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Applying an Equity Lens to Maternal Health Care Practices in Pakistan

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ABSTRACT

The focus of this study is to see how equitable the access and utilisation of health services are among married women in Pakistan. It examines the changes in the pattern of maternal health care practices and the extent to which inequities in access to those services have changed over the past two decades. Using two datasets—the Pakistan Demographic and Health Surveys (PDHS) of 1990-91 and 2006-07, the overall findings indicate that there is an improvement in inequity patterns of health care among married women beginning in the urban areas and more recently spreading to rural areas. Among the factors explaining the health care differentials, the effect of wealth and socio-economic status are significant, especially when examined for use of private and public health facilities. It is further noted that increased educational attainment level of women improves utilisation of maternal health care services. The inequity pattern disfavouring the poor and the large majority of uneducated women is likely to jeopardise achievement of goals 4 and 5 of the Millennium Development Goals and other national and regional targets of maternal and child health care programmes.

Keywords: Equity, Maternal Health, Poverty

INTRODUCTION

The level of development of a society, whether rich or poor, can be judged by the health status of its population and how fairly health care is distributed across the social spectrum. It is widely recognised that people's equitable access to health care services is vital to sustaining good health which depends primarily on income levels and the cost and availability of quality health services. Evidence around the world shows that the patterns of unequal health status outcomes, especially in case of maternal health care, are more pronounced in developing countries than in developed countries [World Health Organisation (2008); Population Reference Bureau (2004)]. As a consequence, issues of inequity in health care have gained increased attention at both policy and programme levels with renewed commitment to closing the health gap through improved access to health care services for the poor and marginalised population [Gwatkin (2000); World Health Organisation (2004)].

The concept and measurement of equity in provision of health care remains an ambiguous issue if interpreted in terms of fairness and justice, making its definition very complex and imprecise. However, the gaps in socioeconomic status that are most commonly used in research and analysis to identify social inequalities are used interchangeably with inequities. This practice is increasingly being recognised by the international community.[1] In general terms, health inequity is defined as "inequalities in health status, risk factors, or health service utilisation between individuals or groups that are unnecessary, avoidable and unfair" [World Health Organisation (1998)]. Wide differences in health status, generally determined by health care practices, reflect different socio-economic constraints and unequal opportunities for different population subgroups. These are specifically measured by such characteristics as income or wealth, occupation, education, place of residence, gender, ethnicity, etc., and not by any biological or genetic variation. The assessment of health equity, therefore, requires comparisons between the more and less advantaged social groups. This helps identify whether health policies and programmes are leading towards or moving away from social justice in health and development [Braveman and Gruskin (2003)]. Thus achieving equity in maternal health care requires minimising avoidable inequalities in access to services and identifying

[1]Equity analysis in maternal health care in this study refers to examining inequitable access to and use of services among different socioeconomic subgroups of population and is used interchangeably with the term inequality in the interpretation of results.

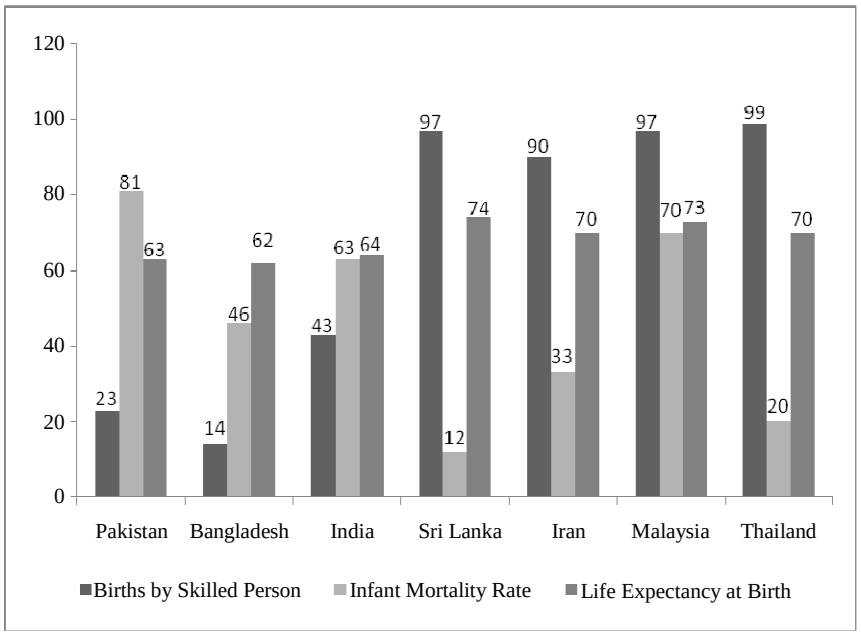
groups that have socioeconomic constrains to benefit from the available opportunities in the health care system.

Pakistan, among other developing countries, has depicted large socioeconomic disparities and inequities in maternal health care practices, making it challenging for the government to achieve the newly adopted MDG target of universal access to reproductive health, especially maternal and child health. Despite various initiatives taken to improve maternal health indicators, the progress has been slow with wide disparities based on income level, class and social status.

MATERNAL HEALTH CARE SITUATION IN PAKISTAN

Looking at Pakistan's situation in the international perspective, it appears that the estimates of salient health indicators, such as life expectancy, infant and maternal mortality and fertility rates, are far behind other countries in the Asian region. Pakistan's infant mortality rate at 78 per 1,000 live births remains one of the highest in the region, while the proportions of births attended by skilled persons are alarmingly low—only 23 percent in Pakistan compared with 97 percent in Sri Lanka and Malaysia, 43 percent in India, and 99 percent in Thailand. This leaves large room for improving maternal health care indicators in pursuit of the targets of MDG 5 by the year 2015 (Figure 1).

Fig. 1. Comparison of Selected Maternal Health Indicators in Some Asian Countries



Source: UNDP (2005); World Development Report; PRB (2010); and MHHD Report (2004).

Among other maternal health indicators, Pakistan's situation with total fertility rate (TFR) of 4 births per woman contrasts significantly with approximately 3.0 in Bangladesh, 2.0 in Sri Lanka and Iran, and 1.9 in Thailand. Similarly, the contraceptive prevalence rate of about 30 percent in Pakistan does not match well with 58 percent in Bangladesh, 70 percent in Sri Lanka and Thailand, 73 percent in Malaysia, and 74 percent in Iran. Moreover, the estimates of women with anemia, births taking place in a health facility, or in the care of skilled health personnel are much worse for Pakistan in comparison with other countries, making a strong case for monitoring of progress in this area to improve the health profile of married women (Table 1).

