

Status of Immunization Coverage and Maternal Child Healthcare in Punjab Province, Pakistan

Health



Pakistan CSOs Coalition for Health & Immunization

Together for a difference

TABLE OF CONTENTS

- 1. Introduction**
 - 1.1 Objectives of Research
 - 1.2 Research Methodology
- 2. Background Perspective for Better Understanding**
 - 2.1 Health Delivery Model Pakistan
 - 2.2 Devolution and the Immunization Programme
- 3. Health Profile of Punjab Province**
 - 3.1 Punjab Demographics
 - 3.2 Health and Facility Indicators of Punjab
 - 3.3 Factors behind Poor Health
- 4. Key Findings Regarding Status of Immunization and Maternal Child Healthcare in Punjab**
 - 4.1 Percentage of Immunization Coverage in Punjab for less than 23 months of age (PDHS 2012-13)
 - 4.2 Percentage of Children Aged 12-23 months that have been Immunized in Punjab based on Recall – At one Immunization (PSLM 2010-12)
 - 4.3 Percentage of Children Aged 12-23 months that have been Immunized in Punjab based on Record – At one Immunization (PSLM 2010-12)
 - 4.4 District Wise Percentage of Immunization Coverage for Children under 23 months of age (PSLM 2010-11)
 - 4.5 District Wise Percentage of Individual Vaccine Coverage for Children under 23 months of age (PSLM 2010-11)
 - 4.6 Percentage of Immunization Coverage for TT in Women including CBA/Mothers/Pregnant Women (PDHS 2012-13)
 - 4.7 District Wise Percentage for TT Vaccine Coverage in Women including /Mothers/Pregnant Women (PSLM 2010-12)
 - 4.8 Mortality Rates (PDHS 2012-13)
 - 4.9 Percentage of Pre and Post Natal Consultations in Punjab (PSLM 2010-11)
 - 4.10 Faculty Wise Percentage of Deliveries (FBS 2010-11)
 - 4.11 Number of Deliveries Conducted by various Healthcare Service Providers (PDHS 2012-13)
- 5. Barriers to Immunization being faced in Punjab Province**
 - 5.1 Inadequate Infrastructure
 - 5.2 Lack of Serious Policy Implementation
 - 5.3 Lack of Motivation of EPI Staff
 - 5.4 Problems with Outreach Capacity of the Vaccinators
 - 5.5 Lack of Accountability
 - 5.6 Problems with Cold Chain Maintenance of Vaccines
 - 5.7 Lack of Private Sector Involvement
 - 5.8 Lack of Awareness and Education
 - 5.9 Non Empathic Attitude of the Doctors in Healthcare Facilities
- 6. Recommendations**
 - 6.1 Integration of Immunization Services with Primary Healthcare
 - 6.2 Strengthening of Inter Provincial Coordination & Collaboration
 - 6.3 Perform an Updated Situational Analysis of EPI in each Province
 - 6.4 Prepare a District Wise EPI Implementation Plan
 - 6.5 Encourage Planning at Union Council Level
 - 6.6 Modify Role of Lady Health Workers
 - 6.7 Modify Role of Doctors and Pediatricians

6.8 Address Role of Political Leaders and Parliamentarians

6.9 Effect of NID's on Routine Immunization

6.10 Strengthening of Fixed Centers of Network

6.11 Logistics System Should be Improved

6.12 Leadership and Management Skills Trainings for Managers

6.13 Increase and Remapping of Human Resource

6.14 Increased Supervision and Monitoring of EPI Programme

6.15 Utilization of LHW's in more Effective Manner

6.16 Surveillance System of EPI needs to be Strengthened

6.17 Demand Creation for Immunization Services

7. Conclusion

8. References

LIST OF ABBREVIATIONS

BCG	Bacillus Calmette–Guérin
BHUs	Basic Health Units
CSOs	Civil Society Organizations
DPT	Diphtheria Pertussis Tetanus
EPI	Expanded Programme on Immunization
FBS	Federal Bureau of Statistics
MoH	Ministry of Health
MOIPC	Ministry of Inter- Provincial Coordination
NIDs	National Immunization Days
PCCHI	Pakistan CSOs Coalition for Health and Immunization
PPHI	Peoples Primary Healthcare Initiatives
PDHS	Pakistan Demographic and Health Survey
PSLM	Pakistan Social and Living Standards Measurement
TT	Tetanus Toxoid
WHO	World Health Organization

1. Introduction

Immunization is the most cost-effective public health intervention that has had the greatest impact on the health of people. Vaccines save millions of lives across the globe every year. However, it is tragic that vaccine preventable diseases still take lives of millions of children every year. A careful estimate shows that every year more than 90, 000 children suffer from paralytic Polio, which could have been saved by two polio drops.ⁱ Immunization saves 3 million lives each year. In 1974, the World Health Organization(WHO), initiated the Expanded Program on Immunization in which less than 5% children were vaccinated against six diseases (Diphtheria, Tetanus, Pertussis, Polio, Measles, and Tuberculosis), during its first year.ⁱⁱ In 1998 nearly 74 % of children around the world were immunized against these diseases. This improvement in immunization coverage has been the single greatest public health achievement of all time. But the disparity between immunization rates in developing versus developed countries is vast. About 3 million people still die each year from vaccine-preventable diseases. In addition at least 30 million children still do not have access to basic immunization services in sub-Saharan Africa, Asia, and Latin America. This means that every ten seconds, someone dies from a vaccine-preventable disease.

Pakistan as a country has some of the highest rates of deaths among children in the world. One child in every 11 (87 per 1000 live births) born in Pakistan dies before turning 5 years old and nearly half of all deaths in Pakistan are among children less than 5 year old, compared with 8-10% of all deaths in developed countriesⁱⁱⁱ. Although the rates of child death have been falling steadily over years, however, progress has been slow and Pakistan may miss meeting its Millennium Development Goals (MDGs) 2015 target of reducing under 5 deaths to 52/ 1000 live births^{iv}. Pakistan is one of the 3 countries where polio transmission remains endemic. Around a third of these child deaths are due to vaccine preventable diseases^v. Since communicable diseases contribute so much to morbidity and mortality rates, prevention programs, particularly immunization are critical.

