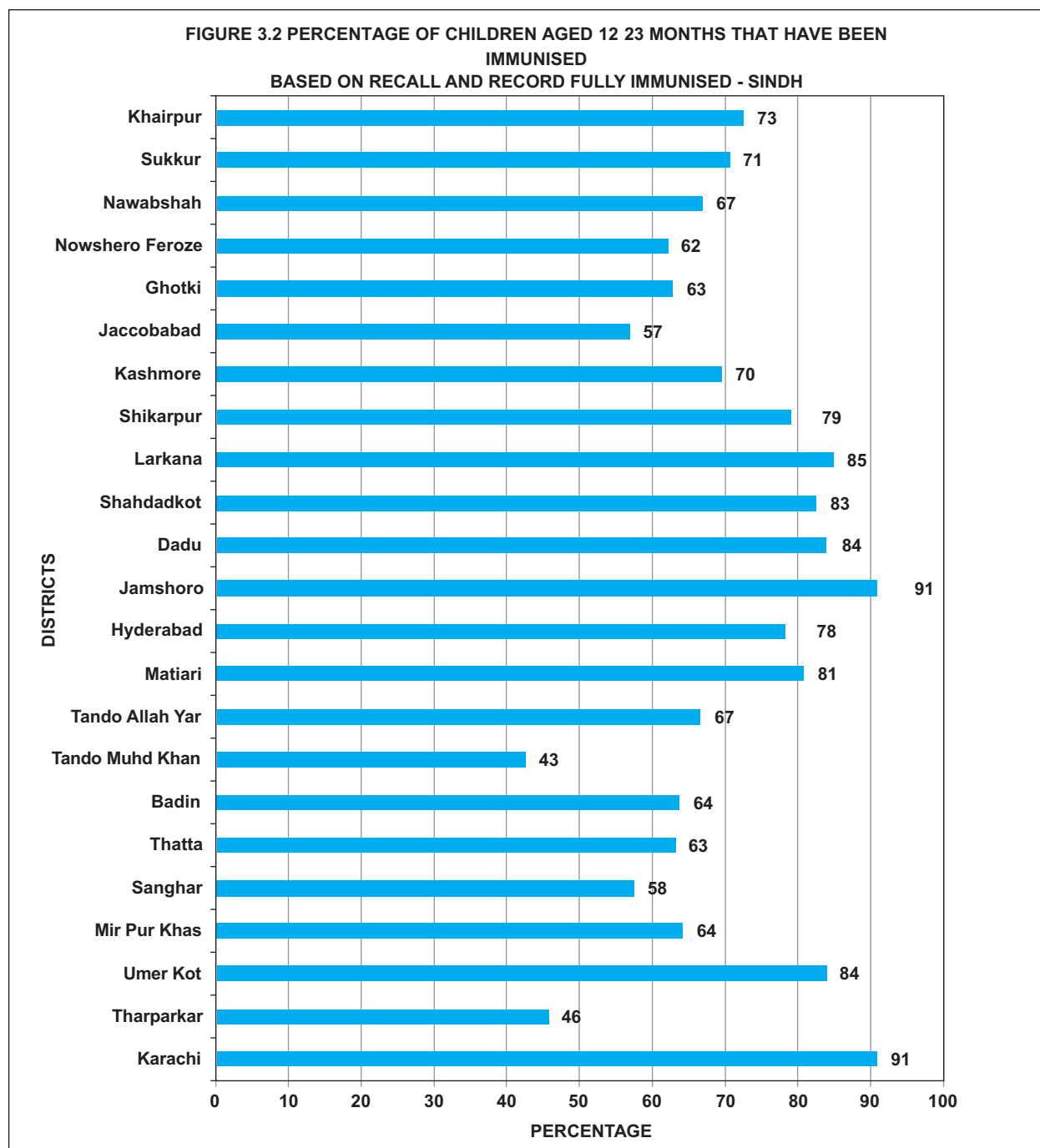
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Figure 0A.36: Appendix



