Women and Children's Health

An In-depth Analysis of 2006-07 Pakistan Demographic and Health Survey Data

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NATIONAL INSTITUTE OF POPULATION STUDIES (NIPS)

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Foreword

The 2006-07 Pakistan Demographic and Health Survey (PDHS) was designed to provide data for monitoring the population and health situation in Pakistan. The objective of the survey was to provide up-to-date information on fertility, family planning, childhood mortality, infant and child feeding practices, maternal and child health, maternal mortality and HIV/AIDS-related knowledge and behavior. The main report of PDHS has already been published in 2008.

NIPS' staff has been involved in carrying out research since long. A need was felt to make this research more meaningful, realistic and practical. Taking this agenda forward, an in-depth analysis of 2006-07 PDHS data has been carried out by NIPS' Researchers.

The papers in this book mirror the women and children's health in this country. The findings of these papers are not only interesting but also revealing. I am sure that these thought provoking findings will open avenues for researchers to work on. These findings will surely benefit all the stake holders.

The untiring efforts of all the writers and contributors of these papers are highly commendable. I am highly indebted to the relentless efforts of Syed Mubashir Ali, whose valuable guidance made it possible for the researchers of NIPS to work on in-depth analysis for the first time and produce high quality papers. I am thankful to the ABT/USAID, TACMIL Health project for providing the services of Syed Mubashir Ali for this project.

NIPS is also grateful to Macro International for providing the services of Dr. William Winfrey and Ms. Sarah Bradley who visited NIPS for a week and provided the Researchers with valuable technical support, during one on one sessions with the researchers.

Finally, I would like to thank and appreciate Mr. Faateh ud din Ahmad, Computer Programmer for his technical support during the analysis and Mr. Amanullah Bhatti, Director (Research and Surveys), for his patronage of the project, right from its inception to completion.

Dr. Sajid Ahmad
Executive Director
December, 2009

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Unintended Pregnancy and Antenatal Care in Pakistan

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1. Introduction

In recent years unintended pregnancy has appeared as an important public health concern in both developed and developing countries because it is not only distressing for the affected women, but can also have far-reaching health, social and economic consequences. Women who experience mistimed and unwanted pregnancy are less likely to seek antenatal care or seek it later during pregnancy than those whose pregnancies are planned. Unintended pregnancies are more likely to result in unsafe abortion and low birth weight (Islam and Rashid, 2004)

For developing countries, the Demographic and Health Surveys have provided a major database to carry out studies related to the topic under study, unintended pregnancy and use of antenatal care. Pregnancies (or births) are classified as intended if they were wanted at the time they occurred. An unintended pregnancy is defined as one that occurred sooner than wanted or was not wanted at all. Unintended pregnancies are associated with age, early marriage, spousal age difference, number of living sons, past unintended pregnancy, geographical region, contraceptive use prior to pregnancy, contraceptive supply (Che and Cleland, 2004)

The consequences, for the child and the family, of unintended pregnancy has attracted research interest both in the United States and in developing countries. The consequences of unintended pregnancy are of particular concern in Pakistan because levels of unintended pregnancy have risen in recent years. Overall 24 percent of births in the five years period preceding the Pakistan Demographic and Health survey 2006-07 were not wanted at the time of conception with 13 percent wanted at the later time and 11 percent not wanted at all. The proportion of births that are mistimed or not wanted at all at the time of conception increases sharply with birth order ranging from 5 percent of first births to 37 percent of fourth and higher births. The proportion of births considered mistimed or unwanted has also increased overtime slightly, from 21 percent to 24 percent since the 1990-91 PDHS. (Ali and Ahmad, 2008) Nevertheless, there has been a significant improvement over the past ten years in the proportion of mothers who received prenatal care from a skilled health provider, increasing from 33 percent in 1996 (Hakim et al., 1998) to 43 percent in 2001 (NIPS, 2001) to 44 percent in 2003 (NIPS, 2007) to 61 percent in 2006-07. (Zafar and Cross, 2008)

Prenatal care is important for the health of mother and child. It refers to pregnancy related health care checkups provided at a medical facility or at home. Ideally prenatal care comprises at least four visits and includes monitoring the pregnancy, for signs of complication; detection and treatment of pre-existing and concurrent problems of pregnancy such as anemia; provision of advice and counseling on preventive care, diet during pregnancy, and encouragement of institutional delivery by trained health care personnel and counseling on use of family planning. Under the National Health Policy prenatal care should include provision of iron supplements folic acid supplements two doses of tetanus vaccine blood pressure measurement and identification of reproductive tract and sexually transmitted infections. (Zafar and Cross, 2008)

This paper will assess the relationship between unintended pregnancy (both unwanted and mistimed) and use of antenatal care among women in Pakistan. Whether women with planned pregnancy are more likely to receive antenatal care (ANC) visits to any health provider than women with unintended pregnancy (unwanted and missed timed). We also investigate the other socio-economic and demographic factors that affect the use of antenatal care.

2. Literature Review

Unintended pregnancy is a concern from both a human rights and a public health perspective. At the 1994 International Conference on Population and Development (ICPD) held in Cairo, the Programme of Action stated that "couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so" (ICPD 1994: Principle 8). A similar sentiment emerged from the Committee on Unintended Pregnancy of the Institute of Medicine. In 1995, the committee concluded "the consequences of unintended pregnancy are serious, imposing appreciable burdens on children, women, men, and families" (Brown and Eisenberg, 1995:1).

The effects of unintended pregnancy may extend beyond the index pregnancy or child to other siblings or to parents. In some contexts, specific children may be considered unwanted according to their sex or birth order (for example, the youngest daughter), and may be particularly likely to suffer neglect or maltreatment (Das Gupta, 1987). Although son preferences may

be the best-documented manifestations of this phenomenon, "differential care can proceed against any less desirable child, as moderated by family circumstances and existing family composition" (Levine, 1987:282).
Overall, findings (for example, those of Lloyd, 1994) highlight the importance of considering the potential interaction between family size and pregnancy intention and of accounting for contextual factors, and aspect that has received only limited attention in studies assessing the impact of unintended pregnancy on health outcomes.

Numerous United States and European studies have found a significant positive association between pregnancy intention and delayed initiation of antenatal care and/ or decreased number of antenatal care visits (Weller et.al. 1987; Sable et al. 1990; Bitto et al. 1997; Joyce et al. 2000; Pagnini and Reichman 2000; Koreman et al. 2002;). However, inconsistent or no effects were also found in a few studies, (Joyce and Grossman 1990; Altfeld et al. 1997; Joyce et al. 2000). Comparisons among studies are complicated by the variety of ways in which antenatal care is measured: whether the woman sought any antenatal care, whether she initiated care before the first or second trimester, or whether she obtained a certain number of visits.

Developing country studies on pregnancy intention and antenatal care have yielded inconsistent results. Some studies have found a positive association between unintended pregnancy and antenatal or delivery care (Eggleston 2000; Magadi et al. 2000), and others have found no association or mixed effects (Gage, 1998; Marston and Cleland, 2003). Most of these studies were based on DHS data and, therefore, relied on women's retrospective recall of the timing of their antenatal care visits and on their retrospective assessments of pregnancy intention.

Two studies using DHS data from sub-Saharan Africa explored the relationship between pregnancy intention and initiation of antenatal care and total number of antenatal visits. Data from Kenya showed that women experiencing unwanted or mistimed births had, on average, fewer antenatal care visits and were more likely to delay the timing of the initial visit than women with wanted births (Magadi et al., 2000).

A study conducted in the state of Missouri found that women who felt "unhappy" when they discovered they were pregnant were 40% less likely to receive adequate prenatal care than women who were happy to be pregnant. Adequate prenatal care was defined in terms of both timely initiation of care

(In the first 4 months of pregnancy) and number of visits (eight or more for a pregnancy over 36 weeks) (sable, stockbauer, schramm and land, 1990).
The three United States studies reviewed concerning maternal risk behaviours also considered pregnancy intention and antenatal care. Joyce and his colleagues' while analysing (2006) NLSY data showed significant effects between intentions and antenatal care in cross-sectional models, but these effects diminished once observed family-background variables and fixed-effects models were used. Marginally significant effects were found indicating that women with unwanted pregnancies were more likely to receive later antenatal care (at six months' or longer gestation), compared with women who experienced wanted pregnancies. Koreman and his colleagues (2002) found more persistent effects on antenatal care.

The above related review of literature does not point out a clear cut direction of relationship between pregnancy intention status and antenatal care. Most of the studies found that either unintended pregnancies were associated to lower levels of ANC use or there was no association. A framework for determining and measuring the pathways between unintended pregnancy and utilization of antenatal care must be outlined. The review highlights persistent gaps in the literature, indicating a need for more studies in developing countries and for further research to assess the impact of pregnancy intention status on antenatal care and long-term health outcomes. The challenges in measuring and assessing these health impacts are also need to be discussed, highlighting avenues in which further research efforts could strengthen existing knowledge.

3. Data and Methodology

The analysis for this study uses the data of the Pakistan Demographic and Health Survey (PDHS) 2006-07. In this nationally representative survey a total of 10601 women were identified as eligible women of that 10023 were interviewed.

Pregnancy intention status in Pakistan was determined by asking women to recall their feeling at the time they became pregnant. Women were asked, "At the time you become pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you not want to have any (more) children at all". Pregnancy that was wanted at the time of becoming pregnant was categorized as a planned pregnancy. If the woman

wanted to wait until later, her pregnancy was considered mistimed. An unwanted pregnancy was the one that was not wanted at all.

Studies of the effects of unintended pregnancy are highly reliant on the way intentions about pregnancies are asked to women. It is true that the retrospective measure of pregnancy intention status used in this study may not reflect the true intentions at the time she become pregnant. A woman's attitudes at the time of conception may change over the ensuing weeks with concomitant effects on her behaviour during pregnancy. Moreover, women may not wish to report a conception as unwanted or mistimed after the child that resulted has become a loved member of the family. However, if a woman did report unintended or mistimed pregnancy as planned, this measurement error is likely to bias the analysis i.e. to under estimate the proportion of pregnancies that are unintended and their effects on prenatal care use. Hence readers are cautioned about the interpretation of the findings ensuing out of this analysis.

The ANC utilization variable in this study refers to the provision of antenatal care to women during pregnancy by either antenatal care visits to a skilled provider (Doctor and Nurse/ midwife/ Lady health visitor) or other ANC providers (Dai, Lady health worker, Hakim, Dispenser/Compounder) etc.

The analysis is based on simple cross-tabulation in the form of bivariate tables. The cross-tabulation is used to show unadjusted geographical, socio-cultural, economic, and demographic differential of antenatal care utilization during pregnancy. The OLS Multiple Regression analysis is used to test the statistical significance of each independent variable on the dependent variable -number of ANC visits (0-20) during last pregnancy represented here in terms of proportion to the highest number of visits made - to identify the use of Antenatal Care during unintended pregnancy. The independent variables included; Pregnancy intention status and Region of residence, availability of any health facility within a radius of 5 km is used as dummy variables where planned pregnancy, province of Punjab and any health facility not available within a radius of 5 km are used as reference category in the regression equation. The variable of health facility is included in the regression analysis in order to control the effect of availability of source of treatment in the urban and rural community. Four binary variables for all the four categories of wealth quintile are used in the regression equation and poorest wealth quintile is the reference category. Number of previous births, mother's education and husband's education are taken as interval scale variables.

Husband's education is included in the regression equation mainly because it is presumed to have an effect on decision-making in the male dominated Pakistani society. In Pakistan most of the decisions, particularly those of vital importance such as taking wife to the doctor for treatment, is the responsibility of a male household member or husband (Ali, 2000).

Current working status of the women -- an indicator of financial autonomy is included as dichotomous variables. Women with no current working status used as reference category in the regression equation.

The sample is limited to women whose last pregnancy ended in 2001 or later. To control for non-independence of pregnancy to the same mother, a woman is represented only once in sample. Only the most recent pregnancy per woman was included. All analyses incorporated sampling weight to take unequal probabilities of selection into account.

4. Pregnancy intention status and background characteristics

Table 1 presents women's pregnancy intention status and background characteristics. Approximately 14 percent of women reported that their last pregnancies were unwanted and 13 percent said their pregnancies were mistimed while most of the women (73 percent) considered their pregnancies planned. Just over half the women (52 percent) in the study were between 25 and 34 years old at the time of their last birth/ pregnancy. Prior to their most recent pregnancies one third (34 percent) of the women had two or three previous births. About half (49 percent) had given birth to four or more children.