The estimated total coverage for a fully immunized child in Pakistan varies between 56% - 88% with considerable variation between provinces (PDHS, PSLM). The coverage also varies by the antigen, being the highest for BCG, DPT1 and HBV and the lowest for polio. In terms of coverage, Pakistan is lagging behind regional countries such as Bangladesh and Sri Lanka. India has managed to interrupt indigenous polio transmission in 2011 through aggressive high-quality polio vaccine campaigns. More than half of the funding for immunization is for campaigns which are predominantly for polio and yet polio case numbers have been increasing since 2007. There is considerable debate about the effect this enhanced emphasis on polio campaigns is having on routine immunization activities and whether the nation and the polio eradication effort will be served better by finding a better balance between routine immunization and the 8-12 periodic campaigns annually that essentially stop routine immunization efforts for 10-12 days every month. Persisting differences between rural and urban children suggest the need to increase access of the poor and the marginalized to health and preventive services

1.1 Objectives of Research

In 1978, Expanded Program of Immunization was initiated in Pakistan with the objective of reduction in morbidity and mortality caused by six vaccine preventable diseases.vi In July 2002, vaccination against Hepatitis B was also included in routine immunization schedule of EPI. Initially donor agencies contributed mainly for provision of budget for EPI activities but gradually they have withdrawn support which resulted in decrease of immunization coverage in 90s. Government in return had to increase budget allocations to EPI thus coverage began to improve again from 1998 onwards with little fluctuations among the years. Similarly in December 2013 pneumococcal vaccine was added to the routine immunization regime. viiHowever there are still

many reasons for low immunization coverage and declining health indicators in Pakistan. Among various core reasons, most commonly observed are the lack of motivation of EPI staff, absence of vaccinators and inconvenient/hard to reach places for providing routine immunization and technical problems with cold chain maintenance.viiiSo the core objective of the mentioned desk research is to evaluate the status of immunization in one of the provinces that is Punjab through review of secondary resources and documents. That is to not only highlight the prevailing situation in Punjab but also to make recommendations to bring about improvements in the current health system and health indicators of the province. Community perspective related to issues of EPI coverage has been captured through different studies.ix

1.2 Research Methodology

Qualitative research was conducted by reviewing various secondary reports and documents to evaluate the status of immunization and maternal child healthcare in Punjab province. Data collected through three different sources show wide differences in coverage rates, which is the highest for the PSLM surveys and the lowest for the PDHS. All surveys use the same measure, i.e. a combination of mothers recall and a record of vaccination available with the family on the vaccination card and the same sampling frame which is provided by the Federal Bureau of Statistics.

2. Background Perspective for Better Understanding:

2.1 Health Delivery Model of Pakistan

Pakistan has an extensive health care–delivery system consisting of a mix of both public and private sectors in practice. Primary health care services are offered through a network of basic health units (BHUs) and sub health centers (5,310), rural health centers (561), maternal child health centers (879), and dispensaries (4,794). Secondary and tertiary care services are provided through tehsil/taluka, district, and teaching hospitals (948). In 78 districts (more than 50 percent of the districts in Pakistan), the BHUs function as a public-private partnership arrangement managed by civil servants on secondment to rural support organizations (RSOs) under the Peoples Primary Healthcare Initiative (PPHI). The public sector also provides preventive services through vertical programs, for example, EPI, TB Control Program using DOTS strategy (TB-DOTS), National Program for Family Planning and Primary Healthcare (commonly called LHWs Program), AIDS Control Program, Malaria Control Program (through Roll-Back Strategy), Nutrition Program, and Reproductive Health Program: (managed fully by the federal level until 2001 and partially until July 2011, since then completely by the provincial level). There is also a large network of medical practitioners and approximately 12,000 registered civil society organizations (CSOs) in the country providing a significant proportion of primary health care services.

2.2 Devolution and the Immunization Programme

Prior to 2001, Pakistan followed a federally/provincially managed structure to deliver health services. In 2001, some of the powers were devolved to the district governments. The EPI was integrated into district-level preventive programs. In contrast to pre-devolution arrangements, the financial allocation to EPI was not earmarked and was within the general pool of resources annually allocated to the health sector at district level. The change in the pattern of resource allocation badly impacted the performance of routine immunization. Conversely, during the same time, the national immunization days/sub national immunization days (NIDs/SNIDs) received more prominence as donors and UN agencies (UNICEF/WHO) fully financed all activities related to polio eradication at all levels. The monitoring of routine immunization activities at the province and national levels was also reduced because of devolution of health to the district governments.

Amendment 18 of the Constitution was passed by the National Assembly of Pakistan on April 8, 2010. As a result, most functions of the federal Ministry of Health were devolved to the provinces with effect from July 2011. Of particular relevance to this paper, the bill enhances provincial autonomy. It devolves authority from the federal government to the provinces and eliminates the “Concurrent List” in about forty areas including health, a sector that is now fully devolved to the provinces. This means that much of the management of health services including immunization has been devolved to the provinces. The provinces are also expected to plan and manage their own provincial budgets for the EPI. There are concerns about the ability of provincial governments to assume effective authority in health. While at the federal level, a Ministry of Inter Provincial Coordination (MOIPC) has been strengthened and some federal Ministry of Health (MOH)–managed units have been moved under its jurisdiction, it remains unclear whether the policy, oversight, regulatory, monitoring and evaluation functions are managed by this ministry.

As a result, there is a possibility that the different provinces could end up implementing province-specific immunization schedules, administer different vaccine preparations, and use different combinations of strategies. Further, the existing staffing structures of the EPI cell in the MOIPC and provincial EPI sections have serious shortcomings. Still, the devolution is nonetheless a stimulus and provides a special opportunity to managers, particularly at the provincial level, to reexamine the management of the immunization program.