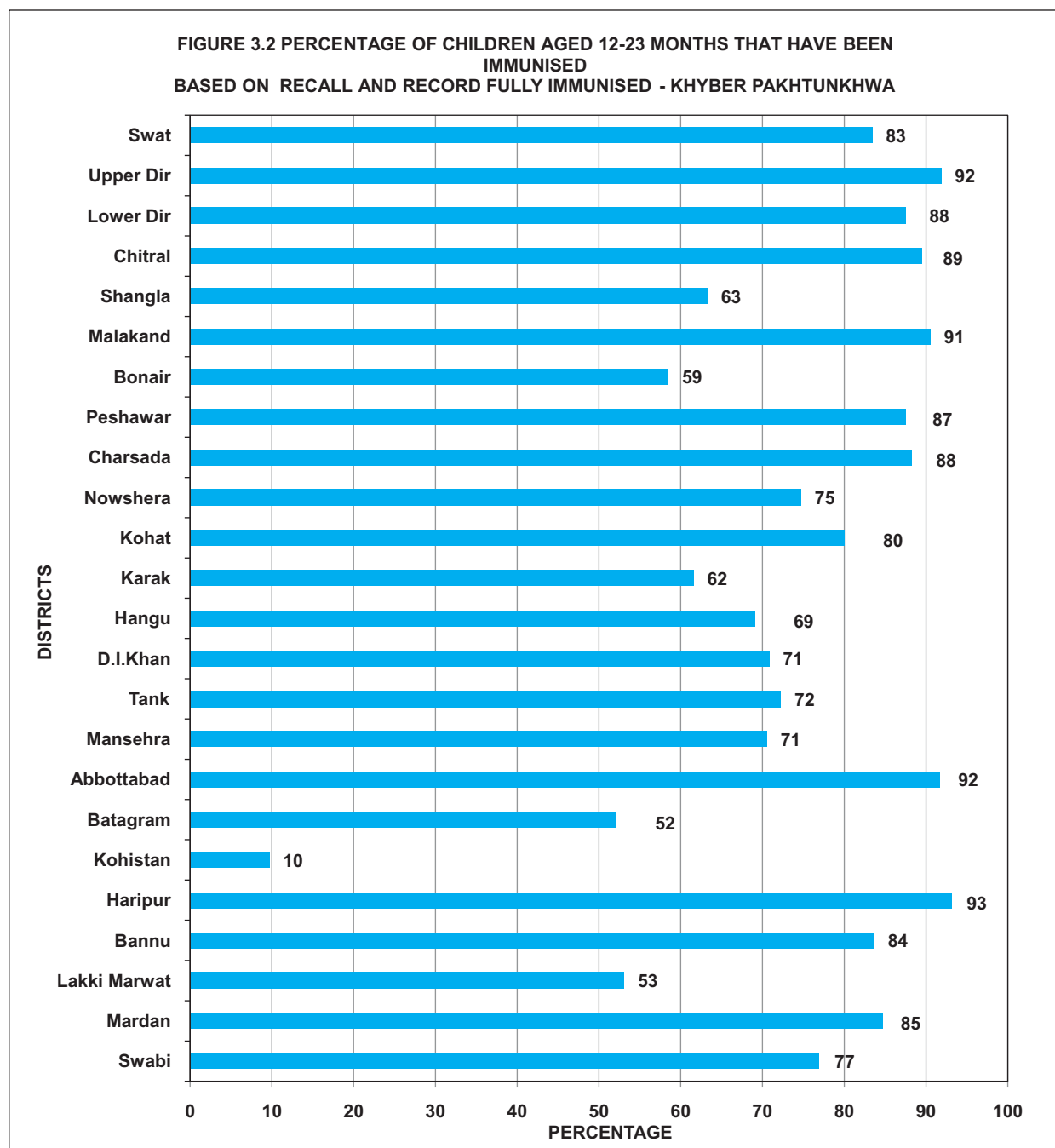
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Figure A.37: Appendix