Table 1

Selected Demographic and Health Indicators: A Comparative Perspective, 2005-2010

Indicators	Pakistan	Bangladesh	India	Sri Lanka	Iran	Malaysia	Thailand
Total Population(mil)	175	162	1172	21	73	28	68
Female Population	85	80	510	9	–	–	–
Life Expectancy	63	65	64	71	71	74	69
Male	63	64	63	67	69	72	66
Female	64	66	65	75	73	77	72
Total Fertility Rate	4.0	2.5	2.7	2.4	2.0	2.6	1.8
Infant Mortality/ 1000 LB	78	48	55	15	35	35	55
Child Mortality	103	69	87	15	39	7	26
Maternal Mortality /100,000 LB	277	380	540	92	37	41	44
Contraception %	30	56	56	68	74		72
Modern Method	22	48	49	53	56	55	70
Women Anemic in Pregnancy	47	53	52	39	–	–	
Tuberculosis/ 100,000 Persons	358	490	287	89	36	135	203
Antenatal Care	60	40	60	98	–	–	–
T.T. Vaccination	30	64	67	97	90	97	99
Births by Skilled Person	23	14	43	97	90	97	97
Health Expend. % GDP	0.9	0.8	0.9	1.8	2.9	2.0	3.1

Source: UNDP (2005); Mahbub ul Haq Human Development Centre (2004); Population Reference Bureau (2010); Pakistan (2009-10).

Although Pakistan's national level surveys provide evidence of some progress in maternal health care over the past years, this improvement has not been rapid enough to ensure a significant reduction in the health divide among different sections of society, making it unlikely for the country to meet the target of improving maternal and child health. Pakistan's Demographic and Health

Surveys (PDHS) data show that maternal health's low status is reflected in terms of frequent closely spaced pregnancies resulting in reproductive health related morbidity, high maternal mortality,[2] unsafe abortions,[3] nutritional deficiencies, and poor health care practices—factors that all have adverse effects on the health of mothers and children. Low maternal health status is closely linked to infant and neonatal health and has strong impact on infant and child mortality. Recent evidence shows only a modest decline in infant mortality rate from 94 to 78 deaths per 1000 live births and in child mortality from 117 to 94 deaths per 1000 live births during the period 1990-91–2006-07 (Table 2). On a more serious note, neonatal mortality (deaths within the first month) has virtually remained unchanged since the 1990s, which now constitutes 70 percent of all infant deaths [National Institute of Population Studies (1992 and 2008)]. The trends in maternal health care indicators such as antenatal consultation and child birth assisted by skilled personnel show a significant proportion of eligible women not accessing these services and face many health risks resulting in various pregnancy and child birth related ailments.

Table 2

Trends in Maternal Health Related Indicators in Pakistan: 1990-91–2006-07

Indicator	1990-91 (PDHS)	1996-97 (PFFPS)	2000-01 (PFPRHS)	2006-07 (PDHS)
Total Fertility Rate (TFR)	5.4	5.4	4.8	4.1
Median Age at First Birth	21.3	21.3	–	22
Contraceptive Use%	11.8	23.9	27.6	30
Modern Method%	9.0	16.9	20.2	22
Unmet Need for FP%	38.0	37.5	33	25
Infant Mortality Rate	94.0	92	–	78
Under-five Mortality	120.0	111	–	94
Maternal Mortality Rate	>500	533	–	276
Prenatal Care%	25.6	31.6	43.3	61
Birth by Skilled Person%	18.8	–	–	39
Birth in Health Facility%	13.4	17.2	22.9	34

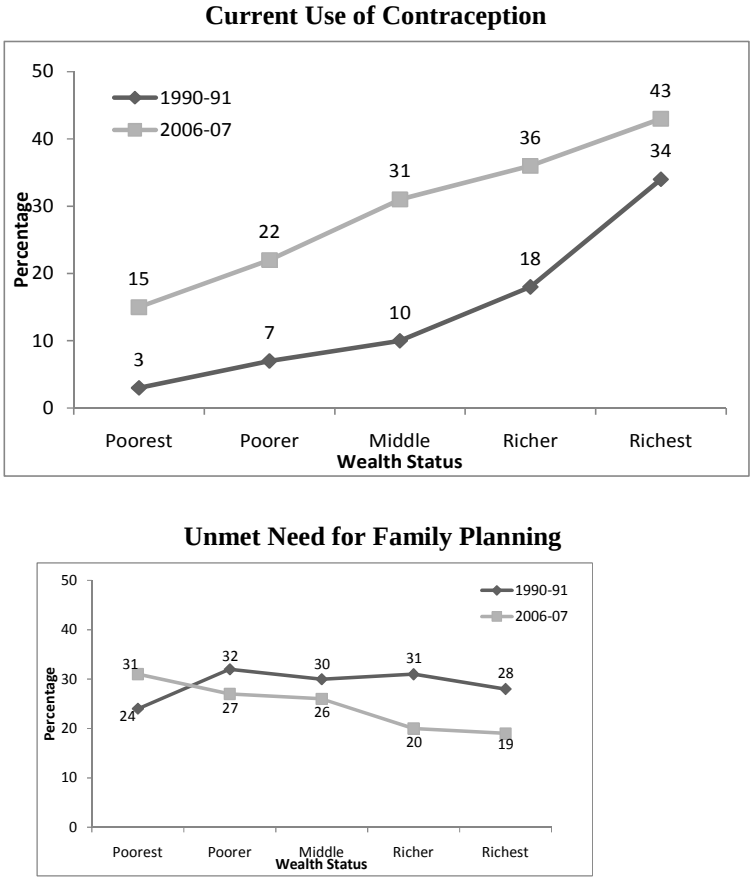
Source: National Institute of Population Studies: Various national level surveys, i.e., PDHS= Pakistan Demographic and Health Survey; PFFPS= Pakistan Fertility and Family Planning Survey; PFPRHS= Pakistan Family Planning and Reproductive Health Survey.

[2]Maternal mortality rate in Pakistan has been reported to range from 250 to 500 per 100,000 live births in different sub-sections of population. However, national level estimates from PDHS data of 2006-07 have reported it to be 277 per 100,000 live births.

[3]Abortion rate in Pakistan has been estimated at 29 per 1000 women of reproductive age in Pakistan [Population Council (2004)].

Further evidence shows that low socioeconomic status is a constraining factor in accessing maternal health services as a large majority of women from poor households refrain from using contraception compared with those from wealthier background. Similarly, the unmet need for family planning remains high among the poor in sharp contrast to rich women who have shown significant reduction in conjunction with increased use of contraception in recent years (Figure 2). This situation calls for seeking further insights into maternal health care practices among different subgroups of women in Pakistan to identify targets for improved programmes.

Fig. 2. Trends in Current Use of Contraception and Unmet Need for Family Planning among Married Women by Wealth Status: 1990-91–2006-07



The Present Study

With evidence of persistently high levels of fertility and stubbornly low contraceptive use with limited use of facility-based health services among the poor women in Pakistan, it is of interest to better understand how inequities in access to maternal health care contribute to slowing down progress of MDG 5[4] as a critical means of achieving health and development goals.