Table 1: Percent distribution of women age 15-49 who had a live birth in the five years preceding the survey for the last birth by pregnancy intention status and background characteristics, Pakistan 2006-2007

Background characteristic		Percent distribution	Total Number
Pregnancy intention status	Planned	73.2	4077
	Mistimed	13.1	729
	Unwanted	13.8	766
Mother's age at last birth	<25	23.6	1315
	25-34	52.1	2903
	35 +	24.3	1353
No. of Births	1	17.0	945
	2-3	34.0	1893
	4-5	24.5	1365
	6+	24.6	1369
Health Facility within 5 K.m	Not Available in Rural Areas	9.0	500
	Health Facility Available in Rural Areas	60.8	3389
	Health Facility Available in Urban Areas	30.2	1682
Province	Punjab	56.2	3133
	Sindh	24.7	1378
	NWFP	14.6	813
	Balochistan	4.5	248
Mother's education	No education	65.2	3635
	Upto primary (1-5)	14.5	806
	middle (6-8)	6.2	346
	secondary (09-10)	8.1	450
	Secondary + (11+)	6.0	335
Wealth quintile	Poorest	22.6	1261
	Poorer	21.1	1175
	Middle	19.4	1080
	Richer	18.7	1045
	Richest	18.1	1011
Working status	Currently Working	24.7	1374
	Not Working	75.3	4198
Total Number of Observations			5572

Overall, nine-tenth of the Pakistani women have an access to a health facility within 5 kilometers radius while for 9 percent women access to a health facility was beyond 5 kilometers radius. More than half (56 percent) of the women were from Punjab, one fourth (25 percent) were living in Sindh, 15 percent from NWFP and only five percent were from Balochistan. Majority of the women (65 percent) were uneducated, 15 percent had education up to primary, 6 percent attained middle level education and 8 percent secondary

and higher education and about one-fourth of the women are currently working.

4.1 Antenatal Care Visits

The World Health Organization (WHO) recommends that a woman without complication have at least four visits to provide sufficient prenatal care. It is possible during these visits to detect health problems associated with a pregnancy. In the event of complication, more frequent visits are advised and admission to a health facility may be necessary.

The percentage of women who made four or more prenatal care visits during their pregnancy has increased during the last ten year from (16 percent) in 1996 (Hakim et al., 1998) to (24 percent) in 2003 (NIPS, 2007) to (28 percent) in 2006-07. (Zafar and Cross, 2008).

Table 2: Percentage of women age 15-49 who had a live birth in the five years preceding the survey by receiving at least 4 and more antenatal care (ANC) visits, for the most recent birth by Pregnancy intention status and background characteristics, Pakistan 2006-2007

Background characteristic		Received at least 4 and more ANC visits	Number of Women
Pregnancy intention status	Planned	28.0	4076
	Mistimed	34.4	729
	Unwanted	28.0	766
Mother's age at birth	<25	27.9	367
	25-34	32.1	933
	35+	22.7	307
No. of Births	1	38.1	945
	2-3	32.5	1893
	4-5	26.7	1365
	6+	19.6	1369
Health Facility within 5 K.m	Not Available in Rural Areas	12.0	500
	Health Facility Available in Rural Areas	21.2	3389
	Health Facility Available in Urban Areas	49.2	1682
Province	Punjab	29.8	3133
	Sindh	36.8	1378
	NWFP	18.2	813
	Balochistan	7.8	248
Mother's education	No education	17.8	3635
	Up to primary (1-5)	32.5	806

Background characteristic		Received at least 4 and more ANC visits	Number of Women
	Up to middle (6-8)	48.7	346
	Up to secondary (09-10)	61.5	450
	Secondary + (11+)	76.0	335
Wealth quintile	Poorest	10.3	1261
	Poorer	14.6	1175
	Middle	22.3	1080
	Richer	39.2	1045
	Richest	64.9	1011
Mother's working status	Currently Working	22.7	1373
	Not working	31.1	4198
Total Number		29.1	5572

In bivariate analysis women with mistimed pregnancies are more likely (34 percent) to have visited any health facility for at least 4 or more ANC visits for their last birth as compared to those whose pregnancies were wanted then or unwanted at all. However, some differentials in the utilization of ANC visits are observed in the women of middle age group (25-34 years) who are more likely (32 percent) to have received ANC while this proportion has decreased (23 percent) for women who are 35+ years of age. More over, women with higher parity, having no health facility available in rural areas within 5 K.m, residence in Balochistan, having no education, poorest wealth quintile and currently working appeared to be less likely to use Antenatal care but the differences appear largest by education and wealth status.

5. Source of Antenatal Care

"Prenatal care is important for the health of mother and child. It refers to pregnancy related health care checkups provided at a medical facility or at home. About two third (64.6 percent) of the Pakistani women receive antenatal care during their last pregnancy. Sixty-one percent of mothers receive prenatal care from skilled health providers that is from a doctor, nurse, midwife, or lady health visitor". (Zafar and Cross, 2008).

Fifty-eight percent of mothers receive ANC from doctors, 6 percent from Nurse/Midwife/LHV. Only 4 percent of women receive ANC from a traditional birth attendant (Dai). In addition, 2 percent of mothers receive prenatal care from a lady health worker, homeopath, hakim, dispenser, compounder. Thirty-three percent of women receive no ANC at all.

A higher proportion (56 percent) of women with planned pregnancies received ANC from doctors than the women with unwanted pregnancies (52 percent). Younger mothers (less than 35 years) are more likely to receive ANC from skilled health providers (doctors, nurse/midwife/LHV) than older mothers (age 35+ years). Mothers are also much more likely to receive care from skilled health providers for their first birth (76 percent) than for births of order six and higher (51 percent).

There are large differences in use of ANC services between urban and rural women according to the availability of health facilities within 5 K.m. Urban women having health facility in urban areas are more likely to receive ANC from skilled health providers (74 percent form doctors and 6 percent from nurse/ midwife/LHV) compared with rural women having health facility (50 percent from doctors and 7 percent from nurse/midwife/LHV).

Table 3: Percentage of women age 15-49 who had a live birth in the five years preceding the survey by antenatal care (ANC) provider during pregnancy for the most recent birth, according to pregnancy intention status and background characteristics, Pakistan 2006-2007

Background Characteristics		Doctor	Nurse/ Midwife/ LHV	Dai/ TBA	LHW	Homeopath	Hakim	Dispenser/ Compounder	Other	No one	Number of women
Pregnancy Intention Status	Planned	56.1	5.0	3.6	.9	.1	.1	.7	.2	36.3	4077
	Mistimed	60.5	10.1	2.9	1.1	.2	.2	1.1	.2	28.2	729
	Unwanted	51.9	9.2	5.7	1.4		.4	1.1	.3	35.3	766
Age	< 25	57.4	7.2	5.1	.9	.1		.9	.3	32.3	1315
	25 - 34	60.2	6.4	3.5	1.2		.2	.8	.3	31.3	2903
	35 +	46.0	5.0	3.2	.6	.2	.2	.7	.1	46.1	1353
No. of previous births	1	69.6	6.1	5.2	1.2			.6	.2	21.6	945
	2 - 3	60.9	6.4	3.1	.9	.1	.0	.9	.4	30.4	1893
	4 - 5	51.6	5.7	4.7	1.3		.2	.9	.1	38.6	1365
	6+	44.5	6.6	2.8	.9	.2	.3	.7	.1	47.5	1369
Availability of Health Facility within 5 K.m	Not Available in Rural Areas	40.6	1.4	5.4	1.8	.0	0.2	0.0	0.0	52.6	500
	Available in Rural Areas	49.5	7.3	3.2	.8	.0	0.1	1.1	0.3	41.4	3390
	Available in Urban Areas	73.9	5.5	4.5	1.3	0.1	0.1	0.4	0.2	17.3	1683
Region	Punjab	54.8	8.1	4.8	1.4	.1	.2	1.1	.4	33.9	3133
	Sindh	68.1	3.1	2.4	.4			.3		27.3	1378
	NWFP	46.7	5.4	1.4	.9		.1	.7	.2	46.2	813
	Balochistan	35.5	2.8	6.3	.5		.1	.2		57.5	248
Education	No education	45.3	5.9	4.1	.7	.1	.1	.9	.2	45.8	3635
	Up to primary	65.6	7.2	5.1	1.9			.8		23.6	806
	Up to middle	74.7	8.6	1.5	1.4		.2	1.5	.2	16.2	346
	Up to secondary	84.4	6.0	2.5	1.8	.3	.2	.5	.5	7.5	450
	Secondary+	92.3	5.3	1.1	.7				.5	3.3	335
Wealth index	Poorest	34.3	3.1	3.2	.6		.3	.7	.1	59.9	1261
	Poorer	42.9	6.4	3.8	.5			1.3	.4	47.5	1175
	Middle	53.3	10.2	5.0	1.5	.1	.2	.9	.2	33.4	1080
	Richer	68.2	7.2	4.7	2.1	.3		.9	.1	20.7	1045
	Richest	88.9	4.7	2.3	.4		.1	.2	.3	6.5	1011
Current work status	Currently working	51.5	6.0	3.5	.6	.1	.2	1.3	.4	40.1	1374
	Not working	57.6	6.3	3.9	1.2	.0	.1	.6	.2	33.5	4198
	Total	58.2	6.1	3.7	1.1	0.1	0.1	0.8	0.2	33.2	5572

Noticeable differences are found in use of ANC services by provinces. About two third of the women in Sindh (71 percent) are more likely to receive ANC services from skilled health providers than the women residing in Balochistan (38 percent).

The use of ANC services from skilled providers (doctors/nurse/ midwife/ LHV) is strongly related to mother's level of education. Women with higher education are almost twice as likely to receive ANC from skilled providers (98 percent) than women with no education (51 percent). Similarly, women

Table 4: Estimated Regression Equation for the Utilization of Antenatal Care Dependent Variable "Received Number of Antenatal Care Visits during last Pregnancy "

Explanatory Variables	Coefficients	95 Confidence Interval for B	
		Lower Bound	Upper Bound
Pregnancy Intention Status Planned (Reference)			
Miss timed	.174	-.056	.405
Un wanted	.439**	.191	.687
No. of Births	-.087***	-.121	-.053
Mother's education	.161***	.136	.187
Husband's education	.039***	.020	.057
Province Punjab (Reference)			
Sindh	.070***	.515	.899
NWFP	-.420***	-.652	-.188
Balochistan	-.646**	-1.032	-.260
Wealth quintile Poorest (Reference)			
Poorer	.378**	.138	.618
Middle	.710***	.453	.967
Richer	1.508***	1.224	1.793
Richest	2.522***	2.175	2.868
Working status No work (Reference)			
Currently Working	-.022	-.208	.165
Availability of Health Facility within 5 K.m Not Available in Rural Areas (Reference)			
Available in Rural Areas	.315*	.032	.598
Available in Urban Areas	.665***	.334	.995
Adjusted R square	0.271		
F	139.176		
S.D.	2.90		
N	5572		

Note: *** Significant at < .001 level
** Significant at .001-.01 level
* Significant at > .01-.05 level

6.2 Number of Births

Number of total births is also an important factor that affects received ANC visits. As expected the parity of women is found to be highly significant and inversely associated with utilization of ANC.

In our society, it is generally considered that a woman who has given birth to 2 or more children does not require ANC visits as she has already previous experience of pregnancy and childbirth. Thus an inverse association with ANC is an expected out come.

6.3 Mother's Education

The "mother's education" has been established as one of the strongest and important predictor of demographic behaviour in Pakistan (Ali, 2000).

As expected, mother's education is found to have positive and highly significant association with dependent variable i.e. number of ANC visits. The magnitude of the coefficient is also substantially high. This out come emphasises the importance of imparting education among females.

6.4 Husband's Education

Husband's education is another factor that affects the use of ANC during pregnancy, because Pakistan is a male dominated society and mostly men are the decision makers in the family. Thus, utilization of ANC by women becomes dependent on the will of husband. Nevertheless, it is expected that educated husbands behave differently than their uneducated counterparts. In view of this situation husband's education is included in the regression equation. The results show that husband's education is positively associated and has statistically significant effect on the number of ANC visits.

6.5 Region of Residence

The regression results show that Sindh emerges as having not only highly significant positive association but its relationship is found to be stronger for women living in this region than those living in other provinces. It is observed that provinces of NWFP and Balochistan are less developed than the province of Punjab. The regression results show that NWFP and Balochistan are significantly and inversely associated with received number of antenatal care visits but the magnitude of co-efficient is smaller than Sindh.

6.6 Wealth Quintile

The regression results show that as compared to women living in poorest household, the ones living in poorer households are more likely to visit health providers for antenatal care. This relationship is also statistically significant. The women belonging to other three categories, i.e. middle, richer and richest economic status yielded a stronger association with receiving more ANC visits during their last pregnancy. This is evident from not only significance level but by the large magnitude of coefficients as well. This

outcome reemphasizes the importance attached to ANC visits among high economic status women.