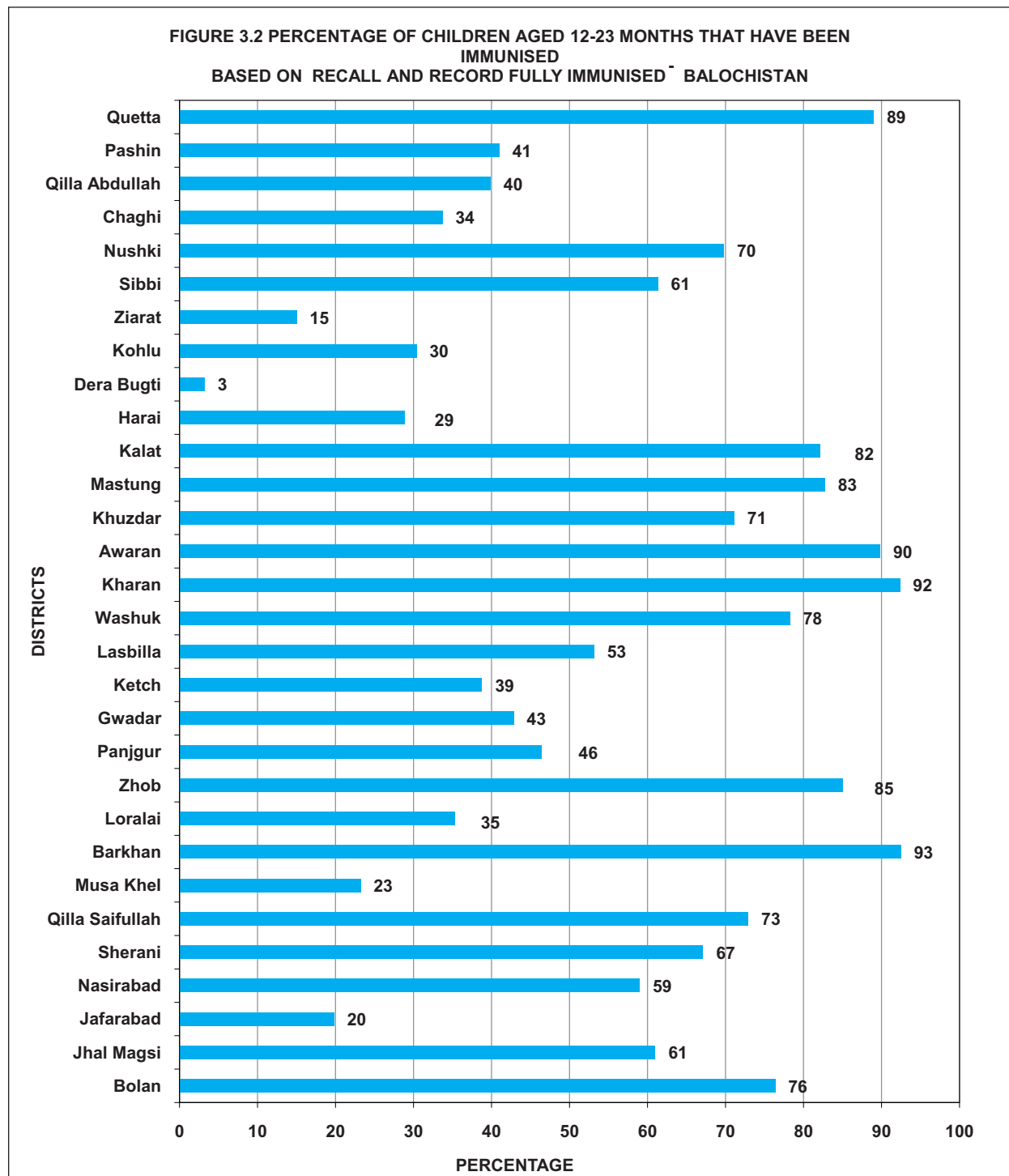
Source: PSLM 2010-11

Figure A.38: Appendix



Source: PSLM 2010-11

Figure A.39: Appendix



Source: PSLM 2010-11

Appendix B

Table B.57: Overview Of Studies Analyzing Benefit Incidence In Health Sector⁵¹

| Author/Org anization | Year of Public ation | Journal (published/un published) | Country of Analysis | Data Used (e.g. DHS, other household level micro data) | Expenditure Indicators utilized from NHA or form any other source | Technique Used | Findings | Limitation |
|-------------------------|-------------------------------|--|------------------------|---|--|---|--|------------|
| Selowsky, M | 1979 | Oxford University Press, New York | Colombia | Sample Survey (1974) | Data from ICSS (Institute of Social Security) hospitals is used. Inpatient, outpatient, deliveries and operations facilities of hospitals and healthcare center under National Health System (NHS) and Social Security System (SSS) are analyzed | Benefit Incidence Analysis, Concentration and Lorenz curves | In case of NHS, inpatient services appear more beneficial for lower-income quintiles. In case of outpatient, the share of services consumed remains similar for the first four quintiles and diminishes sharply for the richest quintile. The shares of consumption appear more erratic across income quintiles for surgical operations. In case of SSS, outpatient and inpatient services have 82 per cent of total subsidy. Overall, the three highest income groups have the highest shares, particularly in case of outpatient care. | |
| van de Walle, D | 1992 | The World Bank, Policy Research, WPS No. 0871 | Indonesia | SUSENAS Survey(197 8, 1987) | Routine budget recurrent data for hospitals and health centers | Benefit Incidence Analysis and changes in incidence | The lowest income groups are less likely to seek treatment outside the home. Hospital treatment increases with urban residence and household per capita expenditures. The overall health subsidy is found to be progressive, but only mildly. Incidence of subsidies to hospitals increases with consumption, while in case of primary health centers, incidence of subsidies constant across deciles. | |