3. Health Profile of Punjab Province

Punjab constitutes more than half the population of Pakistan. In spite of extensive network of health care facilities, health status of the people of the province as a whole is below the desired level. Infant mortality rate is 77 per 1000 live births. Less than 5 mortality rate is 112 per 1000 live births. Maternal mortality ratio is estimated to be 300 per 100,000 live births, lower than the national figure 350. Total fertility rate in the province is estimated to be 4.7. 92 percent of the population has access to improved drinking water sources; whereas 58 percent of the population in the province has access to sanitation. Currently there are about four million malnourished children in Punjab, and about a third of all pregnant women are estimated to have iron deficiency anemia. Over 34 percent of children under the age of five years are short for their age; over 10 percent are under weight for their age and over half anemic. Malnutrition is a major contributor to infant and maternal deaths.^x

3.1 Punjab Demographics

Area (sq. kilo meters)	205,345
Average Population	396.1 persons per square kilometer
Estimated Population	Above 81 Million
Population in Rural Areas (%)	70
Population in Urban Areas (%)	30%
Ratio of Male & Female	111:100
Population of Infants (%)	2.5
Population under 5 years (%)	14.25
Population under 15 years (%)	43
Women in Child Bearing Age	15 – 49 years (22% of the total population)
Women Estimated to be pregnant Every Year (%)	4.5

3.2 Health and Facility Indicators of Punjab^{xi}

Health Indicator	Value
Infant mortality rate /1000 live births	77
Maternal mortality ratio/100,000 live births	300
Under-five mortality/1000 live births	112
% age of Under nutrition(<5 years)	34
Total fertility rate	4.7
Life expectancy at birth	64
No. of hospitals	151
Dispensaries	194
RHCs	293
BHUs	2,461
MCHCs	188
No of beds (include other Government departments)	37,272

3.3 Factors behind Poor Health:

Poor health status can be explained by poverty, low levels of education especially for women, low status of women in large segments of society, and inadequate sanitation and potable water facilities, low spending/expenditure on health even by Asian standards (0.7% as compared to 1.3%, World Bank report). It is also strongly related to serious deficiencies in health services, both in public and private sectors in the province.

4. Key Findings Regarding Status of Immunization and Maternal Child Healthcare in Punjab Province:

According to a recent study carried out by experts and students of the Punjab Institute of Public Health (PIPH), the average routine immunization coverage rate for the province is 57.5 per cent. In some districts, it's as low as 40 per cent or even below. According to a UN report, released in September, about 6.9 million children in Pakistan died before their fifth birthday in 2011, compared to around 12 million in 1990.^{xii}

4.1 Percentage of Immunization Coverage in Punjab for less than 23 months of age (PDHS 2012 – 2013):

According to WHO immunization guidelines, children are considered fully immunized when they have received one dose of BCG, three doses against diphtheria, pertussis and tetanus (DPT) and pneumonia, three doses of polio (excluding the one given at birth) and at least one dose of measles vaccine. All the vaccines in the routine immunization of schedule are provided free of cost in all public health facilities in Pakistan:

Region	DPT				Polio				Measles	All Basic Vaccination	No Vaccination	% With vaccination card seen
	BCG	1	2	3	0	1	2	3				
Punjab	91.6	87.2	81	76.3	72	97.4	95.2	92.4	70	65.6	1.5	40.7
Urban	94.4	90.5	89	86.5	86.4	95.3	94.7	91	78.1	74.4	1.6	46.6
Rural	90.3	85.6	77	71.4	65.2	98.3	95.5	93.1	66.2	61.5	1.4	37.9

Percentage of children age 12-23 months who received specific vaccines at any time before the survey (according to a vaccination card or the mother's report) and percentage with a vaccination card, by background characteristics, Pakistan 2012-13
 According to PDHS 2012-2013 the overall immunization coverage in Punjab is 65.6 %, an average of 74.4 % is confined to urban population while 61.5% to rural population. In addition

only a very small percentage of overall 40.7 were seen carrying a vaccination card. While for vaccine wise immunization coverage in Punjab for less than 23 months of age – Polio coverage is at the top with 92.4 %, BCG at the second number with 91.6 %, DPT3 coverage at 76.3 % and with the lowest coverage of measles in the province at 70%.

4.2 Percentage of Children Aged 12-23 Months that have been Immunized (Punjab) Based on Recall – At least One Immunization (PSLM 2010 – 2012)^{xiii}

Boys are more likely than girls to be fully immunized. Also urban rural differences in immunization coverage are quite visible. Children residing in urban areas are more likely to be fully immunized than children in rural areas:

Punjab	PSLM 2007-08			PSLM 2010-11			PSLM 2011-12		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
Urban Areas	98	97	98	97	98	97	100	97	99
Rural Areas	97	96	96	97	96	97	99	99	99
BASED ON RECORD – FULLY IMMUNISED									
Urban	68	69	68	69	62	66	79	69	74
Rural	57	51	54	59	57	58	61	61	61
BASED ON RECALL AND RECORD – FULLY IMMUNISED									
Urban	83	84	83	89	83	86	90	84	87
Rural	78	68	73	87	85	86	85	88	86
Overall (Punjab)									
	79	73	76	87	84	86	86	87	86

Following above are the figures of Federal Bureau of statistics, which shows the percentage of immunization coverage in Punjab based on recall/record. Only a small rise from 76 to 86% is seen between years 2007 to 2012. This highlights the alarming situation of the vaccination cards not being kept in place and the lack of general understanding of the significance of maintaining a proper documentation for a child's routine immunization coverage.

4.3 Percentages of Children between 12-23 Months that have been Immunized by Region Based on Record(PSLM 2010 – 2012):

TYPE OF ANTIGEN – BASED ON RECORD ^{xiv}								
A. Punjab PSLM 2011-2012	BCG	DPT1	DPT2	DPT3	POLIO1	POLIO2	POLIO3	MEASLE
Urban Punjab	72	72	71	70	72	72	71	67
Rural Punjab	65	65	64	63	65	65	63	62
B. PSLM 2010-								

2011								
Urban	74	74	73	73	73	73	72	66
Rural	62	62	62	61	61	60	60	58
C. PSLM 2007- 2008								
Urban	73	74	73	72	74	74	72	70
Rural	61	63	61	59	61	60	60	57
OVERALL- PUNJAB								
	64	66	64	63	65	64	63	60

Following the emerging trends of urbanization a decrease in the level of urban area antigen specific coverage is seen from year 2010-2011 to year 2011-2012. However according to the quoted PSLM report the coverage in rural population seem to be increasing with varying trends.