This study focuses on examining how equitable the access and utilisation of health services are among married women in Pakistan. The major objective is to see the large health divide among different segments of population and to examine the factors that explain how the poor are less likely to utilise maternal health care services relative to the non-poor. Among the various issues related to disease and morbidity, maternal health indicators stand out significant in affecting the reproductive health status and mortality ratio of large proportions of women in Pakistan, and this study examines changes in the pattern of maternal health care practices and the extent to which inequities in access to those services have sustained over the past years. In particular, the links between poverty, educational status and maternal health care practices are examined that would be helpful in seeking guidance for policy directions to bridge the health gap between the poor and non-poor subgroups of women. More specifically, the study looks into three main questions:

(1) How do patterns of maternal health care vary across socioeconomic subgroups?
(2) Whether the changing trend in accessing services reflects widening or reducing inequity in maternal health care indicators?
(3) Have maternal health care practices improved or deteriorated over-time in terms of accessing public or private health facilities?

With an estimated population of nearly 175 million, about half of which are women and about one-third of which living below the poverty line with significant number estimated as women in reproductive ages, it seems important to ascertain between group and within-group differentials in maternal health care indicators. Consider if the population under study is divided according to their wealth status, education or place of residence, then the between-group inequity may be referred to a pattern where individuals belonging to different wealth quintiles or education categories seek services differently.[5] Applying an equity lens to use of health services assumes that each individual has access to a minimum standard of services and has the same opportunity to access or use basic health services if and when required, irrespective of their economic, social, and demographic characteristics.

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[4]The MDG 5 pertains to improving maternal health that is associated with a number of demographic, socioeconomic and health care practices.

[5]An implication of this inequality is that the opportunity to access services is determined by an individual's poverty status or educational attainment level.

Data and Analytical Approach

This study has used two datasets—the Pakistan Demographic and Health Surveys (PDHS) of 1990-91 and 2006-07. Both surveys are nationally representative undertaken to yield information on socioeconomic, demographic and health characteristics of women with a gap of about one and a half decade. The 2006-07 PDHS is the recently available dataset covering the largest-ever household-based sample of more than 10,000 ever-married women of 15-49 years of age, whereas the 1990-91 PDHS has a sample of more than 6,000 ever-married women.[6] The present study is based on selected sub-samples of about 5,700 ever-married women in 2006-07 and more than 4,000 ever-married women in 1990-91, who had a live birth in the five years preceding the survey with information on their background characteristics and various maternal health care related indicators.[7] The rationale behind choosing these two datasets is that both surveys contain comprehensive information on maternal health care as well as socio-economic indicators making it possible to assess changes in equity patterns of health care indicators at two points in time. Moreover, estimates from both surveys are comparable as they are conducted by the same organisation (National Institute of Population Studies) and are similar in scope, methodology, and structure of the questions asked in those surveys.

Equity analysis in maternal health care practices is based on information on wealth index as provided in the PDHS 2006-07, measured from household asset data including ownership of a number of consumer items as well as standard of living and dwelling characteristics [National Institute of Population Studies (2008)]. The index reflects the level of wealth that is consistent with expenditure and income measures and is developed and tested in many countries to measure inequalities in household income and its relation with use of health services and health outcomes [Rutstein and Johnson (2004)].

To estimate the socio-economic index, household durable goods ranging from a television, refrigerator, car, etc. to a bicycle or other small household items[8], and dwelling characteristics such as, source of drinking water, sanitation facilities, and type of material for construction and flooring was used from the long household questionnaire. Each asset was assigned a weight (factor score) measured through Principal Component Analysis, and standardised in relation to normal distribution with a mean of zero and standard deviation of one [Gwatkin, *et al.* (2007)]. The ownership items scores were then summed up for each household; and individuals were ranked according to the score of the household

[6]For details of sample design and other features of both the surveys, see [National Institute of Population Studies/Macro International (1992 and 2008)].

[7]Information used for maternal health care indicators pertains to the most recent birth during the past five years.

[8]For detailed information on household durable goods, see PDHS Report, 2007-07, Table 2.12: p. 25.

in which they resided. The sample was then divided into five wealth quintiles ranging from one (lowest/poorest) to five (highest/richest) categories of socioeconomic status.[9] For the 1990-91 PDHS data, the same methodology was applied to get parallel estimates of wealth quintiles,[10] based on the household asset ownership data, to examine changes in health inequities in relation to socioeconomic status of the households during the past two decades. Besides using wealth index, other indicators such as women education, urban-rural and region of residence are used to measure the opportunities to access health care services and are at the same time critical for human development.

The maternal health care indicators used to study variations across socioeconomic subgroups are 'prenatal care', 'birth attended by skilled personnel', and 'place of delivery' to see if the birth occurred at home or in any health facility—the indicators most widely used and readily available in the data which are most likely to affect the reproductive health status and maternal mortality ratio. For the analysis, simple measures are used including the percentages, relative ratios, and absolute difference between the highest and lowest wealth quintiles to identify patterns of inequity. To further test the hypothesis that wealth status has a stronger impact on maternal health care practices than education and place of residence, logistic regression models are run for the 2006-07 PDHS dataset. The methods used in the analysis are well established and widely used in a number of countries generating DHS data sets to analyse inequities in maternal health status [O'Donnell, *et al.* (2008); Son (2009); Yazbeck (2009); Ortayli and Malarcher (2010)].

Despite the vast information available on maternal health care indicators in both surveys, these data are limited in scope in terms of assessing general health status of women such as nutritional status, morbidity, and disease incidence. Recognising the fact that health data are grossly inadequate in Pakistan, both these surveys are a good source of information to assess maternal and child health care indicators to monitor progress in reaching MDG goals 4 and 5, and to identify equity patterns in use of services among married women representing national, provincial and household level conditions.

RESULTS

Patterns of Inequity in Maternal Health Care

Examining equity patterns of health across socioeconomic dimensions reveals which stratum is most strongly associated with inequity—information

[9]For details on the method of estimation of socioeconomic status index and wealth quintiles, see NIPS/Macro Int. (2008) *Pakistan Demographic and Health Survey, 2006-07*.

[10]Based on the household ownership data of 1990-91, wealth quintiles were measured similar to estimation of 2006-07 indices to match the comparison between the two surveys and assess the change over time.

that is critical to designing appropriate policy and programme planning. Trends in maternal health care indicators such as prenatal care by skilled person and birth in a health facility reveal that the proportion of women seeking these services has increased over the years. Overall, 32.4 percent of women received antenatal care from a skilled person in 1990-91, and this increased to about 59 percent in 2006-07 indicating an improvement of 26.7 percentage points (Table 3). Although the rising trends of prenatal care services signal positive outcomes in reproductive health, these overall estimates can mask important fluctuations in the equity curve for different socioeconomic subgroups. As Table 3 shows, about 35 percent of women reported not having any prenatal care while about 6 percent used services of unskilled persons in 2006-07 which needs further exploration to identify targets for programme interventions. The section below examines how maternal health care practices vary by household wealth status, women's education, and urban-rural residence as proxy measures of opportunity to access services, and the extent to which these patterns have changed over time.