7. Work Status

As expected mother's employment has no impact on the use of ANC. "A working mother in Pakistani society is the busiest person. She is not only devoting time to work that is gainful, but also busy with household chores" (Ali, 2000). In this situation, she is the one who suffers the most. In bivariate analysis this negative association was also observed. However, regression result shows that female labour force participation is statistically not significant.

7.1 Availability of Health Facilities

"There is a wide range of distance in the availability of services in rural area. As might be expected, the vast majority of rural households are 10 or more kilometers from the district headquarters, hospital ambulance service, ultrasound services for pregnant women, a functioning maternal and child health center. Rural health centres and family welfare centres are also not likely to be in close proximity of rural households. In fact, the most available health-related personnel are dais (traditional birth attendants), dispensers/compounders, hakeems and homoeopaths" (Sheraz and Zahir, 2008). Nevertheless, in urban centres, availability of health provider is taken as within 5 kilometers.

The addition of community variables related to availability of health providers within 5 kilometers in the regression equation emerged as statistically significant and yields a positive association with the dependent variable. However, the magnitude of coefficient is not large. Availability of health facilities in urban areas emerges as a positive and highly significant variable affecting the utilization of ANC through visits to health providers.

8. Summary and Conclusion

Prenatal care is more beneficial in preventing adverse pregnancy outcomes when it is sought early in the pregnancy and is continued through to delivery. In Pakistan the most common reason of not using the ANC is lack of concern. "Almost three quarters of the mothers did not consider having a

check up to be necessary. The next second most commonly cited reason (30 percent) is that prenatal care costs too much". (Zafar and Cross, 2008).

This study reveals that women with unwanted pregnancies are significantly, and positively associated with number of ANC visits. However, the analysis did not show a significant impact of mistimed pregnancy on the number of ANC visits.

In case of planned pregnancies women are less likely to receive antenatal care visits than women with unintended pregnancies. Probably for them conception according to their plan and on a proper time is enough for the safety of mother and child health and hence they become complacent about visiting health care facility. On the other hand women, who become pregnant against their wish, accept it as God's will and pay adequate attention to that pregnancy as well as their own health by visiting health care facilities for ANC.

Parity of women exhibited a highly significant negative effect on the received number of ANC visits. As the analysis shows that by far the most important factors are mother's education and wealth status that has a highly significant and positive impact on the received number of antenatal care visits. Punjab and Sindh has also highly significant and positive effect on the received number of antenatal care visits while NWFP shows not significant yet positive effect on ANC visits.

The analysis did not show a significant impact of work status on the number of ANC visits among women who received ANC during their last pregnancy.

The relationship between social and demographic characteristics and antenatal care use suggests the need for attention by providers and programme planners to social and demographic factors that influence women's use of ANC during intended and unintended pregnancy. Although the potential of bias in the measurement of pregnancy intention status cannot be ruled out, yet, the findings of this study highlight that expanding access to education and improving the economic status are the major ways to help women for utilization of ANC. There is also a need to inform mothers and families about the availability and benefits of prenatal checkups in order to help overcome traditional attitudes and other hurdles that prevent mothers from seeking prenatal care. Further research investigating the cultural and

psychological factors associated with both pregnancy intention status and use of antenatal care services is also needed.

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2

Maternal Mortality

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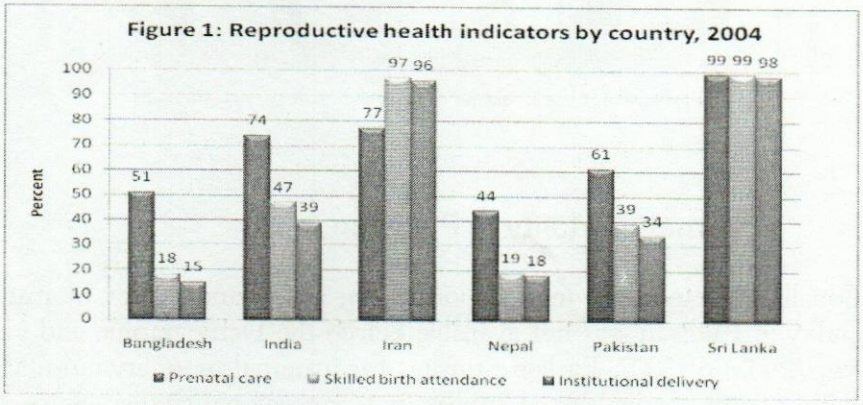
1. Introduction

Immediately after independence in 1947, the Government of Pakistan focused its efforts on improving the health of the mothers and children. Pakistan was among the pioneers in the developing world to introduce national programs in maternal and child health (MCH) and family planning. However, the pace of development in the social sector could not be maintained over decades of political instability within the country and perpetually volatile geopolitical situation outside the country. Paucity of sincere leadership at the national and local levels, bad governance, lack of accountability in the public sector and flawed planning and poor implementation of programmes are the most important reasons for Pakistan's lagging behind its neighbors in terms of social and economic development. Unfortunately, the health and education sectors seem to be the most affected of all.

Ranking 136 on the UNDP Human Development index, Pakistan faces high child and maternal mortality and high population growth (WHO 2008). Pakistan's population currently is over 160 million with 60 percent of the population living in underserved rural areas. According to PDHS 2007, 1 in 89 women die of maternal causes with a mortality ratio of 276 per 100,000 live births. Among women age 15-49 years, complications of pregnancy and child birth are the leading causes of death, accounting for 20 percent of all deaths for women of child bearing age. With a current fertility rate of 4.1 per women, annual growth rate of 1.8 percent and contraceptive prevalence rate of less than 30 percent (PDHS 2007), it seems unlikely that population growth rate would decline significantly in the near future.

A comparison of data from Pakistan's Demographic and Health Surveys of 1991 and 2007suggests that there has been some progress in the women's health indicators over the last two decades. For example, life expectancy for females (68 years) finally surpassed that for males (64 years); total fertility rate (TFR) declined from 5.4 to 4.1. It is also observed that more women started using prenatal care services and health facilities for delivery. Unfortunately, the rate of progress was much slower in the rural areas and in Balochistan province. Finally, regional studies and indirectly derived estimates suggest that there is no indication of a significant decline in maternal and newborn mortality during this period.

access to these services are likely to have a healthy pregnancy and a healthy baby. In civilized societies, great emphasis is placed on maternal health and good quality health care is provided to women during pregnancy and childbirth. In Pakistan two-thirds of the births occur at home and 60 percent of births are not assisted by skilled birth attendants. Moreover, about 80 percent of maternal deaths occur due to the first two delays. In this regard, Pakistan is behind India, Iran and Sri Lanka although a little better than Bangladesh and Nepal (Figure 1).



Between 1991 and 2007, Pakistan has recorded significant increase in the use of maternal and child health services, both in urban and rural areas (Figure 2). Unfortunately, this increase has not yet translated into a significant reduction in neonatal mortality - deaths among newborn children. Pakistan's neonatal mortality rate has remained unchanged since 1991 (was 53 in 1991 and 54 in 2007). Does this indicate that the progress in the country during this period, if any, has completely bypassed the mothers and newborns?

It is a proven fact that when women have universal access to prenatal care and skilled birth attendance, they remain healthy during pregnancy and childbirth. As a result, the newborn babies are also healthy and their chances of survival are high. Neonatal mortality rate (number of deaths of children within first month of life, out of each 1000 births) is a sensitive indicator of the quality of health services available to mothers and newborns. Unfortunately, Pakistan's neonatal mortality rate is the highest among its neighbors (see Table 1) in spite of the fact that more women in Pakistan use prenatal care and skilled birth attendance except Bangladesh and Nepal.

within each district where the survey was conducted. It could be assumed that MMR is lower in the Punjab province and in the urban areas of Pakistan; therefore, the national level figure of MMR ought to be significantly lower than 392. In 2002, the National Committee on Population and Reproductive Health Indicators deliberated on deciding upon a reasonably accurate estimate of MMR for Pakistan. After reviewing all available evidence, the Committee recommended to use a range of 350-400 for the period 2002-2003. Also in 2002, a study using the MIMS data in mathematical models to extrapolate the number of maternal deaths in Pakistani districts estimated the national level MMR at 279 (PDHS, 2007).

Table 2 presents a summary of the national MMR estimates for Pakistan since 1980.

Table 2: National estimates of MMR for Pakistan

Source	Year of study/estimation of MMR	Method of estimation	MMR (per 100,000 live births)
UNICEF: State of the World's Children	1980-1995	Unknown	500
UNCEF/WHO: Progress of the Nations	1996	Mathematical modeling	340
Hill et al., (Bulletin of WHO)	1998	Mathematical modeling	201
National Institute of Population Studies	Ca. 1991	Sisterhood method	533
Midhet, F. 2002	Ca. 1991	Mathematical modeling	279

In this chapter, we present an in-depth analysis of the maternal mortality data from Pakistan's Demographic and Health Survey of 2007. We look into the levels of maternal mortality and how they vary between provinces and between urban and rural areas. We also describe the causes of maternal deaths and the role of the three delays in the causation of maternal mortality. Finally, we examine the individual-level and contextual risk factors associated with maternal mortality. The primary objective of the present study is to identify – indirectly from the Pakistan DHS 2006 – the important risk factors associated with maternal mortality in Pakistan, including biological and socioeconomic risk factors. In addition, the effect of community-level variables (such as accessibility of healthcare, transport and telecommunication) on the risk of maternal mortality is also estimated.

survey. Eligible respondents were next of kin of the deceased woman who were present during the latter's fatal illness and also at the time of death. Interviews were attended by more than one respondent, although a primary respondent was identified by the interviewer.

3. Assignment of the cause of death to each VA questionnaire by a panel of experts: Each completed VA questionnaire was reviewed by three experts, including two obstetricians and one general physician, each of whom independently assigned a cause of death. The differences between reviewers were resolved through meetings between reviewers and/or by a fourth expert who reviewed all available data to arrive at a final decision. The causes of death were coded according to the International Classification of Diseases, 10th Version (WHO, 2005).

Further details of the above processes are provided in the Pakistan Demographic and Health Survey (2007) Report (National Institute of Population Studies Pakistan and Macro International USA, 2007).

The design of Pakistan DHS (2006) was such that the births and deaths occurring during the recall period were recorded in the entire sample (approximately 95,000 households). However, detailed birth histories from ever-married women were obtained in only about 10% of households (approximately 10,000 ever-married women). Hence, it is not possible to directly estimate the relative risk of maternal mortality from the risk factors at the household and community level. To overcome this difficulty, we designed a nested case-control study to identify the important risk factors associated with maternal mortality in Pakistan (see below).

We present the results of an in depth analysis of the maternal mortality data, primarily from the VA questionnaires, to identify the differences between provinces and urban and rural areas. We also present the results of a nested case-control study, designed to compare the women who died of maternal causes, with those surviving a pregnancy in the same sampling clusters and during the same time period. All maternal deaths identified in the Pakistan DHS (2006) are regarded as cases, while the controls are randomly selected from the women reporting a live birth during the last 3 years before the survey. Cases and controls are not matched. The ratio between cases and controls is 1:10. All female deaths in the reproductive ages that occurred during 2003-2006 and were classified as maternal deaths are included in the study as cases (n = 230, sampling fraction for cases = 1.00). Correspondingly,

controls per cluster, as included in our study, is very small. Approximately 60% of sampling clusters have reported no maternal death during the 3 years recall period (and hence the number of cases in these clusters is 0). The average number of observations per cluster (both cases and controls) in our study is 2.9. Therefore, we do not make an attempt to adjust for the clustering effect of observations.

4. Results

The overall MMR was 276 maternal deaths per 100,000 live births, which reflects the average for the recall period (2003-2006). Maternal deaths constituted approximately 20% of all female deaths in the reproductive age (15-49 years). The MMR is significantly higher in the rural areas (320, compared to 177 in urban areas; $P < 0.05$) (Figure 3). The MMR is also significantly higher in the province of Balochistan (765, compared to 227, 311 and 272 in Punjab, Sindh and NWFP, respectively) (Figure 4).