4.4 District Wise Percentage of Immunization coverage for children under 23 months of age (PSLM 2010 – 2011):

PERCENTAGE OF CHILDREN AGED 12-23 MONTHS THAT HAVE BEEN IMMUNIZED BASED ON RECORD - FULLY IMMUNIZED(2010-11 PSLM)									
PROVINCE & DISTRICT	URBAN			RURAL			TOTAL		
	MA LE	FEMAL E	TOTA L	MAL E	FEMAL E	TOTA L	MAL E	FEMAL E	TOTA L
Punjab	69	62	66	59	57	58	62	59	60
Attock	50	40	46	80	60	68	74	58	65
Rawalpindi	69	81	74	78	70	74	73	75	74
Jhelum	76	73	74	88	68	78	85	70	77
Chakwal	85	65	76	86	80	84	86	79	83
Sargodha	68	35	50	72	63	67	71	57	63
Bhakhar	100	63	81	51	56	53	57	57	57
Khushab	64	61	63	75	71	73	73	70	71
Mianwali	63	60	61	62	60	61	62	60	61
Faisalabad	67	76	71	64	55	60	65	64	65
Jhang	37	51	43	34	31	33	35	35	35
T.T.Singh	69	49	58	47	63	53	50	59	54
Chiniot	85	84	84	76	71	74	78	74	76
Gujranwala	70	55	64	72	68	70	71	63	67
Gujrat	83	64	75	81	89	85	82	84	83
Sialkot	80	96	88	77	89	82	78	90	83
Hafizabad	75	70	72	59	61	60	64	65	65
MandiBahudin	72	72	72	77	74	76	76	73	75
Narowal	63	81	70	75	71	73	73	72	72
Lahore	76	65	70	51	64	57	71	65	68
Kasur	79	38	57	78	72	75	78	64	71
Sheikhupura	68	27	48	69	79	74	68	61	65
Nankana Sahib	86	64	79	88	96	91	88	90	89
Vehari	85	75	80	65	68	66	68	69	68
Multan	46	64	54	52	40	47	50	49	50
Khanewal	54	34	43	30	23	27	35	26	31

Lodhran	51	38	44	45	39	42	46	39	42
D.G.Khan	73	52	62	41	43	42	45	45	45
Rajanpur	72	40	55	66	71	69	67	67	67
Layyah	84	87	85	64	65	64	67	67	67
MuzaffarGarh	20	17	19	27	15	21	26	16	21
Bahawalpur	33	39	36	15	20	18	19	25	22
Bahawalnager	78	83	80	51	62	56	57	65	61
Rahim Yar Khan	54	40	47	15	14	15	21	19	20
Sahiwal	59	62	60	79	65	73	76	64	71
Pakpatten	71	91	78	66	56	61	67	61	64
Okara	82	80	81	79	85	82	79	84	82

According to PSLM report 2010 – 2011 the overall coverage in Punjab province is 60% (M: 62% F: 59%) with the highest coverage percentage confined to district Nankana Sahib (89%) and with utterly low coverage rates in the districts of Rahim Yar Khan, MuzaffarGarh and Bahawalpur (21%).

4.5 District Wise Percentage Individual Vaccine coverage for children under 23 months of age (PSLM 2010 – 2011):

The following table indicates the individual vaccine coverage in 37 districts of Punjab province both in rural and urban population, for children under 23 months of age:

PROVINCE & DISTRICT	BCG	DPT 1	DPT2	DPT3	POLIO 1	POLIO 2	POLIO 3	MEASLES
Punjab	66	66	65	65	64	64	63	61
Urban	74	74	73	73	73	73	72	66
Rural	62	62	62	61	61	60	60	58
Attock	68	68	68	68	68	68	68	65
Urban	46	46	46	46	46	46	46	46
Rural	72	72	72	72	72	72	72	68
Rawalpindi	78	77	77	77	77	76	76	74
Urban	77	76	76	75	75	74	73	74
Rural	80	78	78	78	78	78	78	74
Jhelum	86	86	84	84	84	82	82	77
Urban	83	83	83	83	83	83	83	74
Rural	88	88	85	85	85	82	82	78
Chakwal	84	84	84	84	77	77	77	83
Urban	86	86	86	86	86	86	86	76
Rural	84	84	84	84	76	76	76	84
Sargodha	71	72	72	71	72	72	71	64
Urban	75	75	75	75	75	75	75	50
Rural	70	71	71	70	71	71	70	68
Bhakhar	67	67	65	64	67	65	65	57
Urban	90	90	90	81	90	90	90	81
Rural	63	63	61	61	63	61	61	53
Khushab	78	78	78	77	77	77	75	71
Urban	68	68	68	68	68	68	68	63
Rural	80	80	80	78	78	78	76	73