Wealth Status

The results show large wealth status differentials in prenatal care for sub-samples of women selected from both surveys. In 1990-91, women from poorest households had the lowest prenatal consultation—only 8.5 percent, which rose substantially to 35.8 percent in 2006-07. Among poorer households (2nd quintile), this proportion increased from 10.4 percent to 48.8 percent over the same period. On the other hand, women from richest households had the highest proportions accessing prenatal care services, 69.2 percent in 1990-91 and 89.6 percent in 2006-07, indicating an overall reduction in poor-rich gap over the years (Table 3). It must, however, be noted that large proportions of women—59 percent in the poorest and 46 percent in poorer (2nd quintile)—reported not receiving prenatal care for their most recent birth compared with only 8 percent in the richest quintile.

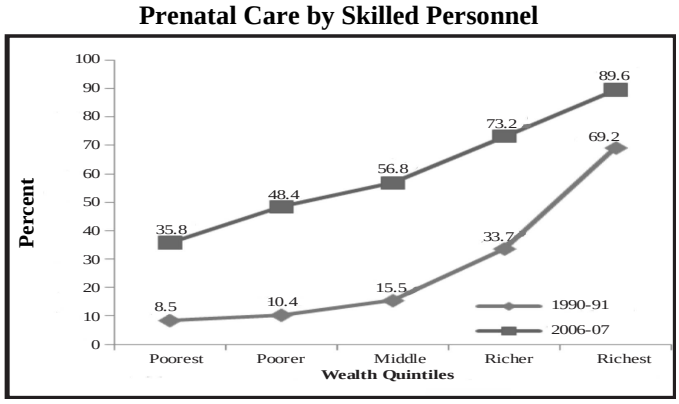
Table 3

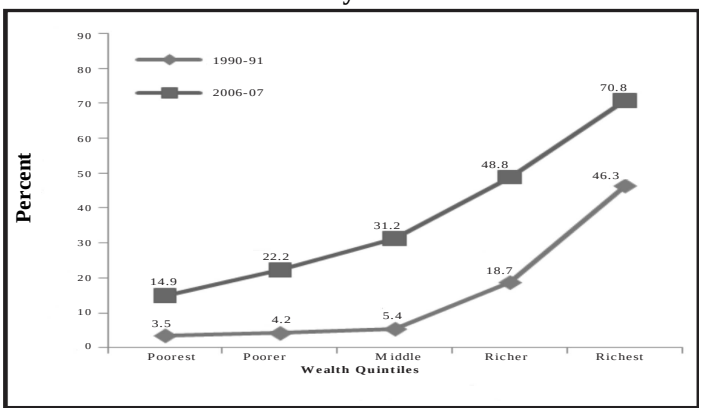
Percent Women (15-49) who had a Live Birth Preceding Five Years of the Survey Reporting Prenatal Consultation by Wealth Quintiles, 1990-91–2006-07

	Skilled Personnel			Unskilled Personnel			None		
Indicator	1990-91	2006-07	Change	1990-91	2006-07	Change	199-91	2006-07	Change
Wealth Status									
Poorest	8.5	35.8	27.3	7.2	4.9	–2.3	84.3	59.2	–25.1
Poorer	10.4	48.4	38.0	5.7	5.5	–0.2	84.0	46.1	–37.9
Middle	15.5	56.8	41.3	9.0	8.1	–0.9	75.5	35.1	–40.4
Richer	33.7	73.2	39.5	7.1	6.8	–0.3	59.2	20.0	–39.2
Richest	69.2	89.6	20.4	4.7	2.5	–2.2	26.1	8.0	–18.1
Poor-rich Gap	**60.7**	**53.8**	**–**	**–2.5**	**–2.4**	**–**	**58.2**	**51.2**	–
Overall	**32.4**	**59.1**	**–**	**6.6**	**5.6**	**–**	**61.0**	**35.3**	–
(N)	**(1296)**	**(3370)**		**(266)**	**(319)**		**(2442)**	**(2010)**	

Increase in use of prenatal care services from skilled health personnel is apparent in each wealth quintile, with the highest positive change among women from poorer (2nd quintile), middle and richer households (4th quintile). This is reflected by flattening of the slope of equity curve in the year 2006-07 and the narrowing of the absolute difference between the richest and the poorest households (Figure 3). However, the majority of poor women who reported no prenatal care for the most recent birth gave 'not necessary', and 'high costs' as major reasons [National Institute of Population Studies (2008); Zafar and Anwar (2009)], this suggests that prenatal care practices could be further improved by lowering direct and indirect costs and creating awareness among poor women about the benefits of accessing those services.

Fig. 3. Changes in Inequity Patterns for Prenatal Care and Births Attended by Skilled Personnel among Different Wealth Quintiles: 1990-91–2006-07





Source: Tables 3 and 4.

A critical component involved in reducing health risks among women pertains to safe delivery care practices in terms of utilisation of services needed during pregnancy, births attended by skilled health professionals and place of delivery. Here it is important to see to what extent the increased level of prenatal consultation among married women is translated into improved practice of having births attended by skilled health professionals. The results from the PDHS data show that overall, only 19 percent of women in 1990-91 and about 36 percent in 2006-07 utilised services of skilled personnel for delivery care,[11] leaving a majority (64 percent) seeking these services from untrained persons in 2006-07[12] (Table 4).

Table 4

Percent Women Aged 15-49 who had a Live Birth Preceding Five Years of the Survey Attended by Skilled and Unskilled Personnel for Wealth Quintiles, Education, and Age, 1991-2007

	Skilled Personnel			Unskilled Personnel		
Indictors	1990-91	2006-07	Change	1990-91	2006-07	Change
Wealth Status						
Poorest	3.5	14.9	11.4	96.5	85.1	–11.4
Poorer	4.2	22.2	18	95.7	77.8	–17.9
Middle	5.4	31.2	25.8	94.6	68.8	–25.8
Richer	18.7	48.8	30.1	81.3	51.2	–30.1
Richest	46.3	70.8	24.5	53.7	29.2	–24.5
Poor-rich Gap	**42.8**	**55.9**	**–**	**–42.8**	**55.9**	**–**
Education Level						
None	10.9	25.3	14.4	89.1	74.7	–14.4
Primary	28.7	42.5	13.8	71.3	57.5	–13.8
Secondary	53.7	60.9	7.2	46.3	39.1	–7.2
Higher	80.0	80.9	0.9	20	19.2	–0.8
Age Group						
15-24	19.1	36.8	17.7	80.8	63.2	–17.6
25–34	21.3	38.2	16.9	78.7	61.8	–16.9
35+	14.3	30.2	15.9	85.7	69.8	–15.9
Overall	**19.0**	**57.8**	**38.8**	**81.2**	**64.2**	
(N)	**(759)**	**(3594)**		**(3237)**	**(3654)**	

Source: Pakistan Demographic and Health Survey data, 1990-91 and 2006-07.