| Demery, L et al | 1995 | PSP Discussion Paper No. 19704 | Ghana | Living Standards Survey (1989, 92) | MOH expenditure data is used for hospital (inpatient and outpatient) and health center/clinic | Benefit Incidence Analysis for health facility utilization and subsidies | From 1989 to 92, there is increase in use of hospital outpatient visits and somewhat less increase in use of health centers/clinics. This increase is occurring across all expenditure groups and reducing the gaps between income groups. Health subsidies are highly unequal in favor of rich. Poor are benefiting from inpatient care and marginally more from outpatient hospital care, health centers and clinics. | |
| Castro-Leal, F et al | 2000 | Bulletin of World Health Organization | 7 African countries | Household Surveys of different countries | Govt. accounts are used for hospital (inpatient and outpatient) and health center for curative health care | Benefit Incidence Analysis and Concentration Index | Overall, Govt. subsidies directed towards curative health care are poorly targeted to poor household and the richest are getting more benefit. | |
| Sahn, D. E and | 2000 | Fiscal Studies | Eight sub- Saharan | Household Surveys for | Simple binary approach (0/1) is employed for hospital and | Benefit concentration and | The benefits associated with hospital care are less progressive than other health facilities and the benefits of healthcare | |

⁵¹ Here, only health sector studies are discussed. Many studies have analysed health as well as education sector including: Demery, L et al (1995), Younger, S. D (2000), Glick, P (2002, 2004), Heltberg, R et al (2003), Davoodi, H.R et al (2003), Hovhannisyan, S (2006), Syntychyche, N.D et al (2007), Akram, M and Khan, F.J (2007) and Demery, L and Gaddis, I (2009). Gasparini, L.C and Panadeiros, M (2004) examined the many other programs along health programs, such as milk in hospitals and food in kindergartens and Meals in local centers program. Khatib, R and Mataria, A (2010) analyzed the education and infrastructure sector (water and electricity) as well as health sector. Similarly, Limwatta nanon, S et al (2011) employed Benefit and Financial Incidence Analysis. Selowsky, M (1979) analyzed health, education, electricity, piped water, sewerage and lightening, Agri. Loan facilities.