Figure 3 Maternal mortality ratio and 95% confidence limits by residence

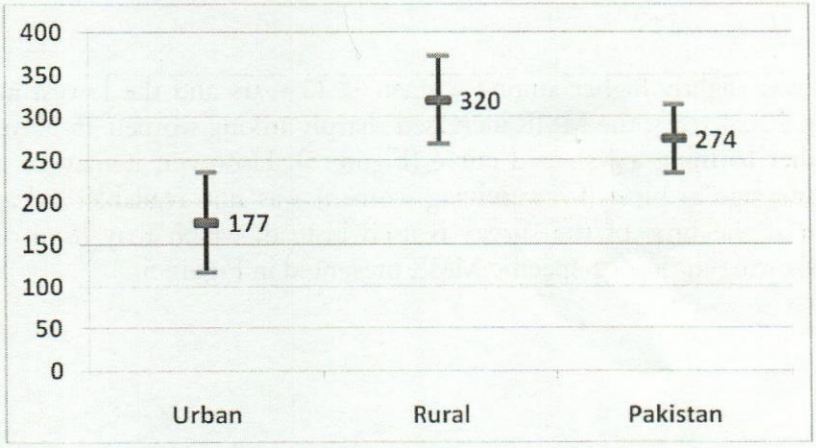
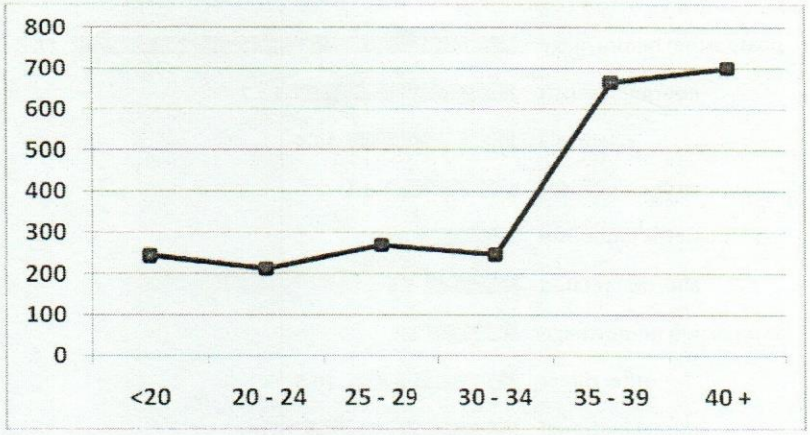


Figure 5 Maternal mortality ratio (per 100,000 live births) by age-group



Postpartum hemorrhage was the commonest cause of maternal deaths (27.2%), followed by puerperal sepsis (13.7%), eclampsia (10.4%) and obstetric embolism (6%). About 8% of all maternal deaths were attributed to 'iatrogenic causes', reflecting that these deaths occurred primarily due to incompetence and/or negligence of the hospital staff; 5.6% deaths were attributed to the complications of abortion and 5.5% to antepartum hemorrhage. All other direct causes of maternal deaths constituted 10.5%, while 13% maternal deaths were attributed to indirect maternal causes (ICD-10: International Classification of Diseases, 10th version - revised; WHO 2007) (Figure 6). It was difficult to separate the deaths occurring due to complications of induced abortion. However, there was positive information about ten deceased women (out of the 230 maternal deaths) that they did something to end their pregnancy (data not shown).

Table 3: Percentage distribution of maternal deaths by cause of death and residence/province

Cause of death	Residence		Province			
	Urban	Rural	Punjab	Sindh	NWFP	Balochistan
Eclampsia	15.8	8.9	7.8	11.4	3.1	8.9
Iatrogenic causes	3.5	5.1	2.6	7.1	12.5	5.1
Postpartum hemorrhage	28.1	28.4	28.8	25.7	28.1	28.4
Puerperal sepsis	8.8	11.4	15.6	8.6	9.4	11.4
Obstetric embolism	7.0	5.5	9.1	4.3	--	5.5
All other causes	36.8	40.7	36.4	42.9	46.9	40.7
Number of maternal deaths	34	146	84	50	25	19

The 'three delays' (Thaddeus and Maine, 1990) are considered to be the most important operational factors in the causation of maternal mortality. According to the reviewers of the VA questionnaires, there were significant differences between the provinces and between urban and rural areas with regard to the percent of deaths attributed to the first and the second delay, but not with regard to the third delay (Tables 4 and 5). The percent of deaths where the first and second delays occurred was significantly higher in the peri-urban and rural areas (as compared to the urban areas) and in the province of Balochistan (as compared to the other three provinces). Moreover, there is a trend of increase in the first and second delays as one moves from urban to rural areas and from Punjab to Balochistan, indicating a close link between these delays and accessibility of emergency obstetric care services (Tables 4 and 5).

Table 4: Percent of maternal deaths by attribution to first, second and third delays and residence

Delay	Major Urban	Other urban (Peri-urban)	Rural
First delay*	44.4	70.4	83.0
Second delay*	16.0	26.3	47.4
Third delay	78.6	53.8	75.0

*Differences between regions are statistically significant ($P < 0.05$)

Table 5: Percent of maternal deaths by attribution to first, second and third delay and province

Delay	Punjab	Sindh	NWFP	Balochistan
First delay*	69.0	71.6	77.4	92.9
Second delay*	19.7	37.3	60.0	78.3
Third delay	66.7	84.2	64.3	62.5

*Differences between regions are statistically significant ($P < 0.05$)

5. Results from the nested case-control study

Table 6 presents the unadjusted and adjusted odds ratios (OR) for selected biological and socioeconomic risk factors of maternal mortality, derived from the nested case-control study analysis. The common risk factors having a significant association with maternal mortality are as follows:

1. Woman's age at pregnancy (those younger than 20 years and older than 35 years are at a significantly greater risk of maternal mortality than the women in the 20-34 years age group).
2. Parity (primiparous women and those having five or more live births previously are at a significantly greater risk of maternal mortality compared to the women having 1-4 live births previously).
3. Woman's education (women having no schooling and those having less than secondary school education are at a greater risk of maternal mortality than the women having secondary level education or above).
4. Socioeconomic status – women in the lowest wealth quintile are at a greater risk of maternal mortality than the women in the highest wealth quintile.
5. Family planning – it appears that the deceased women were significantly less likely to have used a family planning method prior to their last pregnancy, compared to the controls.
6. Pregnant women who received prenatal care during their last pregnancy were at a lower risk of maternal mortality. The women who were delivered by a skilled birth attendant were not at a lesser or greater risk than the women not delivered by a skilled birth attendant.

After adjusting for all of the variables shown in table 6, age at birth of 35 years or older, nulliparity, lack of use of family planning prior to the last pregnancy and woman's educational level emerge as significant risk factors

associated with maternal mortality. Among women who had a pregnancy resulting into a live birth, both antenatal care and skilled birth attendance are significantly associated with maternal mortality. The deceased women were less likely to receive antenatal care but more likely to have skilled birth attendance during delivery.

Table 6: Adjusted and unadjusted odds ratios (OR) for woman/household level risk factors

Risk Factor	Unadjusted OR (95% confidence limits)	Adjusted OR[1] (95% confidence limits)
Woman's age at birth		
< 20 years*	2.0 (1.2, 3.8)	1.5 (0.8, 2.7)
20-34 years (Ref.)	1.0	1.0
□ 35 years*	1.6 (1.2, 2.2)	1.8 (1.2, 2.7)
Parity		
Primiparous women*	2.4 (1.6, 3.5)	1.8 (1.1, 2.7)
1-2 previous live births (Ref.)	1.0	1.0
3-4 previous live births	1.3 (0.9, 2.0)	1.2 (0.8, 1.9)
□ 5 previous live births*	1.8 (1.2, 2.7)	1.1 (0.7, 1.8)
Prior history of pregnancy loss		
None (Ref.)	1.0	1.0
1 or more*	1.2 (0.9, 1.7)	1.3 (1.0, 1.9)
Ever used family planning		
No (Ref.)	1.0	1.0
Yes*	0.3 (0.2, 0.4)	0.3 (0.2, 0.5)
Woman's education level		
No schooling*	3.6 (1.9, 6.8)	3.6 (1.5, 8.8)
Less than secondary school*	2.3 (1.1, 4.7)	3.2 (1.3, 7.4)
Secondary school and above (Ref.)	1.0	1.0
Husband's education level		
No schooling*	1.9 (1.4, 2.6)	1.4 (1.0, 2.1)
Less than secondary school	1.2 (0.8, 1.7)	0.9 (0.6, 1.4)
Secondary school and above (Ref.)	1.0	1.0
Socioeconomic status		
Highest 20% (Ref.)	1.0	1.0
Middle 60%	1.5 (1.0. 2.4)	0.8 (0.5, 1.3)
Lowest 20%	1.9 (1.2, 3.1)	0.7 (0.4, 1.3)
Residence		
Urban (Ref.)	1.0	1.0
Rural	1.5 (1.1, 2.1)	1.2 (0.8, 1.7)
Antenatal care in last pregnancy[2]:		
None (Ref.)	1.0	1.0
Yes*	0.3 (0.2, 0.4)	0.2 (0.1, 0.4)
Skilled birth attendance in last delivery[2]		
No (Ref.)	1.0	1.0
Yes	1.3 (0.8, 1.9)	2.2 (1.3, 3.6)

[1]Each variable is adjusted for all other variables shown in table except antenatal care and skilled birth attendant; a separate model estimated for antenatal care and skilled birth attendant, including all other variables shown in table and excluding pregnancies not resulting into a live birth.
[2]Excluding the pregnancies not resulting into a live birth;

*Differences between categories are statistically significant (P < 0.05) before controlling for other variables; the highlighted OR and 95% confidence limits indicate retaining statistical significance after controlling for the other variables shown in the table.

Table 7 presents the crude and adjusted OR for selected community-level variables. Estimates for the first five variables are only for the rural areas. Those for the last two variables are for the entire sample including both urban and rural areas.

6. Community-level variables

In the rural clusters, a distance of 40 kilometers or more to any of the three facilities (primary health facility, hospital and transport) is a clear risk factor for maternal mortality. Similarly, women residing in villages where mobile phone service is available are at a lower risk of maternal mortality. Presence of an LHW in the village, however, does not seem to have an effect on the risk of maternal mortality. Finally, a greater percentage of women delivered by a skilled birth attendant in the community, and a higher rate of secondary school education (among women residing in the sampling cluster) are also associated with a lower risk of maternal mortality.

After adjusting for the woman-level variables (age, parity, past history of pregnancy loss, woman's education level, husband's education level, family planning use before last pregnancy and socioeconomic status), distance to hospital and public transport retain their rather strong association with maternal mortality. The association between maternal mortality and mobile phone services and presence of Lady Health Worker (LHW) do not seem to change after adjusting for the individual level variables. The effect of skilled birth attendance rate and secondary school education rate among women in the village disappears when adjusted for the individual level variables.

Table 7: Adjusted and unadjusted odds ratios (OR) for community level risk factors1

Risk Factor	Unadjusted OR (95% confidence limits)	Adjusted OR[2] (95% confidence limits)
Distance to primary health facility		
< 10 Kilometer (Ref.)	1.0	1.0
10 – 39 Kilometers	1.2 (0.8, 1.7)	1.2 (0.8, 1.7)
□ 40 Kilometers*	2.2 (1.1, 4.2)	1.9 (0.9, 3.8)
Distance to hospital		
< 10 Kilometer (Ref.)	1.0	1.0
10 – 39 Kilometers	1.1 (0.7, 1.6)	1.1 (0.8, 1.7)
□ 40 Kilometers*	2.2 (1.4, 3.3)	2.4 (1.5, 4.0)
Distance to public transport		
< 10 Kilometer (Ref.)	1.0	1.0
10 – 39 Kilometers	1.6 (0.9, 3.0)	1.8 (0.9, 3.7)
□ 40 Kilometers*	3.1 (1.4, 7.0)	3.6 (1.5, 9.1)
Mobile telephone coverage		
No (Ref.)	1.0	1.0
Yes*	0.6 (0.4, 0.9)	0.6 (0.4, 0.9)
Lady Health Worker in village		
No (Ref.)	1.0	1.0
Yes	0.8 (0.6, 1.1)	0.9 (0.6, 1.3)
Percent of deliveries by SBA[3]		
< 10% (Ref.)	1.0	1.0
10% - 20%*	0.6 (0.4, 0.9)	0.8 (0.5, 1.2)
>20%*	0.5 (0.2, 0.9)	0.7 (0.3, 1.4)
Percent of women with secondary school education[4]		
< 10% (Ref.)	1.0	1.0
10% - 20%	0.9 (0.6, 1.3)	1.4 (0.9, 2.1)
>20%*	0.5 (0.3, 0.8)	0.8 (0.4, 1.4)

[1]For rural sampling clusters only, except for the last two variables.

[2]Each variable adjusted for age, parity, past history of pregnancy loss, woman's education level, husband's education level, family planning use before last pregnancy and socioeconomic status; models for first five variables exclude urban areas.

[3]Percent of deliveries in the cluster by skilled birth attendant (SBA) during last 3 years; includes both urban and rural sampling clusters.

[4]Percent of ever-married women in the sampling cluster having secondary school education or above; includes both urban and rural sampling clusters.

*Differences between categories are statistically significant (P < 0.05) before controlling for other variables; the highlighted OR and 95% confidence limits indicate retaining statistical significance after controlling for the other variables shown in the table.