The differentials by wealth quintiles for delivery care show that only 3.5 percent of women in 1990-91 and 14.9 percent in 2006-07 from the poorest households utilised services of a skilled person for child birth, compared with 46.3 percent and 70.8 percent respectively among the richest households. This indicates that the poor-rich gap in accessing skilled personnel for birth has

[11]Skilled health personnel include services of doctor, nurse, midwife, and lady health visitor.

[12]Unskilled providers refer to traditional birth attendant, lady health worker (LHW), hakeem, friend and relative.

widened overtime because delivery care practices of poor women have changed little compared to richer women during the past decade (Figure 3). It should be noted from Figure 3 that despite improved status of prenatal care in all wealth categories, proportions of births attended by skilled personnel remain low, especially among women from the lowest, second and middle quintiles because most of them seek delivery care services at home or from unskilled persons. This large poor-rich gap could be explained in terms of high cost of services of skilled health personnel, problem of their availability and lack of education among women of lower socioeconomic subgroups as found in other studies on issues of maternal health care [Bloom, Wypij, and Gupta (2001); Falkingham (2003); Zafar and Anwar (2009)].

A further analysis of women's access to relatively safer and quality maternal health care services to avoid various health risks and complications shows that overall, only 17.3 percent of women in 1990-91reported having child births in a health facility which increased to about 37 percent (12 percent public and 25 percent private) in 2006-07, leaving a majority having child births at home than going to a health facility (Table 5). However, the change in safe delivery care practices is evident mostly in private health facilities in recent years.

Table 5

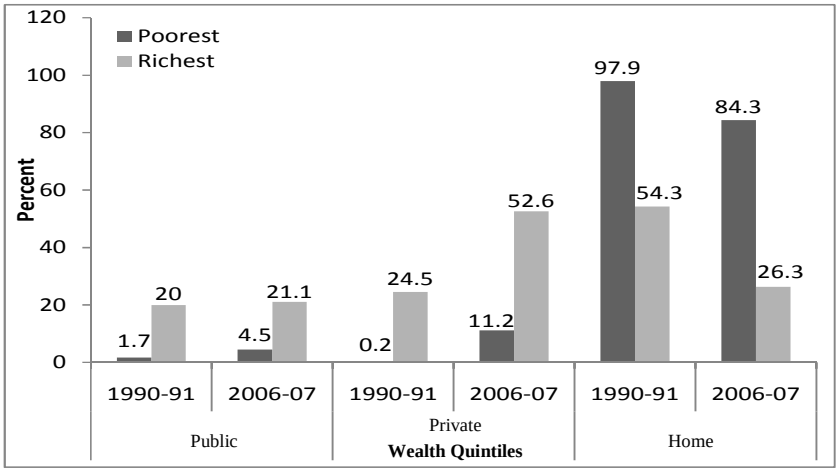
Percent Women (15-49) who had a Live Birth Preceding Five Years of the Survey at Home or Health Facility, Public and Private by Wealth Quintiles, Education, Residence and Age

	Public			Private			Home		
Indicators	1990-91	2006-07	Change	1990-91	2006-07	Change	1990-91	2006-07	Change
Wealth Status									
Poorest	1.7	4.5	2.8	0.2	11.2	11.0	97.9	84.3	–13.6
Poorer	2.9	7.8	4.9	0.5	16.2	15.7	96.6	76.0	–20.6
Middle	2.9	12.2	9.3	1.6	19.6	18.0	95.4	68.2	–27.2
Richer	8.8	17.7	8.9	6.0	31.4	25.4	85.3	50.9	–34.4
Richest	20.0	21.1	1.1	24.5	52.6	28.1	54.3	26.3	–28.0
Poor-rich Gap	**18.3**	**16.6**	–	**24.3**	**41.1**	–	**43.6**	**58.0**	–
Education Level									
None	5.2	9.3	4.1	3.5	16.3	12.8	91.1	74.3	–16.8
Primary	14.1	14.2	0.1	12.2	30.6	18.4	73.8	55.2	–18.6
Secondary	25.6	20.4	–5.2	28.8	43.7	14.9	45.6	35.9	–9.7
Higher	27.7	19.7	–8	10.5	65.1	54.6	18.5	15.2	–3.3
Age Group									
15–24	10.5	12.4	1.9	6.7	26.8	20.1	82.8	60.8	20.1
25–34	9.6	12.2	2.6	9.9	26.8	16.9	80.5	61.0	16.9
35+	17.3	11.7	–5.6	6.6	9.5	2.9	87.0	68.7	2.9
Overall	**9.0**	**12.1**		**8.3**	**25.0**		**82.7**	**62.9**	
(N)	**(359)**	**(691)**		**(332)**	**(1427)**		**(3309)**	**(3585)**	

Source: Pakistan Demographic and Health Survey data, 1990-91 and 2006-07.

Looking at the wealth status differentials, we find that the inequity pattern in use of facility-based delivery care is fairly high, largely favouring the highest 20 percent of the sampled population. In 1990-91, less than 2 percent of the poorest women used a health facility for delivery care compared with about 45 percent of the richest women (20 percent public and 24.5 percent private). In 2006-07, the corresponding percentages increased to about 15.7 percent (4.5 percent public, 11.2 percent private) among the poorest women compared with 73.7 (21.1 percent public and 52.6 percent private) among their wealthiest counterparts (Figure 4). This pattern indicates a significant shift towards utilisation of private sector health facilities, mostly among the richest quintile, a finding endorsed by some other studies on the same issue [Bloom, *et al.* (2001); Koeing, *et al.* (2001); Mahbub ul Haq Human Development Centre (2004)].

Fig. 4. Inequity Patterns in Accessing Public and Private Sector Facilities for Delivery Care by Wealth Status: 1990-91–2006-07



Source: Table 5.

Analysis of data in Table 5 further reveals that during the period 1990-91 to 2006-07, the biggest change in use of private health facilities for delivery care is apparent for the richer (from 6 percent to 31.4 percent) and the richest quintiles (from 24.5 percent to 52.6 percent), resulting in widening the poor-rich gap from 24.3 percent to 41.1 percent in accessing private sector. On the other hand, the change in use of public health care facilities has been minimal in all wealth quintiles. However, it is interesting to note that 20 to 21 percent of women from the richest households have reported using public sector health facilities in both surveys (Table 5), implying that the non-poor benefit more from public subsidies in health than the poor—a finding that suggests making availability of public sector health care more pro-poor and more equitable.