| | | | | | |
|---------------------------------|-------------------|--|---|---|---|
| Younger, S. D | African countries | all countries | non-hospital healthcare. Govt. budget data is utilized for comparison between binary approach and unit subsidy valuation method | Lorenz curves and Dominance tests, complemented by extended Gini/Concentration Coefficients | outside hospitals are more progressive than the distribution of household expenditures. Only South Africa is a country having expenditure progressivity is hospitals. Comparison of simple binary indicators versus unit costs valuation at a regional level show few significant differences. |
| Younger, S. D | Peru | Encuesta Nacional de Hogares and ENNIV (1985/6, 1991, 1994, 1997) | Cost data is not utilized. Binary indicator (1/0) is employed for women and children preventive services, consultation and hospitalizations at public health facilities | Concentration curve and Lorenz curve for targeting and progressivity, Dominance test | Almost all of the health services are progressive. Moreover, the dominance tests reveal that non-hospital consultations that are free of charge dominate hospital consultations that are free of charge. Consultations at health centers and posts are more progressive than consultations at hospitals. Vaccinations and child well visits are per capita progressive. |
| Lanjouw, P et al | Indonesia | Multiple rounds of SUSENAS household survey | Budget data is utilized for Primary health care, Hospitals and routine expenditures. | Static and Dynamic Benefit Incidence Analysis. Sensitivity of results with respect to economies of scale assumption. For Marginal Incidence Analysis, marginal odd ratios of participation by Lanjouw and Ravallion (1999) method | Traditional Benefit Incidence analysis reveals primary health care spending as slightly pro-poor and hospital public spending as slightly pro-rich. When economies of scale are introduced then implicit subsidies become more pro-poor. Average incidence analysis indicates that primary health care is fairly regressive while, Marginal odds are highest for 2 nd quintile. Marginal incidence estimates for hospital care are not statistically significant. Overall, Marginal and average incidence analysis reveal that greatest benefit to the poor would come from an increase in primary health care spending. |
| Glick, P and Razakamanantsoa, M | Madagascar | Enquete Permanente Aupres des Menages survey (1993/94, 1997, 1999) | No cost data is used. Benefits are measured by using a binary (0, 1) indicator for whether a particular public service is received. Services include Outpatient, Prenatal care, Child vaccination | Lorenz and Benefit Concentration curves, Coverage rate, Progressivity of services, Statistical dominance test and Robustness analysis by taking alternative welfare ranking of household | Vaccinations are expenditure progressive but are not per-capita progressive, while prenatal care services are per-capita progressive. Outpatient hospital care, prenatal and vaccinations are equally distributed than distribution of consumption expenditures. Robustness analysis pointed out that Prenatal care remain expenditure progressive and it becomes per-capita progressive for some values of θ less than 1 in 1999. With the exception of 'all completed vaccinations', immunization benefits remain expenditure progressive in 1999. |
| Heltberg, R et al | Mozambique | National Household Survey of Living Conditions (1997-98) | Cost data is not utilized. Binary indicator (0/1) is employed. Child vaccination, Antenatal care and other individual health services (hospital, health center, or other medical facility) | Non-behavioral Benefit Incidence methodology by Benefit Concentration curves and Dominance testing | Infant vaccination and antenatal care services are progressive but vaccination services are particularly progressive. Moreover, infant vaccination is progressive but not per-capita progressive. The Dominance testing reveals that the curve for infant vaccinations statistically dominates antenatal care as well as Lorenz consumption curve. Hospital and health center services appear to be progressive but not per capita progressive. |
| Davoodi, H.R et al | 56 countries | From different sources | Data on spending for primary health care, health centers and hospitals are derived | Benefit Incidence Analysis, Lorenz and Benefit | "Overall spending on health is on average pro-rich, particularly in sub-Saharan Africa, but is well targeted and progressive only in the Western Hemisphere". All health services are poorly |