7. Discussion

This chapter is an attempt to analyze the extremely rich and multi-dimensional data on maternal mortality from the Pakistan DHS (2006-2007). Some of the obvious constraints to this study related to the fact that the DHS is usually not designed to allow carving out a nested case-control study. The major difficulty that we encountered in designing this study was that the information on the cases and controls was not necessarily comparable. For obvious reasons, the reliability and precision, as well as the quality, of the data arising from the verbal autopsy interviews were poorer than comparable data extracted from the ever-married women's interviews and birth history records. However, every single one of the detailed verbal autopsy interviews was scrutinized by a panel of experts, who were aided by an open-ended verbatim story of the death, recorded in the respondents' own words. The panelists also recorded their opinion about the quality of the data contained in the VA questionnaire, which was found to be satisfactory in the vast majority of cases included in this study.

An important difficulty encountered during data analysis was the co-linearity between the independent variables. Information is available on a large number of independent variables, both at the woman/household level and the community level. However, selection of the right variables for inclusion into the logistic regression was a major problem. We tried to include as few variables as possible, and our selection was based upon a preliminary analysis through 2 by 2 tables, as well as our judgment of the practical importance of the risk factors.

The findings from this exercise are largely as expected: Older women (age 35 years and above), nulliparous women and those having no schooling are at a significantly greater risk of dying of complications of pregnancy and childbirth. In the logistic regression model, women's education status emerges as a more important socioeconomic variable than the socioeconomic status (measured in terms of wealth quintiles) and the husband's education.

Women residing in remote rural villages and having no access to transport and telecommunication are also more likely to die of such complications. Since high-risk pregnancies and women having complications are more likely to be referred to skilled birth attendants, the risk of maternal death is higher among births delivered in hospitals and/or by trained health professionals.

We also found that women who were using a family planning method before their last pregnancy were less likely to die of maternal complications. Another finding is that the women who received prenatal care during the last pregnancy were much less likely to die of maternal complications. Both of these findings could possibly be due to underreporting of family planning use and prenatal care among the deceased women. However, we have examined the verbal autopsy data very carefully and believe that the information on the deceased women is sufficiently complete and reliable. For example, we found no differences in the quality of the data contained in VA questionnaire (assigned by the reviewers and recorded on a scale o 0-10) between the deceased women who were reported to have used family planning methods and those who were reported to not have used a family planning method prior to their last pregnancy. Similarly, there were no differences between these two groups of questionnaires in terms of the respondent's education and his/her relationship with the deceased woman. The deceased women having used prenatal care and those not having any prenatal care were also compared along the same lines and no differences were found. Considering these facts, we believe that disregarding these two findings completely would be unjustifiable.

Previous studies in Pakistan have shown with great clarity that accessibility of health services, particularly MCH care and emergency obstetric care, is an important risk factor of maternal mortality. Besides, women residing in areas where the services infrastructure - roads, communications and transport - are better developed are more likely to survive the obstetric complications than those residing in remote and under-developed areas. The following table presents the data computed from the MIMS Survey conducted in 14 rural districts of the NWFP and Balochistan provinces of Pakistan, and indicates that the level of maternal mortality is directly correlated with availability and accessibility of health services.

Table showing MMR (per 100,000 live births) estimated by average distance to secondary hospital and staffing patterns of primary healthcare (PHC) facilities:

Average distance to the EmONC facility (Secondary level hospital)	Staffing patterns of PHC facilities in the district		
	Doctor & LHV	Doctor only	Neither
< 20 KM	168	271	438
20 – 39 KM	197	318	514
□ 40 KM	231	374	604

This table indicates that the variation of MMR between provinces, regions, districts and villages is caused by the accessibility of health services, and that access to emergency obstetric care as well as the availability of staff (doctor and/or LHV) at the primary health care facility, are important factors in the causation of this variation. Another study has linked the indicators of development at the district level with the risk of maternal mortality (Midhet, 2002).

The results of this analysis clearly indicate the importance of accessibility to emergency obstetric care, transport and telecommunication. Women having access to a mobile phone, as well as those residing in a geographical area served by a mobile phone network, were at a lower risk of maternal mortality. Those residing in remote areas, away from hospitals and transport services, were at a significantly higher risk of maternal death. Besides these community-level risk factors, however, the importance of women's schooling, use of prenatal care and use of family planning services is further emphasized by our analysis. After controlling for the known biological risk factors (age and parity), all of the above mentioned risk factors retained their significant association with maternal mortality.

To conclude, the first-ever national study of maternal mortality in Pakistan brings no surprises and confirms the following: 1) women's education remains an important determinant of their health and well-being, especially during pregnancy and childbirth; 2) in order to save women's lives, accessibility of emergency obstetric care will have to be improved substantially, especially in the rural areas and in the remote province of Balochistan; 3) family planning services must be made freely available to women in all areas; and 4) prenatal care might work in more than one ways: while it is true that prenatal care cannot help in prediction or prevention of obstetric complications, it does expose the woman to the health services and to important information regarding birth preparedness.

8. Recommendations

The findings from this analysis reinforce the importance of accessibility of maternal health services, particularly emergency obstetric care. We feel that these data are telling us the following:

1. Family planning proves to be an important and significant protection against maternal mortality. In particular, women in the latter years of their reproductive life should be encouraged to use safe and reliable methods to avoid a pregnancy.
2. Prenatal care, although not directly related with maternal complications, could provide the women an opportunity to be introduced to the health system. Information and advice provided by a trained healthcare provider during a routine prenatal visit may prepare the woman and her family to face the unpredictable yet sometimes inevitable complications during pregnancy and childbirth. Similarly, pregnancy risk assessment and appropriate advice may persuade the woman and her family to use a health facility for delivery.
3. The maternal mortality in Pakistan is highest in the remote and under-served areas. Bringing the health services closer to the women and making them more effective and attractive for the woman and her family would go a long way in reducing maternal mortality in Pakistan. Availability of transport and telecommunication systems stands out to be the most significant factor in this regard.
4. Further analysis of the DHS data with regard to maternal mortality is needed to identify the interactions between various risk factors at the woman/family and community level.
5. Pakistan has recently introduced the community midwives – a new cadre of health workers who would provide skilled birth attendance at the community level. The community midwives should be trained in obstetric first-aid, making use of a number of interventions that have recently been developed for which sufficient evidence is now available. Examples are the use of misoprostol or oxytocin during third stage of labor, active management of third stage of labor and use of magnesium sulphate for eclampsia. Our analysis of the DHS data on maternal mortality suggests, both directly and indirectly, that such interventions might be instrumental in bringing a significant decline in maternal mortality in Pakistan.

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3

The Delay in Decision-Making Process and Maternal Mortality

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1. Context

In Pakistan, each year over five million women become pregnant, out of these 0.7 million (15 percent of all pregnant women) are likely to experience some obstetrical and medical complications. An estimated 30,000 women die each year due to pregnancy related causes.

In the case of Pakistan, most of the MMR data was based on local or sub-national data and no authentic MMR data was available, only indirect estimates from National Survey have been made. It is first time in the history of Pakistan that 2006-07 PDHS estimated a Maternal Mortality Rate (MMR) of 276/100,000 live births.

One of the often neglected and ignored issues in maternal mortality studies is cultural values, social barriers and mindsets about decision making in traditional and conservative societies like Pakistan.

The issue of decision making is always a unique challenge and research questions arise that what sort of attitudes and values are important towards the responsibility and risk taking approaches of health seeking behavior, the involvement of family and husband, and how these attitudes exactly drive the decision-making. Because literature review reveals that values and attitudes are as much a part of decision making as institutions and policies are.

2. Data Collection

In view of the scarcity and reliability of MMR data a great need was felt in the government and public health circles to have a reliable estimate of MMR. In 2006-07, the PDHS was launched to accomplish this task through the verbal autopsy technique.

Moreover, to know the causes of death, was a difficult task. To facilitate the identification of causes of death in these settings, a technique has been developed in which relatives of deceased women were interviewed regarding the circumstances leading to the death. Information on the signs and symptoms preceding the death was used to reconstruct the illness leading to death and to assign the most probable cause of death. A total of 247 womens' stories were analyzed in this study.

3. Literature Review

Since the Nairobi Safe Motherhood Conference in 1987, when the world focused on the imperative of making childbearing safer, the philosophy of service provision has evolved from the "risk" approach to the "Four delays" approach. Usually in all the maternal death cases there is a basic issue of delay that has led to individual death. These delays include the following:

- Delay in identification of problem by birth attendants
- Delay in decision making by family and birth attendants
- Delay in arranging for transport and referral to a health facility
- Delay in getting emergency care at the facility level because of :
    1. Moving from one health facility to another
    2. Getting blood transfusion
    3. Getting appropriate medical care.

Pakistan is a patriarchic society where generally females suffer discrimination in every walk of life. This gender discrimination, unfortunately, starts right from the day a baby-girl is born. The birth of a girl is unwelcome. As she grows, the scope of this discrimination increases, be it nutritional needs or medical care, etc. Evidence from various national-level surveys shows a survival disadvantage for the girl-child particularly between 1-4 years of age (Ali, 2000).

Cultural values do not operate in a social and political vacuum but are variables that respond to political, economic and demographic contents and "Decision-makers at all levels-political, economic, social, religious, and household-must foster the perception that pregnancy and childbirth can and should be made safer." (WHO, 2008).

The analysis of the four delays to receiving treatment for complications indicates that the major barriers or delays occur in the household, not in travel to the provider, or waiting time at the service provider. What is of concern is that many women recognized life-threatening complications but did not seek treatment. And among those who sought treatment, many sought it from inappropriate service providers. (MMR Survey, 2001)).

4. Justification

Majority of the researchers spend so much time on the issues like modernization, institutional factors, development indicators, and the importance of facilities that they hardly spend any time, energy, and resources on attitudes and mindsets and whether theses attitudes have an effect on decision making, and why people have lower acceptance for change of new ideas over old ones .The thesis and logic of the paper is built around an argument, that there is a need to look and "look critically" on cultural values and mind-sets in decision-making.

It has become clear that just providing services and telling people to use them does not work. Health care seeking behavior in general remains a complex process, and is even more complicated when it comes to women's health issues, as women's health is so intricately intertwined with the socio-cultural beliefs of female modesty and honor, etc. In order to make our programs more effective, we must look into community based barriers to prevent maternal deaths and make our safe motherhood interventions "more strategic". To reduce maternal deaths, not only medical risks be considered, but social risks as well."

The numerous studies have shown that delays in recognition and treatment of life threatening complications, as well as substandard practices, contribute directly to maternal deaths.

Further research is needed to identify the root causes of the problem through qualitative investigations which can be more helpful to guide policy-makers and programme managers, particularly those working in the areas of advocacy, IEC interpersonal communication, and behavior change strategy.

That's why there was a need of in-depth and further study of verbatim of verbal autopsy. What other factors might have been responsible for her death (e.g. lack of proper and timely care; lack of resources; delay in making the decision to take the woman to hospital; lack of transport; delay in getting to a hospital; lack of facilities and/or healthcare provider at hospital; etc.

5. Objectives of the Study

(i) To understand attitude and approach of decision makers in the process of delay.
(ii) To find out the discrepancy between four delays.
(iii) To figure out the margins of error in decision making.

6. Strategies for Analysis

It was an attempt to analyze the data on maternal verbal autopsy and main concern was on the links, gaps, and margins between decision, making for seeking treatment and compare it with variables such as age, illiteracy, urbanization, and husband's education and type of family: The important independent variables in data were age, place of residence, education, and the dependent variables were cultural values or mindsets in decision making and how decisions were made, planned, organized and disposed during the process of delivery.

As far as verbal autopsy verbatim is concerned, stories were analyzed by narrative analysis with the state of the art computer aid. Process was adopted to contextualize and decontextualize the data from conversational phraseology. This told us how decisions were made towards responsibility and risk taking behavior, what kind of approaches were adopted, whether decisions were made on egalitarian basis or coercive or just things happen, planned or unplanned, ill-thought out, barely discussed haphazard inconvenient or economically expedient.

For this study a technique was devised to enter the data and develop summaries of each verbatim. After having translated the verbatim of verbal autopsy, the important notes were made then data was coded: attached key words or phrases and the data entry were completed keeping in view the strategy for report writing.

A technique of content analysis was also used for counting frequencies, sequences or locations of words and phrases. Then network of associations were developed for systematic conceptually coherent explanation of findings.

Verbatim revealed what is on the minds of decision making people and the family members at household level, their views on what they thought and felt

about the issue of maternal mortality and process of decision making at household level.

7. Limitations of the study

This study has a number of limitations. The study is first of its kind in Pakistan. The study is suggestive rather than conclusive. One should be extremely cautious about generalizing these results, because most of the concepts are of subjective nature based on the analysis of stories and narratives. Another limitation is that although there was one key respondent yet several other respondents who were present at the time of women's demise, also took part in narrating the stories.