Mianwali	74	74	72	72	74	74	73	61
Urban	82	82	82	82	82	82	82	61
Rural	73	73	69	69	73	73	71	61
Faisalabad	68	68	68	66	68	68	67	65
Urban	74	74	74	73	74	74	73	71
Rural	65	65	65	62	65	65	63	61
Jhang	35	35	35	35	34	34	34	35
Urban	43	43	43	43	43	43	43	43
Rural	33	33	33	33	32	32	32	33
T.T.Singh	65	65	62	58	51	52	53	54
Urban	65	65	63	60	59	57	57	58
Rural	64	64	62	58	50	51	52	53
Chiniot	77	77	77	76	77	77	76	76
Urban	84	84	84	84	84	84	84	84
Rural	75	75	75	74	75	75	74	74
Gujranwala	73	73	73	73	73	73	73	67
Urban	76	76	75	75	76	75	75	64
Rural	71	71	71	71	71	71	71	70
Gujrat	86	86	86	86	83	83	83	83
Urban	82	82	82	82	82	82	82	75
Rural	87	87	87	87	83	83	83	85
Sialkot	91	91	88	87	91	88	87	86
Urban	91	91	91	90	91	91	90	88
Rural	91	91	87	87	91	87	87	85
Hafizabad	68	68	68	68	67	67	67	65
Urban	76	76	76	76	76	76	76	72
Rural	64	64	64	64	62	62	62	60
MandiBahuddi n	82	82	82	80	76	76	75	75
Urban	78	78	78	78	78	78	78	72
Rural	82	82	82	80	76	76	74	76
Narowal	73	73	73	73	73	73	73	72
Urban	70	70	70	70	70	70	70	70
Rural	74	74	74	74	74	74	74	73
Lahore	76	76	76	75	76	76	75	68
Urban	80	80	80	79	79	79	78	70
Rural	62	62	62	62	62	62	62	57
Kasur	84	84	81	80	81	79	78	71
Urban	83	83	83	83	83	83	83	57
Rural	84	84	81	79	80	78	76	75
Sheikhupura	77	77	77	77	76	76	76	63
Urban	79	79	79	79	79	79	79	48
Rural	77	77	77	77	75	75	75	72
Nankana Sahib	93	93	92	90	87	86	85	89
Urban	90	90	85	79	90	85	79	79
Rural	93	93	93	93	86	86	86	91
Vehari	70	70	70	70	70	70	70	68
Urban	83	83	83	83	83	83	83	80

Rural	67	67	67	67	67	67	67	66
Multan	50	50	50	50	42	42	42	50
Urban	54	54	54	54	49	49	49	54
Rural	47	47	47	47	37	37	37	47
Khanewal	32	32	31	31	27	26	26	31
Urban	43	43	43	43	43	43	43	43
Rural	28	28	27	27	23	21	21	27
Lodharan	44	44	44	43	36	36	36	42
Urban	56	56	56	52	36	36	36	44
Rural	42	42	42	42	36	36	36	42
D.G Khan	48	48	48	48	48	48	48	45
Urban	81	81	81	81	81	81	81	62
Rural	43	43	43	43	43	43	43	42
Rajanpur	69	69	69	69	69	69	69	67
Urban	76	76	76	76	76	76	76	55
Rural	69	69	69	69	69	69	69	69
Layyah	68	68	68	68	68	68	68	67
Urban	85	85	85	85	85	85	85	85
Rural	65	65	65	65	65	65	65	64
Muzafargarh	22	22	22	22	22	22	22	21
Urban	19	19	19	19	19	19	19	19
Rural	22	22	22	22	22	22	22	21
Bahawalpur	28	28	28	28	28	28	26	22
Urban	42	40	40	40	42	40	40	36
Rural	24	24	24	21	24	24	21	18
Bahawalnagar	70	70	69	68	66	66	63	61
Urban	86	86	82	86	86	82	86	80
Rural	66	66	66	63	62	62	58	57
Rahim Yar Khan	24	24	24	24	24	24	24	20
Urban	61	61	61	61	61	61	61	47
Rural	16	16	16	16	16	16	16	15
Sahiwal	78	78	78	78	78	78	78	71
Urban	71	71	71	71	71	71	71	60
Rural	79	79	79	79	79	79	79	73
Pakpatan	76	75	73	70	76	74	71	64
Urban	92	88	84	84	92	88	88	78
Rural	72	72	70	67	72	70	67	61
Okara	85	85	85	85	84	84	84	82
Urban	93	93	93	93	89	89	89	81
Rural	84	84	84	84	83	83	83	82

4.6 Percentage of Immunization coverage for TT Vaccine in women i.e.

CBA/Mothers/Pregnant women (PDHS 2012-213):

Neonatal tetanus is the leading cause of infant death in developing countries like ours, where a considerable proportion of deliveries take place at home or at health facilities with poor hygiene. Tetanus toxoid injections are given to women during pregnancy to prevent maternal and neonatal tetanus. For full protection women should receive at least two doses of tetanus during pregnancy. If a woman has been vaccinated during a previous pregnancy then however she may require only one dose for the current pregnancy. While five doses are considered to provide a lifetime of protection against tetanus:

	Percentage receiving two or more injections during last pregnancy	Percentage whose last birth was protected against neonatal tetanus
Punjab	67.9	73.8
Urban	73.2	78.9
Rural	65.7	71.7

The overall TT coverage in Punjab province as per the PDHS report 2012-13 presents a better status with close to 73.8% of women having been protected against tetanus in their last pregnancy. Though the ratio of overall coverage is still more in urban areas owing to the factor of awareness but 71.7% in rural areas indicate the progress in right direction.

4.7 District Wise percentage of TT vaccine coverage in women (CBA/Mothers/Pregnant women) Federal Bureau of Statistics (2010 – 2012):

PROVINCE & DISTRICT	PERCENTAGE OF PREGNANT WOMEN THAT RECEIVED TT			RANK
	URBAN	RURAL	TOTAL	
Punjab	86	74	77	
Attock	62	81	77	21
Rawalpindi	84	88	86	12
Jhelum	88	92	91	8
Chakwal	90	82	83	15
Sargodha	96	89	90	9
Bhakhar	92	76	79	19
Khushab	98	92	93	6
Mianwali	96	88	90	10
Faisalabad	86	57	69	30
Jhang	81	55	61	34
T.T.Singh	81	78	78	20
Chiniot	88	76	79	17
Gujranwala	95	95	95	4
Gujrat	94	96	96	2
Sialkot	96	93	94	5
Hafizabad	98	95	95	3

MandiBahuddin	89	97	96	1
Narowal	90	84	85	14
Lahore	90	69	86	13
Kasur	76	74	75	23
Sheikhupura	81	80	80	16
Nankana Sahib	74	73	74	24
Vehari	95	75	79	18
Multan	89	62	72	27
Khanewal	82	69	71	28
Lodhran	74	65	66	32
D.G.khan	78	60	62	33
Rajanpur	79	77	77	22
Layyah	98	87	89	11
MuzaffarGarh	83	70	72	26
Bahawalpur	84	61	68	31
Bahawalnager	59	52	53	37
Rahim Yar Khan	60	56	57	35
Sahiwal	75	61	64	25
Pakpatten	72	67	68	36
Okara	87	73	75	29

For district wise percentage of TT vaccine coverage in women District MandiBahauddin and Gujratdistricts are at the top with overall 96%, while district Bahawalnagar is the bottom number i.e. 37 with only 53% overall coverage.