| | | | | | | | |
|----------------------------------|------|---|-------------|---|---|---|--|
| Gasparini, L.C and Panadeiros, M | 2004 | H N P Discussion Paper, Reaching the Poor Program Paper No. 1 | Argentina | Living Standards Measurement Survey (1996-97, 2001) | from more than 80 sources including books, unpublished manuscripts, journal articles, World Bank reports etc. | concentration curve for targeting and progressivity check and Gini index | targeted in all regions. However, poor are getting more benefit from spending on primary health care and health centers than spending on hospitals. |
| Glick, P et al | 2004 | CFNPP Working Paper No.167 | 9 Countries | Living Standards Measurement Surveys | No cost data is used for antenatal care, attended deliveries, vaccination and to doctor, medicine and hospitalizations. | Concentration curves, Concentration index, Aggregate and Micro-econometric Decomposition | Overall, all health programs are pro-poor but immunization programs are less pro-poor, especially the quadruple and Measles Mumps and Rubella vaccines. Decomposition results suggest that incidence changes in the last five years have been pro-rich. |
| Mangham, L | 2006 | Malawi Medical Journal | Malawi | Second Integrated Household Survey(2004-05) | Cost data is not used, benefits are defined by a simple indicator 0/1 whether the particular service is utilized. | Benefit Incidence Analysis disaggregated by Gender, Coverage rate and Dominance test | Gender gaps in favor of females in all quintiles for health care consultations are indicated by this study. However, if reproductive health care need factor is excluded from analysis then there are very few significant gender gaps and there are no significant changes over time. Vaccination rates between boys and girls are almost equally distributed. |
| Hovhannisy an, S | 2006 | AIPRG Working Paper No. 04 | Armenia | Statistical Yearbook | Govt. accounts are used for data on curative health services for Govt. health facility, hospital and health center | Benefit Incidence Analysis for utilization and subsidy of services, Concentration and Lorenz curves | Benefits across socio-economic groups are largely explained by differences in utilization of health service rather than distribution of health subsidy. Poor receives a considerably lower share of benefits from the subsidy for the provision of hospitals. However, poor receives an equitable benefit from health center. Rural areas are getting more benefit of subsidy and utilization of services than urban areas. Similarly, women are receiving larger share of benefit than men. |
| Syntyche, N.D et al | 2007 | P M M A Working Paper No. 11 | Chad | Multiple Indicator Cluster Survey (2000) | Public Expenditure Review for expenditures on Hospital, Polidlinics. | Benefit Incidence Analysis, Utilization rates and Concentration curves and Gross Benefits | Overall in rural areas, two highest quintiles gain more from the healthcare services (policlinic and hospitals) than two poorest one except in 2001, where there are equal utilization rates among these groups in hospitals. The public expenditure allocated to the hospitals remains high. The benefit incidence increases for all quintiles but increases more for the poorest than the richest and reducing inequality between poor and rich. |
| Akram, M and Khan, F.J | 2007 | PIDE Working Papers No.32 | Pakistan | PSLM (2004-05) | Budgetary statistics for prenatal care, delivery and infantile illness services | Average and Marginal (non-parametric) Incidence Analysis, Concentration curve | With the exception of delivery services, the richest group is hardly receiving more than double the amount of services received by the poorest group. Public transfers for infantile healthcare are less unequal than prenatal care. Marginal analysis reveals that an increase in health transfers might not benefit the poorest. |
| O'Donnell, | 2007 | The World | 11 Asian | Different | Health Accounts are used for | Concentration | Data for mother and child is not available in Balochistan & insufficient for regional level analysis |
| | | | | | | | Public health care is found to be pro-rich in most developing |