The inequity pattern observed by wealth status supports the argument that poverty and economic affordability are important in accessing facility-based services, especially when observed for use of public or private health facilities. As expected, majority of the poor women who rely on home-based services for delivery care remain the disadvantaged group in terms of having births by unskilled and traditional birth attendants at home, whereas women from richer and richest households appear to benefit both from public and private health facilities with relatively better quality of health care provision (Figure 4).

Women Education

The theoretical argument that women's education would increase the opportunity to access health care services is endorsed by these data indicating a monotonic relationship between prenatal and delivery care and educational level attained. The results show big difference between illiterate and educated women accessing skilled personnel for prenatal consultation. However, it is encouraging to note that illiterate women and those with primary level education have shown the largest positive change in prenatal consultation in the year 2006-07. For example, only 21.5 percent women with no education used prenatal service in 1990-91, and this proportion increased to 48.4 percent in 2006-07, and for primary level education, this percentage increased from 50.5 to 70.5 over the same period (Table 6).

Table 6

Percent Women (15-49) who had a Live Birth Preceding Five Years of the Survey with Prenatal Consultation by Skilled and Unskilled Personnel for Education and Age 1990-91–2006-07

	Skilled Personnel			Unskilled Personnel			No One		
Indicators	1990-91	2006-07	Change	1990-91	2006-07	Change	199-91	2006-07	Change
Education Level									
None	21.5	48.4	26.9	7.4	5.8	–1.6	71.1	45.3	-25.8
Primary	50.5	70.5	20.0	5.1	6.6	1.5	44.3	22.9	-21.4
Secondary	77.2	82.0	4.8	4.0	5.2	1.2	18.8	12.9	-5.9
Higher	98.5	94.7	–3.7	0	1.4	1.4	1.5	3.9	2.4
Age (Years)									
15–24	34.2	61.6	27.4	6.8	6.4	–0.4	59.0	32.0	–27.0
25–34	34.8	62.4	27.6	6.8	5.6	–1.2	58.4	32.0	–26.4
35+	25.7	50.0	24.3	6.2	4.7	–1.5	68.1	45.3	–22.8

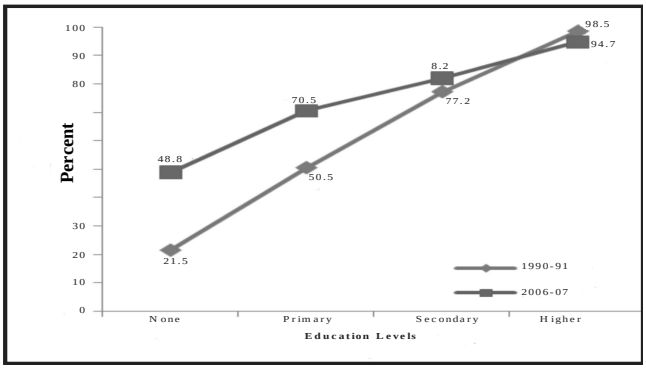
Source: Pakistan Demographic and Health Survey data, 1990-91 and 2006-07.

In the case of skilled delivery care, a more pronounced inequity pattern is observed by educational differentials reinforcing the argument that women's education appears to be a strong factor in improving maternal health care practices. In 1990-91, only 10.9 percent of women with no education accessed

skilled personnel for delivery care compared with 80 percent with higher education as reflected by the steep slope of equity curve. In 2006-07, this inequity reduced because larger proportions of less educated women reported to have accessed skilled personnel for child birth (Figure 5). Again, these patterns reveal that the improvement in health care practices is more pronounced in case of prenatal consultation than births attended by skilled personnel, and this change is visible for illiterate women as well as those with primary level of education. This encouraging trend probably owes to the presence of Lady Health Workers (LHWs) in the community, who are relatively more accessible for consultation and making referrals for maternal care services for larger proportions of illiterate women in rural areas.

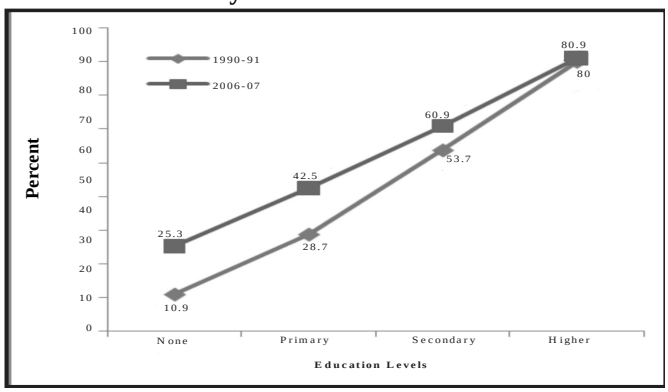
Fig. 5. Inequity Patterns in Accessing Skilled Health Personnel for Prenatal Care and Delivery Care Services by Women Education Levels: 1990-91–2006-07

Prenatal Care by Skilled Personnel



Source: Table 6.

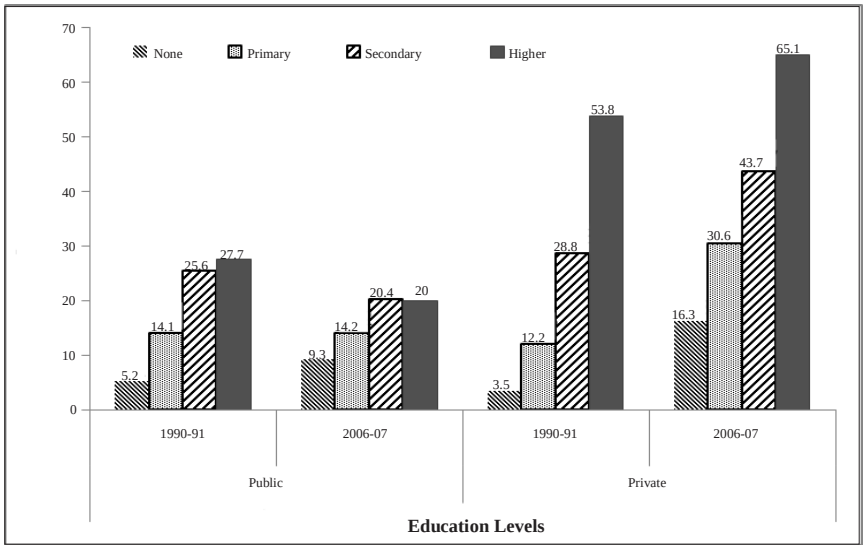
Births by Skilled Health Personnel



Source: Table 4.