4.8 Mortality Rates (PDHS 2012 – 2013):

According to the PDHS 2013 trends in early childhood mortality rates, trends in neonatal, post neonatal, infant, child, and under-five mortality rates for the 10-year periods preceding PDHS surveys by region, Pakistan 2012-13 are as follows;

Region	Survey	Approximate calendar years	Neonatal Mortality (NN)	Postneonatal Mortality (PNN)	Infant Mortality (1q0)	Child mortality (4q1)	Under-five mortality (5q0)
Punjab	2012-13 PDHS	2003-2012	63	25	88	18	105
	2006-07 PDHS	1997-2006	58	23	81	18	97
	1990-91 PDHS	1981-1990	58	46	104	32	133
Characteristic	Neonatal mortality (NN)	Postneonatal mortality (PNN)1	Infant mortality(1q0)	Child mortality (4q1)	Under-five mortality (5q0)		
Punjab	63	25	88	18	105		
Urban	50	17	67	11	78		
Rural	68	28	96	21	115		

The PDHS report indicates that the less than five years of age mortality rate in Punjab province is at an alarming top of 105 deaths per live 1,000 live births while the infant mortality rate is at 88 deaths per live 1,000 live births. Mortality trends can be examined in two ways: by comparing mortality rates for the three successive periods preceding a single survey or by comparing mortality estimates obtained from various surveys. The above mentioned table indicates a marked improvement from phase 1 to phase 2, however a decline is seen in the improvement made in phase 2 in the current survey of 2012 – 2013.

In addition below is the table showing the number of stillbirths and early neonatal deaths, and the perinatal mortality rate for the five-year period preceding the survey, by background characteristics, Pakistan 2012-13:

	Number of stillbirths	Number of early neonatal deaths ²	Perinatal mortality rate
Punjab	229	317	77

Source: PDHS 2012 – 2013

4.9 Percentage of Pre and Post Natal consultations in Punjab (PSLM 2010 – 2011):

Good prenatal care is essential to ensure not only the health of the mother, but the health and well being of the baby as well. Women who refuse prenatal care are much more likely to have low birth weight babies, premature babies, and babies that don't survive. Postnatal care visits on the other hand provide an ideal opportunity to educate a new mother on how to care for her and the new born baby:

PRE -NATAL CONSULTATION IN PUNJAB			POST-NATAL CONSULTATIONS IN PUNJAB	
PROVINCE	PERCENTAGE OF CASES		PERCENTAGE OF CASES	
	URBAN	RURAL	URBAN	RURAL
Punjab				
Pre - Natal Consultation	79	63	40	24
PERSON/FACILITY CONSULTED	4	8	6	20
Home TBA				
Home LHW	3	8	3	7
Home LHV	3	6	2	3
Home Doctor	2	1	3	1
Govt. Hospital/RHC/BHU	31	26	28	15
Private Hospital/Clinic	56	51	59	51
Other	1	1	0	1

According to PSLM report 2010-2011 urban population close to 79% reported for pre natal consultations and then the percentage was reduced to half i.e. 40% for post natal consultations. While only 63% of rural population reported for prenatal consultations which was later reduced to mere 24% for post natal consultations.

4.10 Percentage of Faculty Wise Deliveries (Federal Bureau of Statistics 2010 – 2011):

Proper medical attention and hygienic conditions during delivery reduce the risk of complications and infections that may cause death or serious illness for the mother, the baby or both. Hence an important component is to increase the proportion of babies delivered in a safe and clean environment under the supervision of a skilled health professional:

PROVINCE	PERCENTAGE OF CASES	
	URBAN	RURAL
Punjab		
PLACE WHERE CHILD WAS DELIVERED:		
Home	37	66
Govt. Hospital/RHC/BHU	20	8
Private Hospital/Clinic	43	26
Other	0	1

According to 2010 – 2011 statistics of Federal Bureau 43% of deliveries in urban areas were conducted in a private facility, 37% were delivered at home while only 20% headed towards the government facilities. Similarly in rural areas home delivery trend is at the top with 66% while 26% of the deliveries took place in private facilities and the least percentage was confined to government facilities i.e. mere 8%. The figures state that both the populations place the sole utilization of government facilities at the bottom.

4.11 Number of Deliveries Conducted by various Healthcare Service Providers i.e. Doctors, Nurse, TBA, SBA(PDHS 2012 – 2013):

Antenatal care from a skilled provider is important to monitor pregnancy and to reduce the risk of morbidity for mother and child not only during pregnancy but especially in the time of delivery. According to PDHS 2012-2013 below are the figures of deliveries conducted and post natal care sessions among women of 15-49 years of age, with a live birth in the five years preceding the survey:

Region	Doctor	Nurse/ Midwife/lady health visitor	Lady Health worker	Dai/ TBA	Other	Missing	Non ANC	% Receiving antenatal care from a skilled provider
Punjab	69.8	8.0	0.3	2.0	0.1	0.2	19.5	77.8
Urban	81.7	5.7	0.2	1.8	0.0	0.5	10.1	87.4
Rural	64.7	9.0	0.4	2.1	0.2	0.0	23.5	73.7

PDHS 2012-2013

According to the PDHS report 2012 – 2013 an average of 69.8% of deliveries in Punjab were conducted by a professional doctor while only 8% were delivered either by a nurse or a midwife. For deliveries conducted by doctors the percentage is 81.7% for urban population while 64.7% for rural population.