| O et al | Bank Economic Review | countries | health or socioeconomic surveys available in countries | inpatients outpatients, non-hospital care (visit to doctor, antenatal care, polyclinic, and health center) | curves and Lorenz curves and test for Dominance against equal distribution and Lorenz curve | countries and public spending is strongly pro-poor in high income Hong Kong SAR. Dominance test indicates that total public health subsidy is both inequality-reducing and pro-poor in Hong Kong SAR, Malaysia and Thailand. Overall, hospital care is pro-rich and non-hospital care is pro-poor. |
|----------------------------|--|--------------------------------|--|---|---|---|
| Kamgnia, B.D | AERC Research Paper No. 179 | Cameroon | Household Budget Survey (2001) | Costs data is not used. Utilization of Hospitals of district, Medical center of ward and integrated health center for curative and preventive measures are analyzed | Benefit Incidence Analysis, Concentration curves, Concentration index, Gini index and progressivity index | Expenditures on integrated health center are pro-poor in both rural and urban areas and in all regions. However, expenditures on medical center of ward are pro-poor in urban areas and only in large cities. Expenditures on hospital of districts are pro-rich in both rural and urban areas and in all regions. |
| Demery, I and Gaddis, I | Draft | Kenya | Integrated Household Budget Survey (2005/06) | Shadow Health Budget is used for Referral and Provincial/district hospitals and Primary facilities | Average and Marginal Benefit Incidence Analysis | Poor people are getting less benefit from referral hospital and are getting proportionate benefit from spending on primary healthcare. Overall health spending is regressive. Marginal incidence analysis reveals that poor are getting more benefit than rich from additional spending on primary health-care. |
| Ataguba, J and McIntyre, D | Health Economics Unit Working Paper No. 01 | South Africa | SACBIA and District Health Information System (DHIS) surveys | Recurrent expenditures for each public sector hospital are obtained from national treasury. | Benefit Incidence Analysis | Poor are getting more benefit than rich from outpatient services at district hospitals and at clinics and community health centers. And rich are getting more benefit than poor from central hospital for both in- and out-patient services. Overall, private sector services are more beneficial for rich than poor. |
| Khatib, R and Mataria, A | Economic Research Forum, Working Paper No.564 | Occupied Palestinian Territory | Household Health Expenditure Survey (2004) | No cost data is used. Visits to primary health care, out-patient and in-patient are analyzed | Benefit Incidence Analysis | Visits to private primary health care are increasing with the increasing wealth index and vice versa for government, United Nations Relief and Works Agency and NGO primary health care. In case of out-patient and in-patient visits, the lowest wealth index group in benefiting more from Govt. facilities compared to the highest wealth index group and vice versa in case of private in-patient and out-patient facilities. |
| Alabi, R. A et al | Poverty and Economic Policy (PEP) Research Network | Nigeria | Living Standard Household Survey (2004) | Cost data is not used. Participation rate for prenatal and postnatal hospital consultations and child vaccination are analyzed | Concentration and Gini index, Benefit concentration and Lorenz curves for progressivity, and Marginal Benefit Incidence by using DASP | The richest quintile is benefitting more from prenatal, postnatal and vaccination services than the poorest quintile. Increase in spending in vaccination and postnatal consultation will not benefit the poorest quintile as much as middle income quintile. However, the poorest income quintile will benefit more than the richest income quintile in the case of expansion of prenatal consultation. |
| Adam Wagstaff | Policy Research Working Paper No. 5234 | Vietnam | Household Living Standards Survey (2006) | NHA are utilized for Outpatient visits in commune health centers, polyclinics and govt. hospitals and inpatient visits in govt. hospitals | Benefit Incidence Analysis and Concentration index are used by utilizing three assumptions in AdePT. | "If fees are more pro-rich than utilization, government spending will be least pro-rich under the constant-cost assumption and most pro-rich under the proportionality assumption". |
| Makawia, S et al | SHIELD Work Package 3 | Tanzania | Household survey is | The National Health Insurance Fund for data by | Benefit Incidence analysis, | In case of inpatient benefits, public health centers and district hospitals are pro-poor, regional and referral hospitals are |