8. The Results of verbal autopsy

Table 1: Background characteristics of Deceased Women

Background characteristics		Place of Residence				Total	
		Urban		Rural			
		Percent	Number	Percent	Number	Percent	Number
Age at death	< 25	36.4	17	25.1	50		
	24 - 34	41.0	19	45.1	90	44.3	109
	35 +	22.6	11	29.8	60	28.4	70
Age of Husband of Deceased women at death	< 25	15.3	7	15.1	30	15.1	37
	24 - 34	52.0	24	33.6	66	37.1	90
	35 +	32.7	15	51.3	101	47.8	116
Educational level of deceased women	No education	48.5	23	79.3	159	73.4	181
	Some education	51.5	24	20.7	41	26.6	66
Educational level of deceased women's husband	No education	52.2	23	81.5	159	76.1	181
	Some education	47.8	21	18.5	36	23.9	57
Couple's education	Both educated	44.4	21	18.0	36	23.1	57
	Only husband	24.8	12	37.5	75	35.1	87
	Else	30.8	15	44.4	89	41.8	103
Type of family	Nuclear	29.4	14	29.9	60	29.8	74
	Joint	70.6	33	70.1	140	70.2	173
Educational level of HoH	No education	41.9	20	62.3	125	58.4	144
	Some education	58.1	27	37.7	75	41.6	103
Presence of husband at the time of verbatim interview	Present	16.4	8	25.4	51	23.7	59
	Else	83.6	39	74.6	149	76.3	188

Background characteristics		Place of Residence				Total	
		Urban		Rural			
		Percent	Number	Percent	Number	Percent	Number
Working for wages or salary when she died	Yes	13.6	6	27.9	56	25.2	62
	Else	86.4	41	72.1	144	74.8	185
Timing of death	During pregnancy	61.9	29	44.6	89	47.9	118
	Else	38.1	18	55.4	111	52.1	129
Total		100.0	47	100.0	200	100.0	247

Table 1 shows that Seventy six percent maternal deaths were in rural areas (while the proportion of rural households is 66 percent), and 24 percent deaths were in urban areas (the proportion of urban households is 34 percent)

Data shows that in the age group 24-34 the higher percentage (45) percent of maternal deaths occurred, in rural areas as compared to (41) percent in urban area. The main reason of these high deaths is that, this group consists of women in their prime reproductive age and these are more vulnerable to maternal deaths.

Vast majority of deceased women (73 percent) had no education and number of deaths decrease sharply for women who had some education. In rural areas 79 percent deceased women had no education and only 21 percent deceased women had some education. In urban areas 48 percent deceased women had no education and 52 percent had some education.

Husband's educational level and particularly couple's education does matter regarding maternal deaths. Seventy six percent of total husbands of deceased women have no education while this percentage for rural areas is 81 percent and for urban areas is 52 percent. Difference in educational level of rural and urban areas is quite obvious. By sex of the head of the household, 95 percent deceased women belonged to those household which are headed by male and more or less same trend is observed in urban and rural areas. This clearly shows male dominated society and low status is accorded to women in Pakistan. Seventy percent of the maternal deaths had occurred in households that have joint family system and the remaining are of nuclear family. A rural-urban comparison shows a similar trend.

Regarding educational level of head of household, 58 percent of deceased women belonged to those households whose head has no education. A vast

difference is found between rural areas (62 percent) and urban areas (42 percent).

Sixty two percent of deceased women in urban areas died during pregnancy while in rural areas 45 percent women died during pregnancy. In other words, 55 percent women died due to other factors, in rural areas and 38 percent in urban areas.

Table 2: Percentage of Deceased women According to Person who Involved in decision making that should got for getting Treatment by Background characteristics

Background characteristics		Deceased herself		Husband		Other relatives	
		Percentage	Number	Percentage	Number	Percentage	Number
Age at death	< 25	8.0	67	45.6	67	51.4	67
	24 – 34	20.0	109	49.2	109	48.1	109
	35 +	29.1	70	59.2	70	21.4	70
Age of Husband of Deceased women at death	< 25	13.9	37	63.5	37	55.3	37
	24 – 34	16.5	90	45.6	90	46.2	90
	35 +	23.8	116	52.1	116	33.9	116
Educational level of deceased women	No education	19.6	181	47.6	181	38.9	181
	Some education	18.5	66	60.6	66	48.5	66
Educational level of deceased women's husbands	No education	19.6	181	47.6	181	38.9	181
	Some education	21.3	57	66.8	57	51.5	57
Couple education	Both educated	21.3	57	66.8	57	51.5	57
	Only husband	20.5	87	51.7	87	45.9	87
	Else	17.2	103	41.8	103	32.2	103
Type of family	Nuclear	27.4	74	49.7	74	32.4	74
	Joint	15.9	173	51.6	173	45.3	173
Educational level of HoH	No education	16.9	144	49.8	144	42.6	144
	Some education	22.7	103	52.8	103	39.9	103
Presence of husband at the time of verbatim interview	Present	25.8	59	67.8	59	27.6	59
	Else	17.3	188	45.8	188	45.7	188
Place of Residence	Urban	26.4	47	55.6	47	46.7	47
	Rural	17.7	200	50.0	200	40.2	200
Time of death according to questionnaire	During pregnancy	21.3	60	41.8	60	38.4	60
	At the time of delivery	26.9	20	49.6	20	28.8	20
	During post partum period	18.5	159	55.6	159	43.3	159
	DK/missing	.0	8	33.0	8	60.6	8
Place of death	Hospital/clinic	22.7	118	61.9	118	56.2	118
	Husband's home	14.5	75	46.5	75	20.8	75
	Her parent's home	17.2	17	15.7	17	39.8	17
	In-transit	10.9	25	54.3	25	46.9	25
	Other	36.4	12	16.5	12	16.7	12
Total		19.3	247	51.1	247	41.4	247

Table 2 shows that the percentage of deceased women who were involved in decision making for seeking treatment increases with the increase in age. It shows that women feel strong and more confident at the household level in decision making as the age increases. Similarly role of husband regarding

decision making for seeking treatment increases with the increase in age of deceased women. When both husband and wife were educated, 67 percent of husbands were involved in making the decision that deceased woman should go for treatment. It seems that couples education does matter and play an important role and they have better understanding of decision making at the household level. The involvement of deceased herself, husband, and other relatives in decision making regarding deceased women going for treatment, is higher in urban areas as compared to rural areas. Table clearly shows that couple's education and place of residence are critical in decision making.

It has also been observed in table 2 that the role of husbands and in-laws is very strong in making any type of decision, particularly, about the women. It clearly indicates that in our culture, women have no right to say or to make decision even for her own body, e.g., it is the husband (67 percent) who usually decides whether the woman should go for treatment or not and normally such type of decision by the husband is usually taken under the influence of his family, specially mother. Strong role of husband in decision making about the women was evident in both rural and urban settings which clearly shows that decision makers are the husbands or in laws and not the women herself.

Table 3: Percentage of Deceased women According to Knowledge (4-As) Practices by Background characteristics.

Background characteristics		Awareness	Acceptability	Affordability	Accessibility	
					Percentage	Number
Age at death	< 25	90.3	42.9	25.2	24.7	67
	24 - 34	82.5	33.3	21.6	20.4	109
	35 +	92.1	48.9	26.3	9.8	70
Age of Husband of Deceased women at death	< 25	90.1	31.9	22.8	27.0	37
	24 - 34	83.6	37.7	21.1	19.7	90
	35 +	89.6	45.5	26.4	14.7	116
Educational level of deceased women	No education	88.5	45.7	24.8	16.4	181
	Some education	84.0	25.6	21.7	24.6	66
Educational level of deceased womens' husband	No education	88.5	45.7	24.8	16.4	181
	Some education	83.6	23.1	17.2	22.6	57
Couple education	Both educated	83.6	23.1	17.2	22.6	57
	Only husband	94.4	52.1	26.8	20.7	87
	Else	83.5	40.1	25.2	14.6	103
Type of family	Nuclear	93.0	45.8	31.7	18.2	74
	Joint	85.0	38.1	20.6	18.7	173
Educational level of HoH	No education	86.2	45.0	27.4	20.6	144
	Some education	88.9	33.9	19.1	15.7	103
Presence of husband at the time of verbatim interview	Present	79.4	30.2	18.4	17.1	59
	Else	89.8	43.5	25.7	19.0	188
Place of Residence	Urban	83.7	36.3	28.6	29.9	47
	Rural	88.2	41.3	22.8	15.9	200
Time of death according to questionnaire	During pregnancy	80.9	44.2	31.3	18.7	60
	At the time of delivery	87.9	46.2	36.5	28.4	20
	During post partum period	89.7	37.5	18.6	16.4	159
	DK/missing	86.6	55.2	43.7	36.6	8
Place of death	Hospital/clinic	89.8	41.4	21.9	14.4	118
	Husband's home	90.3	43.0	26.4	20.3	75
	Her parent's home	86.6	20.2	20.4	35.5	17
	In-transit	83.1	36.6	30.2	19.0	25
	Other	54.6	50.8	20.5	24.3	12
Total		87.3	40.4	23.9	18.6	247

It is observed in table that the contribution of the "4 A's" in maternal deaths is, Awareness (92 percent), Acceptability (49 percent), Affordability (26 percent) and Accessibility (only 9 percent). So there is mainly 'lack of awareness' and 'acceptability' among the community about the seriousness of this issue. Unfortunately, pregnancy is always considered a normal physiological process which needs no special care and attention from programme managers and health service providers.

Table 4: Percentage of Deceased women According to Delays (4-Ds) Practices by Background characteristics

Background characteristics		Delay in problem identification		Delay in Decision making		Delay in arranging of Transport		Delay in Health care at the facility	
		Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
Age at death	< 25	89.6	67	63.7	67	9.7	67	15.9	67
	24 - 34	81.0	109	62.3	109	5.3	109	23.0	109
	35 +	95.1	70	77.3	70	4.6	70	9.3	70
Age of Husband of Deceased women at death	< 25	90.2	37	57.9	37	10.6	37	13.9	37
	24 - 34	83.9	90	64.1	90	8.3	90	20.8	90
	35 +	88.8	116	71.8	116	3.6	116	15.3	116
Educational level of deceased women	No education	90.6	181	69.5	181	6.5	181	14.3	181
	Some education	78.3	66	59.8	66	5.8	66	25.2	66
Educational level of deceased women	No education	90.6	181	69.5	181	6.5	181	14.3	181
	Some education	79.0	57	56.1	57	6.7	57	29.1	57
Couple education	Both educated	79.0	57	56.1	57	6.7	57	29.1	57
	Only husband	94.8	87	75.9	87	9.2	87	10.2	87
	Else	85.7	103	65.4	103	3.7	103	16.4	103
Type of family	Nuclear	86.4	74	71.8	74	7.7	74	15.5	74
	Joint	87.8	173	64.9	173	5.8	173	17.9	173
Educational level of HoH	No education	87.6	144	67.0	144	6.6	144	15.6	144
	Some education	87.0	103	66.9	103	5.9	103	19.3	103
Presence of husband at the time of verbatim interview	Present	77.5	59	59.7	59	3.3	59	29.8	59
	Else	90.4	188	69.2	188	7.2	188	13.2	188
Place of Residence	Urban	86.6	47	66.0	47	11.1	47	19.9	47
	Rural	87.5	200	67.2	200	5.2	200	16.5	200
Timing of death	During pregnancy	85.7	118	72.1	118	4.2	118	22.2	118
	Else	88.8	129	62.3	129	8.2	129	12.5	129
Place of death	Hospital/clinic	85.7	118	72.1	118	4.2	118	22.2	118
	Husband's home	97.1	75	67.7	75	3.5	75	11.3	75
	Her parent's home	78.6	17	39.1	17	.0	17	19.0	17
	In-transit	86.1	25	68.1	25	27.2	25	17.9	25
	Other	57.0	12	49.1	12	10.6	12	.0	12
Total		87.4	247	67.0	247	6.3	247	17.2	247

Ever since the VA emerged as a distinct discipline and practice, '4 D's' have been emerged as important theme. These VAs clearly identified various dilemmas with a useful cluster of issues emerging from text.

First 2 Delays in deciding to seek medical care on the part of the woman or her relative is usually regarded entirely as "patient factor" because they emanate directly from within the individual patient, her family or both. The factors identified under this phase of delay include:

- Delay in deciding to seek care may be influenced by various issues and actors involved in the decision-making process (4Ds, delay in recognition of the complication, decision to seek medical help, delay in the process of transportation and at the health care facility).

- Unlike the common knowledge that all 4Ds are equally important in causing maternal deaths, it was observed most of the maternal deaths were caused by first 2 delays (D1-delay in problem identification contributes 95 percent of maternal deaths and D2-delay in timely decision making contributes 77 percent of maternal deaths) compared to delays 3 & 4 (D3 contribute only 5 percent of maternal deaths and D4 contribute only 9 percent of maternal deaths).