5. Barriers to Immunization being faced in Punjab Province:

According to United Nations Development Programme [UNDP] (2011), although the rate of child death have been falling but still the targets of Millennium Development Goals(MDGs) 2015 of reducing under 5 mortality to 52 per 1000 live births, are yet to achieve. Immunization coverage is facing serious challenges in Pakistan. The immunization coverage in Pakistan is not up to the desired level and requires more improvement^{xv}. After the devolution process there still are multiple reasons for the low immunization coverage in Punjab province. The issues of vaccine procurement, transport and administration, all contribute to low coverage^{xvi}. Social factors such as knowledge, attitude and practices of parents and patients are contributing to low inefficiency of immunization program^{xvii}. A few of the most common reasons are as follows:

5.1 Inadequate infrastructure:

Surveys have shown that vaccinating teams are not fully equipped with sufficient vaccines and ^{xviii}cold chains (Cold chains for vaccines is a system of storing and transporting vaccines at low temperatures to maintain their effectiveness before use). Vaccination centers are also situated at far flung areas. Vaccinators are also not provided with transport facilities such as motorcycles, bicycles etc. Also the number of vaccinators is also not sufficient (Faisal et al 2009).

5.2 Lack of serious policy implementation:

Currently, the National Expanded Programme on Immunization has been housed within the ministry of inter-provincial coordination at the federal level (Anita Zaidi 2012). According to the national policy, there should be a number of health centers for immunization but this number is not sufficient to cover the population. Overall there are 6000 EPI centers approximately one for about 27000 population (Anita Zaidi, Evaluation of GAVI support to civil society 2012). There are also lapses in keeping and validating records of immunization programmes. Sometimes policies are influenced politically and the influence is more prevalent at the time of hiring of staff for EPI programmes. Although Pakistan has made progress towards meeting MDG4 and MDG5 targets, progress has been insufficient and uneven and targets are unlikely to be met.

5.3 Lack of motivation of EPI Staff:

It has been observed that the service structure and salaries of vaccinators and other EPI staff is not sufficient. Many of the team members don't continue their jobs due to a great deal of dissatisfaction over the incentives and allowances offered: "I was only once given a bicycle allowance in my 20 years of service", a male vaccinator informed. Lady vaccinators talking about the service structure mentioned: "I was appointed in grade 5 and I am still serving on same position since the last 20 years. I think that I will retire at the same" (Nawab et al 2008. J Pak Med Assoc, vol 58). Apart from this, in-service training for routine immunization staff is not planned. Regular EPI budget from the government does not allocate funds for continuing education and in-service training (Masood and Navaratne 2012).

5.4 Problems with Outreach Capacity of vaccinators:

Many pockets of population go undetected due to the issue of mobility of vaccinators in hard to reach areas. A proper mechanism to access each and every targeted child is missing in the Provincial EPI strategy.

5.5 Lack of accountability:

One of the major reasons for the poor performance of Provincial EPI program is that it lacks accountability. In fact accountability has never been implemented to the initiative of EPI in its true spirit.

5.6 Cold Chain Maintenance of Vaccines:

Vaccines are sensitive biological substances and require a proper and effective temperature maintenance from manufacturing to transportation to storage but reports says that it there are serious concerns over cold chain maintenance in especially in rural areas where there are serious energy crises. This puts a question mark on the effectiveness of vaccines.

5.7 Lack of private sector involvement:

Immunization of all the children across Pakistan is too huge task to achieve by the government alone. So private sector institutions should be taken on board for the accomplishment of immunization goals set by Federal and Provincial EPI.

5.8 Lack of awareness and education:

Knowledge, attitudes and practices of parents and patients contribute to the success or failure of immunization programme. Low literacy rate in the rural and remote areas is the major cause of this lack of knowledge and awareness. Parents sometimes refuse to vaccinate their child due to possible side effects of vaccine such as rash and fever. They are not aware of the fact that these are the normal after effect of a vaccine which does not pose any danger to the child.

5.9 Attitude of Doctors in Healthcare Facilities:

A common complaint is that the health facility doctors do not refer the children to EPI centers for vaccinations or even they do not welcome EPI activities in their relevant health facilities.

6. Recommendations to increase Provincial EPI Performance:

The Provincial EPI needs drastic changes to improve its performance. This is a complex, multifaceted task. Some of the short- and medium-term key recommendations are summarized below:

6.1 Integration of Immunization services with Primary Health Care:

Devolution has provided an opportunity to the provinces for integrating routine immunization with any other PHC program. This can be integrated with maternal and child health (MCH), primary health care initiative (PPHI) or with a private sector immunization program.

6.2 Strengthening of interprovincial coordination and collaboration:

There is need to set the symmetrical targets and to adopt a balanced policy approach across and for it is recommended that inter provincial learning should be strengthened.

6.3 Need to perform an updated situational analysis of EPI in the province:

This assessment could include coverage, mapping of difficult-to-reach populations and fixed service points. The available human resources, logistical demands, funding, and demand aspects of the program should also be included. This assessment could be led and managed by the EPI Program Manager at the provincial level with technical assistance from development partners. This will help to identify the gaps and can suggest the best solutions for increasing the efficiency of EPI program of the province.

6.4 District wise EPI implementation plan:

After the situational analysis, district wise EPI implementation plan should be prepared and implemented as per the highlighted gaps.

6.5 Planning at Union Council Level:

For strengthening the ownership of program, the planning shift to UC level can improve the overall efficiency of Provincial EPI. Under this approach, the use of local knowledge will help to estimate the realistic figures for target children. The local teams should be provided with the appropriate capacity building trainings regarding the planning and its execution.

6.6 Role of Lady Health Workers:

Lady Health workers and female vaccinators are key to reach women and children in rural and remote areas where health care facilities are not in an easy access. Especially interior parts of Punjab there is an extreme shortage of female vaccinators due to strict practice of purdah within the region. Male vaccinators are also unable to access such households.

6.7 Role of Doctors and Pediatricians:

Doctors and pediatricians can also play a role in making routine immunization (RI) successful by educating their patients. It has been observed that doctors do not show any requisite interest in vaccination programmes. They don't refer eligible children to the EPI centers. (Nawab et al 2008. J Pak Med Assoc, vol 58).

6.8 Role of Political Leaders and Parliamentarians:

Political representatives of an area can play a vital role in making Routine Immunization (RI) successful. Unfortunately very little have been done on the part of local representatives in this regard.