Similar striking differentials by education are observed in the use of facility-based services (hospitals, clinics, health centres, etc.) for delivery care indicating a much greater likelihood of use among educated women, especially with secondary and above levels, and this difference is the largest in the use of private health facilities (Figure 6). As Figure 6 shows, only 16.3 percent of women with no education in 2006-07 used a private health facility for delivery care compared with 65.1 percent of women with higher education. Such differentials for public sector health facilities are less marked and indicate a declining trend among educated women to access public hospitals and health outlets, implying that equity issues are more pronounced in use of private health care services. The recent shift towards increased use of private health facilities, especially among educated women, indicate their preference for seeking quality services and their greater ability to pay. This would need further examination in terms of cost/user charges for those services. It is likely that highly educated women also belong to the richer and richest quintiles with increased opportunity to access private sector facilities. On the other hand, the illiterate women may have little disposable income to spend on private health care facilities in addition to the socio-cultural barriers they face in accessing those services [Ezech, Kodzi, and Emina (2010)]. To reduce the existing inequalities, these findings suggest that the less educated women can be informed and educated about the benefits of choosing safe maternal care practice which can help in reducing incidence of maternal or infant mortality.

Fig. 6. Inequity Patterns in Accessing Public and Private Health Facilities for Delivery Care by Women Education: 1990-91–2006-07



Source: Table 5.

Place and Region of Residence

A similar but less striking pattern of inequity is observed when the residential status of women is taken into account. The proportion of urban women to access skilled personnel for prenatal care increased from 50.6 percent in 1990-91 to 74.5 percent in 2006-07, whereas rural women indicated a bigger positive change from only 14.3 percent to 50.9 percent over the same period (Table 7). Table 7 also shows that there is a large difference between urban and rural women in accessing skilled health personnel for delivery care—31.4 percent versus 6.6 percent in 1990-91, and 54.6 percent versus 25.9 percent, respectively in 2006-07. This improved practice of prenatal consultation and delivery care from skilled personnel among rural women appears to reflect the effective role of Lady Health Workers (LHWs) in the community. Their services come handy in areas where women's mobility is restricted to reach out to distant health care outlets [Hardee and Leahy (2008)]. The growing tendency among rural women to seek the help of skilled health personnel for child birth is encouraging and may have beneficial effects on mother and child health besides increasing awareness about safe delivery care practices—a much needed change in rural areas to achieve targets of MDG 5 for better maternal health.

Table 7

Percent Women (15-49) who had a Live Birth Preceding Five Years of the Survey with Prenatal Care and Birth by Skilled Personnel for Place and Region of Residence, 1991-2007

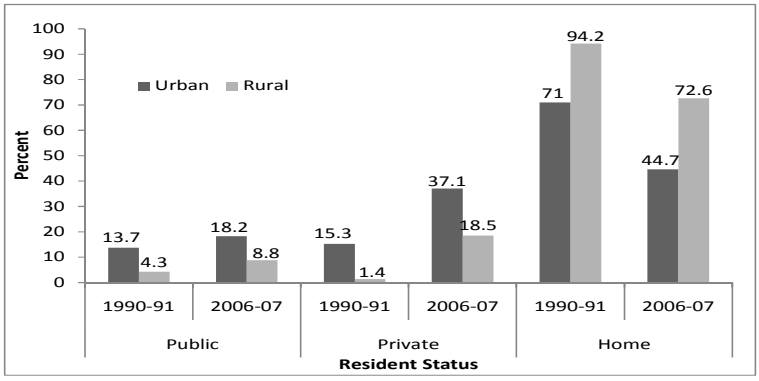
	Prenatal Care by Skilled Person			Birth by Skilled Personnel		
Indicators	1990-91	2006-07	Change	1990-91	2006-07	Change
Place of Residence						
Urban	50.6	74.5	23.9	31.4	54.6	23.2
Rural	14.3	50.9	36.6	6.6	25.9	19.3
Region of Residence						
Punjab	22.1	60.9	38.8	36.2	37.7	1.5
Sindh	45.9	70.5	24.6	39.6	44.4	4.8
Khyber Pakhtunkhwa (KPK)	18.0	51.3	33.3	20.4	37.9	17.5
Balochistan	24.2	40.7	16.5	12.6	23.0	10.4
Overall	**32.4**	**59.1**	**26.7**	**19.0**	**57.8**	
(N)	**(1296)**	**(3370)**		**(759)**	**(3594)**	

Source: Pakistan Demographic and Health Surveys, 1990-91 and 2006-07.

A further look at urban-rural differences reveals that even though majority of women choose to have child birth at home, there is a significant positive change in accessing private facility-based services. For example, the proportion of rural women reporting use of private health facility for delivery care increased from only 1.4 percent in 1990-91 to 18.5 percent in 2006-07 compared with 15.3 percent to 37.1 percent for urban women over the same period (Figure 6). This change points to improved maternal health care

indicators which should be up-scaled and sustained. On the other hand, the small proportion using public health facility for delivery care increased from 4.4 percent to 8.8 percent for rural women and from 13.7 percent to 18.2 percent for urban women, indicating there has been only minor improvement in the situation during the period under study (Figure 7). Women's reasons for not using facility-based services are limited availability of private health facilities in rural areas, high cost of services in addition to the hassle of travel and time taken to reach at a distant place [National Institute of Population Studies (2008)]. This calls for expanding public health facilities in rural areas.

Fig. 7. Inequity Patterns in Accessing Public and Private Health Facilities for Child Birth among Urban and Rural Women: 1990-91–2006-07



Source: Table 5.

Regional differentials that exist in maternal health care practices need to be noted. Women from Sindh province indicated the highest proportion (70.5 percent) seeking prenatal care from skilled persons compared with 60.9 percent in Punjab, 51.3 percent in KPK, and 40.7 percent in Balochistan in the year 2006-07. However, the biggest change is observed for Punjab during the period under study which could be attributed to better outreach services and accessibility of health providers in the province (Table 7). It is also evident from Table 7 that in respect of births attended by skilled personnel, the change observed in KPK and Balochistan is much higher than the other two provinces during the past decade. This is evidence interprovincial disparities have narrowed in the year 2006-07—a welcome development in terms of improved access to skilled health personnel for prenatal and delivery care reflected in reduction in maternal mortality rate from about 300-500 in the 1990s to nearly 276 per 100,000 live births in 2006-07 [Midhet, Jafarey, Ahsan, and Sheraz (2008)]. It would require further in-depth analysis to identify how maternal health care practices are associated with improved maternal mortality.

REGRESSION RESULTS

To further test the hypothesis that wealth (as a proxy for cost/price and socioeconomic status) has a stronger impact on improving maternal health care practices than education and residential status, logistic regression models were applied to 2006-07 data and the results are presented in Table 8. The general pattern that emerges from the regression results reinforces the findings from previous analysis that the impact of wealth is the strongest while education remains highly significant in respect of prenatal care, births attended by skilled personnel and use of facility-based services for delivery care—all three indicators having been used as response variables in the analysis. The results in Table 8 show that for prenatal consultation (model 1), the odds for a woman from the richest quintile are nearly 7 times and from the richer quintile about 3 times higher than the odds for a woman from the poorest quintile. Similarly, the likelihood of highly educated women to seek prenatal care is nearly 4 times higher than women with no education, after controlling for residence, wealth and other demographic characteristics. Moreover, the odds for a woman living in Sindh province are 3 times higher than those from Balochistan, whereas the odds for a woman from urban areas are not significantly different from rural women in seeking prenatal care services after controlling for other related variables.