9. In-depth qualitative thoughts

The study also analyzed whether decisions are made carefully, responsibly, and explicitly. The analysis provided a critical way of examining not only decision makers or actors but also cultural conventions and social norms. After an in-depth exploration of the various underlying causes and dilemmas, a discussion in Verbal Autopsy focused primarily on the four A's (Awareness, Acceptability, Accessibility and Affordability.

However these discussions also centered more explicitly on three-important cluster of issues for supporting four D's as well as four A's. The first theme is about the approach, second is about risk and third one is about the involvement, in getting treatment and making decision. At the end of every verbatim, the conclusion is very simple, it is all about attitude. Data of V.A generated three broad socio cultural issues:

- Linear versus simultaneous approach.
- Risk taking behavior versus responsibility taking behavior.
- Involvement versus detachment.

In linear approach mindsets and cultural values are that women and family has strong belief in home delivery with the help of Dais (Traditional Birth attendant) and this confidence level increases with the number of children. This proportion is higher in joint family system.

As far as risk taking behavior is concerned, verbatim clearly pointed out that not only family and husband but medical professionals are also taking risk and the proportion is much higher among Dais.

Risk means chance of danger, loss, injury or other adverse consequences. Risk taking attitude of the family (especially in-laws) contributed 69 percent death of women followed by service provider (14 percent), especially in rural areas. It has been commonly observed that families (particularly in laws) and service providers (Dais) hold a very strong position in decision making process as they are the ones who decide whether the women should deliver at home or at the health facility.

Service providers (Dais) are usually highly respected in our rural set up and no decision is made without their consent and advice. It is a common practice that they usually try to deliver the baby at home for their monetary benefit instead of referring women to the doctor. Only those cases are referred which they fail to deliver because of complications in the process of delivery but by that time it is usually very late. The most important theme emerged from the study is that involvement of husband and family is pathetic, right from the decision making to service outlets.

10. Conclusion

The results of the study clearly show that women empowerment, emancipation, egalitarian decision making or husband wife sharing decision making is still a daunting task and needs in-depth investigation.

Due to development in all spheres of life, some attitudes impede, others enable systemic misunderstanding. Some attitudes represent preferences and values and people consider that their values and philosophies are correct for them. The findings of this study clearly indicate that decision making in Pakistan is driven by attitudes and mindsets.

There are hundreds of things that need to be changed. However there is a challenge of establishing these values and attitudes in their rightful places and fill the gaps and margins between conflict of belief and behavior and whether attitudes are altered to reduce conflict between beliefs and behavior due to modernization, or change is not taking place at all and its all about attitudes and values. The data of verbatim explicitly describes that rational decision making is still a distant dream and change is not taking place as desired.

There are number of issues with different lessons and insights which can prove useful in thinking about how to address these issues and dilemmas without investing any more money and time. Just, within available resources, things may be turned around and improvise the infrastructure and social networking. A social infrastructure and social networking needs to be systematically and scientifically established with the coordination and cooperation of family, community and service providers.

The results of this study show that three key factors ( ) are closely associated with two D's and two A's. Hence, service providers and policy makers should focus more on first two D's and first two A's to change because the study unanimously agreed that this is critical for the improvement in maternal mortality.

The study also reveals the similarities in the behavior of people all over Pakistan. There is not any great regional variability as far as background characteristics are concerned. Behavior patterns also appear similar according to age, gender, education, residence. These verbatims show that the child bearing patterns have not changed significantly for decades.

The study shows that improving maternal health is possible by identifying and rectifying the margins of error even in low resource settings. However what is needed is a strong political commitment and concerted efforts from Governments, international agencies, NGOs, families and communities.

The detail analysis of V.A provides insights and lessons which are useful in reflecting upon how to make rational approaches and decisions. The underlying lessons learnt from the study lead to a situation of hopelessness and pessimism. Because data don't find any kind of optimision as for as cultural values and mindsets are concerned even after having analyzed the background characteristics. Because most of the patterns and trends are similar.

As far as service providers are concerned they also need to have empathy with the social and human situation rather than playing with the lives of women. Because they must remember that they are always part of this tragedy and trauma. Majority of deaths took place in service out lets and by the time they reach there due to first two DS and first 2As it is already too little to be done. But these verbatim indicates that the attendants blame the service providers for their casual and risk taking behavior.

The discussion of V.A describes that families' communities and service providers are not in a state of denial; however they are tempted to be in denial of the intensity and scope of the problem.

The Study brought to the fore front the new concepts, ideas and cultural barriers in decision making for IEC, particularly interpersonal communication and advocacy.

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4

Knowledge of Tuberculosis and its Correlates among Ever-Married Women in Pakistan

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1. Introduction

Tuberculosis kills one person in every 20 seconds. About 95 per cent of new TB cases and 98 per cent of TB deaths occur in poor countries. In 2007, 202 out of 212 countries and territories reported TB notification data for 2006 to WHO which reflected that more than 2 million people died of Tuberculosis around the world. There were an estimated 9.2 million new cases of TB in 2006 – at an average of 139 cases per 100 000 population. New cases included 4.1 million smear-positive cases i.e., 44 percent of the total new positive cases and 0.7 million HIV-TB positive cases (8 percent of the total). India, China, Indonesia, South Africa and Nigeria rank first to fifth respectively in terms of absolute numbers of cases. The African Region had the highest incidence rate of 363 cases per 100 000 population. There were an estimated 14.4 million prevalent cases of TB in 2006 amongst them 0.5 million cases of multi drug-resistant TB (MDR-TB) in 2006 (WHO, 2009).

A total of 5.1 million new cases, out of the estimated 9.2 million new cases, were notified in 2006 among 202 countries and territories, of which nearly half were smear-positive cases (2.5 million). The African, South-East Asia and Western Pacific regions accounted for 83 percent of the total cases notified (WHO, 2009).

TB is responsible for 5.1% of the total national disease burden in Pakistan. Pakistan is among the 22 high-burden countries and ranks 7th in the world. It accounts for approximately 44 per cent of the estimated new TB cases in Eastern Mediterranean Region of WHO. The incidence of TB in Pakistan is 181 cases per 100,000 population and 80/100 000 for sputum smear positive cases (WHO, 2009). Pakistan is a poor country with low per capita income where one-fourth of the population (25 percent) live below the poverty line (NIPS, 2009) and there is link between poverty and TB. It is stated that "TB is a disease of poverty; affecting mostly young adults

Estimates of epidemiological burden in Pakistan, 2007 incidence [1]	Estimated incidence/ prevalence
Incidence	
All forms of TB : thousands of new cases	297
All forms of TB: new cases per 100,000 population	181
Prevalence	365
All forms of TB: thousands of cases	
All forms of TB: cases per 100,000 population	223
Mortality	
All forms of TB: thousands of deaths per year	48
All forms of TB: deaths per 100,000 population per year	29

in their most productive years. The vast majority of TB deaths are in the developing world, with more than half of all deaths occurring in Asia" (WHO, 2009).

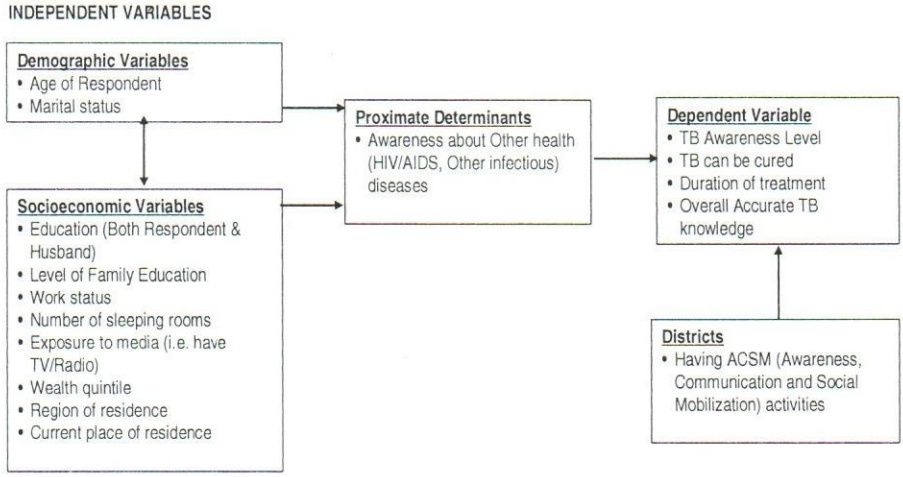
The Government of Pakistan, with the establishment of National TB control Program (NTP), has launched a National Advocacy Communication and Social Mobilization (ACSM) Strategy as an integral part of overall TB-DOTS programme, ACSM activities are implemented in 40 districts to educate approximately 38 percent of population in support of expanding TB-DOTS programme. This paper explores the overall awareness levels of this killing disease among ever-married women in Pakistan, and examines the factors influencing the level of awareness.

The objectives of this paper are to:

- Estimate overall levels of correct knowledge of TB.
- Examine the correlates of knowledge of TB and their effect on the overall knowledge about TB.
- Suggest policy measures for improved implementation of advocacy, communication and social mobilization activities across Pakistan.

2. Conceptual Framework

A conceptual framework is described as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Reichel and Ramey, 1987). It is understandable that appropriate level of awareness can change the attitude and behavior in the long-term. To assess the appropriate knowledge about TB, awareness model/framework and its possible linkages was developed. The main aim is to determine overall correct knowledge of TB disease and associated factors as given below:



Note: Arrows indicate hypothesized relationships

3. Analytical framework and statistical analysis

Both bi-variate and multivariate analysis are employed to analyze the overall levels of awareness about Tuberculosis. The level of TB awareness varies according to background characteristics of ever married women age 15-49 years. The bi-variate logistic regression analysis throws more light on the differentials of TB awareness for each selected variable. As these independent variables are interrelated, an appropriate multivariate technique would be required to determine the independent effect of each variable. For this purpose, multivariate logistic regression analysis is used, as it is appropriate in cases where the independent variables are categorical/quantitative and the dependent variable is dichotomous.

Logistic regression models are fitted using SPSS computer package. The SPSS program produces the overall goodness of fit, regression coefficients of the independent variables for each model, the standard errors as well as the odds ratios which are interpreted as deviations from the reference category of a variable. On the basis of fit, parsimony and substantive plausibility, the preferred models are obtained by dropping all statistically insignificant variables.

Logistic regression equation is: $Log\ (P/1\text{-}P) = a + b_{1x1} + b_2 x_2 + b_3 x \ldots\ldots\ldots\ldots\ldots + b_k x_k$

Where P is the probability of the women who heard about TB and $b_1..b_k$ are the regression coefficients; and $x_1..x_k$ are the independent variables.

Substituting the estimates of parameters and the values of the variables in the above logistic regression equation, the estimated log odds are calculated. By taking the anti-log of the value odds then the probability = odds / (1+odds) of being in the category with respect to reference category being estimated (Demonic). The logistic regression coefficients show the direction of the effect on the dependent variables. Any variable that is negatively related to the regression coefficient is also negatively related to the odds. In simple terms, if a coefficient is greater than 'one' means that on average a person with the characteristic is more likely to exhibit the outcome of interest.

4. Design and Data source

The 2006-07 Pakistan Demographic and Health Survey (PDHS) was carried out by the NIPS from September 2006 to March 2007 (NIPS, 2009). The PDHS is one of the largest household-based surveys ever conducted in Pakistan. Teams visited 972 sample points across Pakistan and collected data from a nationally representative sample of over 100,000 households.

A detailed cross-sectional survey was also conducted from all ever-married women identified in the household, with a pre-coded structured questionnaire. The questionnaire comprised of questions on fertility, reproductive health and assessing knowledge of diseases including four knowledge-related questions on TB i.e. ever heard about TB, how tuberculosis spread from one person to another, can TB be cured and what is the duration of treatment of TB now a days.

The data comes from the Pakistan Demographic and Health Survey (PDHS) conducted in 2006-07. The geographic coverage of PDHS included the whole of Pakistan excluding Federally Administered Tribal Area (FATA), military restricted areas in the cantonment and sparsely populated and inaccessible areas. The national sample represents all ever-married women aged 15-49 years living in urban and rural areas of all four provinces including Islamabad Capital Territory. Of the 10601 eligible women who were identified in the household, 10023 were interviewed successfully with a response rate of more than 95 percent. This paper analyzed only those women who responded "yes" to the question "have you ever heard of an

illness called tuberculosis or TB?" to determine the overall correct knowledge.

There is a limitation of data set, that the respondents were only ever-married women age 15-49 years. Therefore, the finding may not be generalized to the general population. But these women are also important segment of population and their role is central in the households, and any knowledge of these women, may reflect the positive contribution to enhance awareness on health issues among household members.

5. Results

This section elaborates the findings. The first part is mainly focused on bi-variate analysis and the second part is based on multivariate analysis.

5.1 Heard about disease called "TB".

Figure 1 shows that the majority (88 percent) of ever married women age 15-49 years had ever heard about the disease called "Tuberculosis". Across residence, urban women had heard about TB at 93 percent compared to rural women at 85 percent.