6.9 Effect of NIDs on Routine Immunization:

During national immunization days (NIDs) most of the vaccinators and EPI staff remains busy with polio vaccination campaigns. It may have detrimental effect on Routine Immunization. Government has to take this serious issue in consideration to improve existing infrastructure. A good deal of attention has to be paid on regular training of EPI staff and vaccinators. A specific monitoring system should be launched to ensure the quality and proper storage of vaccines. The performance of the teams in relevant areas should also be monitored and a well-organized record should be maintained for future.

Although much work needs to be done in the field for full coverage, there remains a promising ray of light in the form of a united effort where the private sector joins hands with the public sector in this lifesaving drive. If the two sectors can join hands and implement workable strategies towards Routine Immunization, it is certain that the dream of a vaccine preventable disease free Pakistan will indeed come true.

6.10 Strengthening of fixed centers network:

The province should develop a comprehensive plan to expand the number of fixed centers to cover all communities. This could be coupled with a reorganization of outreach services to address hard-to-reach areas, especially in high-risk districts.

6.11 The logistics system should be improved:

Vaccine vial monitors and other cold chain monitoring tools should be introduced to improve the quality of the vaccines. Furthermore, vaccine procurement capacity and cold chain equipment maintenance as well as back-up power systems are all in need of improvements.

6.12 Leadership and Management Skills trainings for Managers:

Management qualifications should be mandatory for appointment to managerial positions. In-service management training for mid-level managers should be offered regularly and made mandatory for all levels of EPI managers. Funding for this course to be offered regularly in each

province should be sought either from the Government of Pakistan (GOP) or from development partners.

6.13 Increase and Remapping of Human Resource:

With devolution, the roles of the new federal EPI cell, provincial EPI cells, and of the district cells have changed. The units should assess their new roles, adjust the staffing structure and incentives, and retrain the staff where necessary to provide the services at each level.

6.14 Increased Supervision and Monitoring of EPI program:

EPI teams, including all members from top to bottom should encourage, preparing supervision and monitoring plans on monthly bases. District managers should monitor the implementation of the mentioned plans.

6.15 Utilization of LHWs in more effective manner:

LHWs originate from the communities they serve; their services are particularly valued in those areas. Therefore, as an initial phase, a remapping of LHWs should be conducted across the province, especially the uncovered rural and urban poor population areas. This task needs to be led by the provincial EPI manager with consultation of district managers.

6.16 Surveillance System of the EPI needs to be strengthened:

It is recommended that existing systems for assessing data quality, feedback, supervision, regular reviews, surveillance of VPDs, data reporting formats and methods for target population estimation should be improved.

6.17 Demand Creation for Immunization Services:

As the public regularly raises questions and concerns about the advantages of immunization, it is essential to provide accurate information to the communities on immunization. Therefore, it is recommended that increased efforts and additional resources are allocated at provincial level especially after devolution to educate the public about the benefits of routine immunization services.

7. Conclusion

Punjab at present exhibits relatively better health indicators in comparison to other provinces of Pakistan. However regardless of the devolution process and the application of the 18th amendment, Punjab's provincial health department has a long way to go as with autonomous powers comes great responsibilities. Hence the provincial department should make use of the autonomy and the available resources to conduct regular baseline surveys to monitor the health indicators of the province. Because there are still many discrepancies in the data quoted by the two most authentic documents i.e. PDHS and PSLM. It's the need of the hour to gather solid on ground facts for true actions to be implemented to bring about a noticeable change in the status of routine immunization in the province. Figures even indicate that there is a decline in the immunization coverage percentage in the urban areas of Punjab, an issue which also needs to be promptly addressed.

References;

- ⁱWorld Health Organization.State of the World's Vaccines and Immunization. Geneva: 2002.
- ⁱⁱWorld Health Organization.Expanded Programme on Immunization. Immunization policy: global programme for vaccines and immunization. Geneva: 1996. (WHOGPV/GEN/95.03 Rev.1).
- ⁱⁱⁱ Immunization in Pakistan, PILDAT 2010
- ^{iv} UNDP 2011
- ^v UNICEF 2009
- ^{vi} Ali SZ. Health for all in Pakistan: achievements, strategies and challenges. East Mediterr Health J 2000; 6:832-7.
- ^{vii} Khan MI, Ochiai RL, Hamza HB, Sahito SM, Habib MA, Soofi SB et al. Lessons and implications from a mass immunization campaign in squatter settlements of Karachi, Pakistan: an experience from a cluster-randomized double-blinded vaccine trial. Trials 2006; 7:17.
- ^{viii} Ahmad N, Akhtar T, Roghani MT, Ilyas HM, Ahmad M. Immunization coverage in three districts of North West Frontier Province (NWFP). J Pak Med Assoc 1999; 49:301-5.
- ^{ix}Mansuri FA, Baig LA. Assessment of immunization service in perspective of both the recipients and the providers: a reflection from focus group discussions. J Ayub Med CollAbbottabad 2003; 15:14-8.
- ^x Punjab Health department, http://health.punjab.gov.pk/?q=Punjab_Health_Profile (Last accessed on Feb 3,2014)
- ^{xi}<http://health.punjab.gov.pk/?q=Reports> (Last accessed on Feb 3, 2014)
- ^{xii}Low immunisation rate: 2013 notified as Routine Immunisation Coverage Year, <http://tribune.com.pk/story/478860/low-immunisation-rate-2013-notified-as-routine-immunisation-coverage-year/>
- ^{xiii} Based on recall: Children reported as having received at least one immunization expressed as a percentage of all children aged 12-23 months.
- ^{xiv}Based on record: Children who reported having received the specified immunisation who also have an immunisation card, expressed as a percentage of all children aged 12-23 months.
- ^{xv}Loevinsohn B, Hong R, Gauri V. Will more inputs improve the delivery of health services? Analysis of district vaccination coverage in Pakistan.Int J Health Plann Manage 2006; 21:45-54.
- ^{xvi}Petrovic V, Seguljev Z, Gajin B. Maintaining the cold chain for vaccines. Med Pregl. 2005; 58: 333-41.
- ^{xvii}Anjum Q, Omair A, Inam SN et al. Improving vaccination status of children under five through health education. J Pak Med Assoc 2004; 54: 610-3.
- ^{xviii}