The results in model 2 support the expected relationship between wealth status and birth attended by skilled personnel. The odds for a woman from the richest household for accessing skilled care for child birth are nearly 4 times as high as the odds for a woman from the poorest quintile, and highly educated women are 3 times more likely to have birth under skilled care than the illiterate women. Moreover, the likelihood of women with prenatal consultation to have birth by skilled attendant is 3 times higher than women with no prenatal care. All other variables used in the model indicate significant relationship with the response variable (Table 8).

With regards to wealth status and education's association with use of facility-based services for delivery care (model 3), it appears that the relationship is highly significant with the greatest effect in the richest quintile, higher education and prenatal care in comparison with other variables. All other variables used in the model are also significant in influencing access to health facilities for child birth with the expected relationship, except for the Punjab province where the use of facility-based services is not significant (Table 8).

Unlike other socioeconomic characteristics, comparisons of age groups vary by specific cultural settings and are not always clear. However, it is expected that younger women would be more likely to access health care service than older ones considering the fact that access to services has increased in recent years. The results show that the age of women does not significantly influence prenatal care, whereas being relatively older is significantly related to accessing skilled personnel for birth and using facility-based services.

Moreover, parity shows a significant relationship with maternal health care indicators in all three models.

After controlling for age, parity and region, the results in Table 8 confirm the strongest effect of wealth status on maternal health care indicators, revealing

Table 8

Odds Ratios Showing the Effect of Wealth Status, Education, and Residence after Controlling for Demographic and other Characteristics on Use of Prenatal, Delivery Care and Facility-based Services: 2006-07

Variables	Prenatal Care by Skilled Persons (Model 1)	Births by Skilled Persons (Model 2)	Facility-based Delivery Care (Model 3)
Wealth Status			
Poorest (r)	–	–	–
Poorer	1.629***	1.315*	1.388**
Middle	2.042***	1.699***	1.747***
Richer	3.200***	2.432***	2.442***
Richest	6.913***	3.671***	4.119***
Women's Education			
None (r)	–	–	–
Primary	1.301**	1.179*	1.325**
Secondary	1.577***	1.659***	1.966***
Higher (r)	3.944***	2.875***	3.833***
Place of Residence			
Rural (r)	–	–	–
Urban	1.101	1.400***	1.277**
Region of Residence			
Punjab	1.166	0.803**	1.104
Sindh	3.238***	1.161	2.047***
Khyber Pakhtukhwa	1.336*	0.918	1.395**
Balochistan(r) **Contraception**	–	–	–
No (r)			
Yes	–	–	–
Tetanus Injection	1.319***	1.237**	1.265**
No (r)			
Yes	–	-	–
Prenatal Care	3.163***	1.105	1.145*
Unskilled (r)			
Skilled	–	–	–
	–	3.143***	3.766***
Age Group			
15–24 (r)	–	–	–
25–34	1.100	1.153*	1.061
35+	0.965	1.596***	1.449**
Parity			
0–2	1.432	1.850***	1.926***
3-4	1.167	1.331**	1.347***
5 & Plus (r)	–	–	–
(N)	**(691)**	**(127)**	**(3370)**

Source: PDHS, 2006-07 data.

Results based on logistic regression models with Skilled vs. Unskilled (1 & 2), and Facility-based vs. Home (3) as response category variables.

*** Significant at p=< .001; ** Significant at p=<.05; * significant at p=<.01.

that women from the poorest and rural households face greater barriers to accessing health care services and contribute to the persistence of health inequities [Gwatkin, *et al.* (2007)]. Moreover, women's education exercises relatively lesser but significant influence on maternal health care practices and calls for increasing access through improved education levels.

Results from this analysis provide useful insight into the relationship between poverty, education, place of residence and maternal health care practices, and reveal how socioeconomic constraints limit the opportunities to improve maternal health status in Pakistan.

CONCLUSIONS AND DISCUSSION

A number of conclusions can be drawn from these results to inform policy, programming, and future research. The overall findings indicate that there is an improvement in inequity patterns of health care among married women during the period 1990-91 to 2006-07 beginning in the urban areas and more recently spreading to rural areas. However, the change witnessed over the last decade is not large enough to bridge the health gap between the rich and the poor.

Poor women whose health risks are greater receive lesser health care and access to services from skilled health personnel than non-poor women. Results from this analysis show that women from mostly the second, middle and richer quintiles have contributed to narrowing the inequity gap in the use of health care services, while the poorest, despite some improvements, lag far behind. The dominance of wealth differentials in maternal health care practices suggests that service costs are significant in sustaining health inequalities, especially when use of private health facilities among the poor is considered. The inequity pattern disfavouring the poor and the large majority of uneducated women is likely to jeopardize the achievement of goals 4 and 5 of the Millennium Development Goals and other national and regional targets of maternal and child health care programmes.

The present analysis also provides insights into socioeconomic constraints to access services and identifies groups not covered by current service-delivery programmes, and where the needs are the greatest. These results provide guidelines for programme planners to reduce inequities and better understand the barriers faced by individuals in these sub-groups, especially pertaining to costs of services, weak health infrastructure, issues of transport and access, and quality of services for women belonging to the poorest households. To counteract the pro-rich inequities, the priority should be to increase coverage in poor communities through appropriate targeting and outreach schemes and service provision strategies.

Important inequities are also observed within education categories showing great variability between no education and higher education level of

women for accessing health care services. As educational attainment levels of women have shown overall improvement in Pakistan over the time period of this study, its impact on use of maternal health care is reflected in the increased proportion of primary and secondary educated women accessing these services in recent years, thereby reducing the educational differentials within groups.

Overall, the results of this study reinforce the earlier evidence that these women—the poorest, the least educated, those living in rural areas—encounter greater constraints in accessing prenatal and delivery care services from skilled health personnel which may contribute to higher rates of maternal morbidity and mortality. There are certain subgroups of women which have indicated improvement and contributed to narrowing the inequity gap, especially for prenatal care, whereas data for some subgroups show that the poor-rich gap has widened over the years, especially in use of private health facilities. The improvement observed in maternal health care practices during the past decade appears to have contributed to a reduction in maternal mortality ratio as estimated in the 2006-07 PDHS data, calling for further in-depth analysis of the effects of improved health care practices on maternal mortality level. However, caution should be taken while comparing the five discrete categories of wealth quintiles of equal size, with widely varying size and composition of population subgroups by education, residence and age groups.

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