| Author | Year | Report | Carried out in | Type of provider, NHA | Concentration curves and index and Dominance test | Findings | Limitations |
|------------------------|------|--------------------------------------|---------------------------------------|---|--|--|--|
| | | | | | | | |
| Halasa, Y et al | 2010 | Eastern Mediterranean Health Journal | Jordan | Healthcare Utilization and Expenditure Survey (2000) | Ministry of Finance and a facility-based study for cost data of outpatient services by healthcare centers | Benefit Incidence Analysis by wealth quintile as well as type of insurance | pro-rich, private-for-profit providers are extremely pro-rich and faith based facilities are relatively evenly distributed. Benefits from outpatient care at district, regional and referral hospitals, faith-based hospital care and private for profit providers are pro-rich and primary faith-based providers are relatively evenly distributed. The richest quintile is receiving the lowest subsidy, while the poorest quintile is receiving the highest subsidy. Individuals with the civil insurance programme and Royal Medical Services insurance are benefitting more from the government in-kind subsidy for health. |
| | 2010 | Poverty & Public Policy | 56 Countries | From different sources including original and secondary sources | Data on spending for primary health care, health centers and hospitals are derived from more than 80 sources, such as World Bank reports, books, unpublished manuscripts and journal articles etc. | Benefit Incidence Analysis | Poor are getting more benefit from the Spending on primary health care and health centers than spending on hospitals. By comparing their results with their previous study, they find a significant improvement in terms of country coverage. |
| Onwujekwe, O et al | 2011 | CREHS | Enugu & Anambra states of Nigeria | Household surveys and document reviews | Unit costs of services such as insecticide-treated nets, immunization, ACT, ANC and normal delivery etc are obtained from the Ministries of Health. | Benefit incidence analysis by socio-economic groups, gender, rural-urban location, Concentration index | Overall, better-off socio-economic quintile is getting benefit from immunization services, ITNs and ANC services. Moreover, benefits are equitably distributed for immunization services, ITNs and ANC in urban areas and male child are getting more benefits from immunization services. |
| | 2011 | CREHS | Thailand | Health and Welfare Surveys (2003,2006,2007) | Reports of expenditure and utilization are used for unit cost data on Ambulatory care, health center and hospital for in and out-patient | Concentration curves and Index for healthcare utilization and subsidy | Out-patient visits at provincial, teaching and private hospitals have slightly pro-rich, pro-rich and less pro-rich distribution respectively. Overall, distribution of service utilization and public subsidies are pro-poor. |
| Gaddah, M and Munro, A | 2011 | GRIPS Discussion Paper 11-14 | Ghana | Living Standards Survey (2005/06) | Cost data is not utilized, Binary indicator approach is used for Curative health care (hospital and clinic visits), immunization, prenatal and postnatal | Lorenz and Benefit Concentration curves, Concentration index, dominance test and a Discrete choice model | Postnatal and prenatal services are the most progressive, followed by clinic visits and hospital visits. Moreover, children healthcare is more progressive than adult's health. Immunization services are also pro-poor and Overall, public health services are progressive. |
| | 2011 | CREHS | Tamil Nadu and Orissa states of India | National Sample Survey (1995-96, 2004) | Cost data is not utilized. Utilization rate for Public hospitals (inpatient, outpatient), Maternal delivery services | Benefit (Utilization) Incidence Analysis, Concentration index and Decomposition Analysis | Overall, public spending on healthcare in Tamil Nadu are more pro-poor for 2004-2005 than a decade earlier (1995-1996) and in case of Orissa, it found to be pro-poor for outpatient services, pro-rich for inpatient and maternity services for two time period of analysis. Increased utilization of institutional services by the lowest quintile is the major factor in increasing the pro-poor nature of the maternal health services. |

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|-----------------------|------|-------------------|-------|--|---|----------------------------|--|
| Chuma, J et al | 2012 | BMC Public Health | Kenya | Cross-Sectional Household Survey (2003,07) | Public expenditure review reports are utilized for cost data of out-patient and in-patient in Govt., Private not-for-profit and Private for-profit facilities | Benefit Incidence Analysis | The three sectors have similar levels of pro-rich distribution in 2003. However in 2007, the private not for profit sector appears to be pro-poor, public sector benefits have an equal distribution and the private-for-profit sector is pro-rich. At the hospital level, inpatient services are pro-rich than outpatient services. |
|-----------------------|------|-------------------|-------|--|---|----------------------------|--|

Appendix C

| Concentration Indices by Type of facility: ⁵² | | | | | | | |
|--|---------|---------------------|---------------------|--------------------|--------------------|--|--|
| | | Prenatal | | Postnatal | | | |
| | | Specialized | Basic | Specialized | Basic | | |
| Pakistan | 2010-11 | -0.031 (-1.500) | -0.110 (-1.921) | 0.109* (2.980) | -0.026 (-0.346) | | |
| Urban | 2010-11 | -0.115* (-3.876) | -0.349* (-5.125) | 0.072 (1.418) | -0.145 (-0.675) | | |
| Rural | 2010-11 | -0.006 (-0.235) | -0.026 (-0.380) | 0.082 (1.678) | 0.040 (0.534) | | |
| Punjab | 2010-11 | -0.059* (-2.007) | -0.173* (-2.614) | 0.199* (3.436) | -0.048 (-0.584) | | |
| Sindh | 2010-11 | -0.022 (-0.489) | -0.058 (-0.711) | -0.048 (-0.576) | 0.067 (0.273) | | |
| NWFP | 2010-11 | 0.031 (0.774) | 0.104 (0.771) | 0.041 (0.695) | -0.182 (-1.002) | | |
| Balochistan | 2010-11 | 0.097* (2.359) | -0.061 (-0.398) | 0.236* (2.947) | 0.354 (1.297) | | |

Note: Specialized facility includes public hospital/RHC/BHU. Basic facility includes LHW and LHV. t values are given in parenthesis. Negative values correspond to pro-poor distribution and positive values correspond to pro-rich distribution.

⁵² *CI indices are significance at 5%