Figure 1: Heard about Tubercolusis

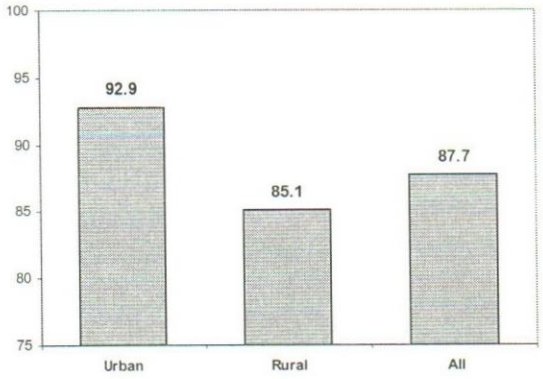


Table 1, placed at the end, describes the differentials of respondents who heard about TB. The table shows that women's awareness of TB increased with the level of education ranging from no education at 84 percent to secondary and higher at 98 percent. Husband's education also had a positive correlation with awareness level at 82 percent in case of illiterate husband to 96 percent in those having secondary school and more education.

The observed crowding of persons per sleeping room shows that nearly two-fifth of the population had five occupants or more in one room and 86 percent of them had heard about TB. Comparatively the number of people that used a separate room for sleeping was negligible to the tune of 2 percent

and a slightly higher proportion of women had heard about TB (90 percent). Although the difference in the knowledge of the above two groups was found marginal, the difference in the magnitude of spread of TB from one person to another person in these two groups is large.

The table further depicts that availability of both TV and radio also showed a positive relationship, as 94 percent of households having both facilities had heard about TB compared to 81 percent of these having none of the facility, meaning that their primary source of information might not be electronic media.

A higher proportion of women from rich households had also heard about TB than the poor: 97 percent by richest quintile and 79 percent by poorest quintile.

The table further exhibits that among women who are aware of sexually transmitted infections (STIs), a higher proportion, had heard about TB than those who had not heard about STIs. More than 98 percent had heard about TB among those who had heard about AIDS. Similarly, 99 percent also heard about TB among those who knew about STIs besides those who had heard about AIDS.

National TB control programme has extended advocacy, communication and social mobilization (ACSM) activities in 40 districts of Pakistan where PDHS was also conducted. Table 1 shows a comparison between 40 ACSM districts and non-ACSM districts. It does not depict any difference among respondents who had heard about TB in the two types of districts.

5.2 Knowledge about the ways of spread of TB

It is important to assess the knowledge among the respondents about the ways of spread of TB and if any myths or misconceptions associated with the spread of TB exist. To determine this, a question "How does Tuberculosis spread from one person to another?" was only asked from those women who had heard about TB. Figure 2, presents various responses of women who had heard of TB. A little over half of the respondents (53 percent) stated that TB spreads through coughing. Other responses were: by sexual contact (54 percent); sharing of utensils (37 percent); touching a TB patient (15 percent) and through mosquito bite (10 percent).

Figure 2: Methods of Spreads of TB

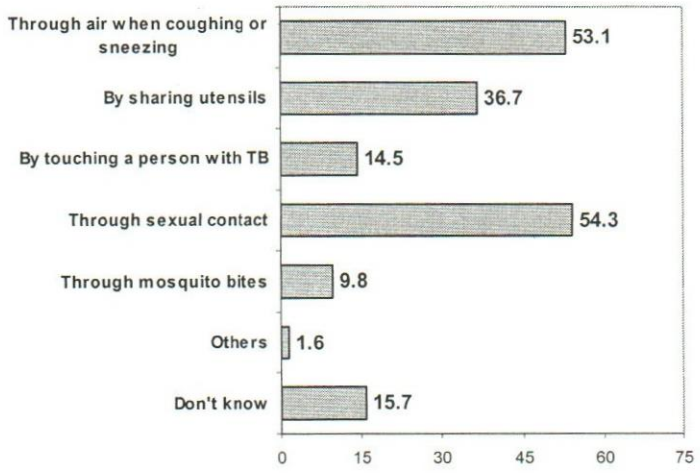


Table 2 provides details about the mechanisms of transmission of TB by a number of background characteristics. Further analysis is only restricted to those characteristics which showed a positive correlation.

Age of women, education level of both-respondents and husbands, place of residence and wealth quintile had a positive association with knowledge that TB spreads through air while coughing and sneezing. Women with secondary + education had highest correct knowledge (78 percent), followed by women who were in richest wealth quintile (66 percent). A substantial differential was observed across regions of Pakistan. Balochi women were found more knowledgeable about spread of TB through air (70 percent) as compared to Punjabi women (50 percent). These findings should be read with caution as described in chapter 4 of the PDHS main report.

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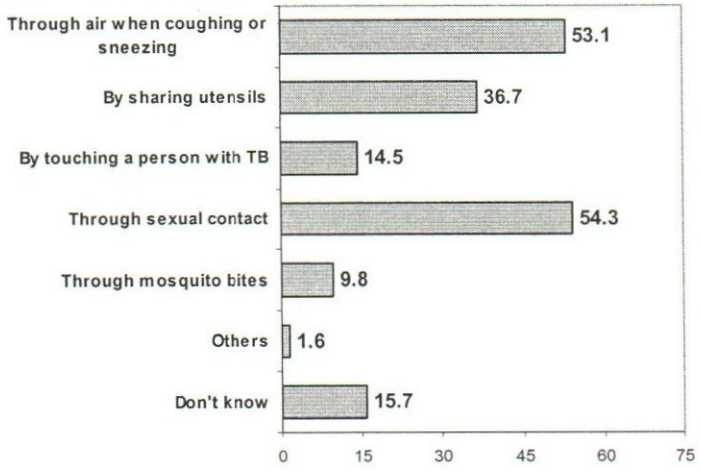

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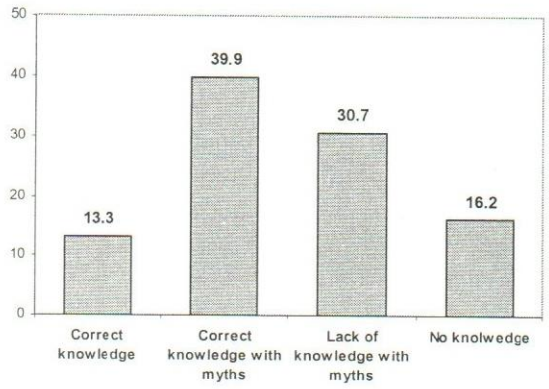
Myths and misconceptions showed no clear cut association with background characteristics. It is imperative to mention that misconceptions were higher among women in ACSM districts, although the difference was not substantial.

5.3 Correct knowledge about spread of Tuberculosis

The knowledge of respondent women about the spread of tuberculosis has been divided into four mutually exclusive categories: (i) correct knowledge that it only spreads through air by coughing and sneezing; (ii) correct knowledge with myths, i.e. that it spreads through air by coughing and sneezing with one or more misconceptions about its spread; (iii) misconceptions about its spread with lack of correct knowledge; and (iv) no knowledge i.e. neither correct knowledge nor any myth. As seen from figure 3, about 1/7th of the respondents (13.3 percent) had "correct knowledge" about spread of TB, while 16.2 percent had no knowledge concerning its transmission. The larger proportions of the respondent women were either those who had 'correct knowledge along with myths' (2/5th of respondent) or knew 'myths with lack of any correct knowledge' (30.7 percent).

Figure 3: Correct knowledge about ways of spread out



Education levels of the respondents had a positive relationship with correct knowledge of the spread of tuberculosis, as 25 percent of women with 'secondary+ education' had correct knowledge compared to 11 percent with 'no education' (Table 3).

Women living in households with 1-person sleeping per room were nearly twice as likely to be knowledgeable (20 percent) about the spread of tuberculosis as those living in congested households with 5 or more persons sleeping per room (12 percent). Because of, lack of correct knowledge and living in congested households, such people are more likely to be at-risk of

spreading or contracting TB. Furthermore, women from the richest households were 2 ½ times (21 percent) more likely to have correct knowledge about spread of tuberculosis than those from the poorest households (8 percent). Among provinces, the highest proportion of women from NWFP (18 percent) had correct knowledge about the spread of tuberculosis with the lowest from Balochistan (8 percent).

When linked with the TB-DOTS programme, interestingly, only 11 percent of the women surveyed from ACSM campaign districts reported 'correct knowledge' about the spread of tuberculosis as against 14.4 percent from districts having no such awareness campaign. That indicates ineffectiveness of ACSM programme in the ACSM districts.

Interestingly, a little more than half of the women with secondary+ education and 45 percent from the richest households reported at least one myth along with the correct knowledge of spread of tuberculosis.

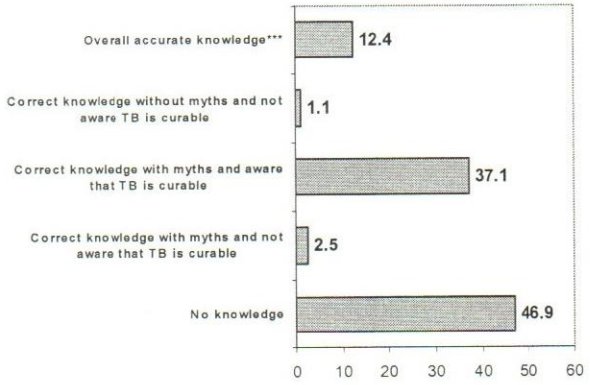
Table 3 further explores awareness levels among respondent women on whether "TB is a curable disease" and its "correct duration of treatment". Nine out of every 10 women, among those who heard about TB, knew that TB is a curable disease but only 11.7 percent knew the correct duration of TB treatment i.e. 6-months or more. The respondents' knowledge that "TB is a curable disease" had a positive relationship with a number of variables: women with secondary+ education had better knowledge than those with no-education – 98.5 percent versus 85.6 percent; higher level of knowledge among those who had radio and TV in their houses than those not having this facility – 93.6 percent versus 81.2 percent; and women in richest quintile were more knowledgeable than poorest – 97.5 percent versus 79.1 percent. Interestingly, women from non-ACSM districts were found more informed about the cure treatment of TB (90.8 percent) than those from ACSM districts (85.6 percent).

5.4 Overall measurement of knowledge

The knowledge of women who "heard about TB" is further assessed on two indicators relating to its spread and cure. The assessment is made under four categories that comprise: (i) No-knowledge about the spread of TB and it cure; (ii) correct knowledge about the spread of TB along with some misconceptions but not aware that it is curable; (iii) correct knowledge about the spread along with some misconceptions and aware that it is curable; and

(iv) correct knowledge about the spread without any misconceptions and that it is curable.

Figure 4: Composite Index based on Correct knolwedge



As shown in figure 4, about 1/8th of respondents had accurate knowledge of spread of tuberculosis without any misconception and that it is a curable disease. On the other extreme, a little less than half of the women had no knowledge about the disease, neither about its mode of spread nor its curability. A large proportion of women to the extent of 37 percent had right knowledge about the spread of TB and that it can be cured but also had some misconceptions about its spread.

Table 4 clearly indicates that women's education and wealth quintile had positive association with overall accurate knowledge about the TB disease, ranging from 9.8 percent among women with 'no education' to 24.7 percent among those with 'secondary education'. Similarly, only 6.3 percent women belonging to poorest wealth quintile had overall accurate knowledge as compared to women in richest quintile (20.2 percent).

Logistic regression analysis

Bivariate Analysis:

Women with secondary+ education were three times more likely to be knowledgeable about the spread of tuberculosis from one person to another and its curable status than those having no-education (Odds ratios 3.001, p=0.000). A pattern of better knowledge was also observed in women whose husbands had secondary+ education (Odds ratios 1.816, p=0.000), women living in the urban areas (Odds ratios=1.517, p=0.000), and women living in districts where TB-DOTS program had not organized ACSM activities (Odd ratios=1,403, p=0.000). Households in the highest wealth quintile (Odd

ratios 3.775, p = 0.000) or those with one family member sleeping per room (Odd ratios 1.90, p=0.000) or those possessing both radio and television (Odd ratios 1.808, p=0.000) were also more likely to have better and accurate knowledge about the spread of tuberculosis and its cure status. More details of bivariate logistic regression analysis are given in table 5.

Multivariate Analysis:

All predictors used in the analysis were included in multiple logistic regressions Model 1. Independent variables, that showed significant relationship on the reported accurate knowledge of TB, were included in Model 2, presented in Table 6 for determining net effect.
Model - 1 reveals that Age of women, marital status, place of residence, knowledge about other sexually transmitted diseases and availability of TV/radio at household level lost their significant effect on the outcome variable i.e. overall correct knowledge.

Model-2 was then applied on those predictors that had a significant association. The model illustrates that women with secondary+ education, those in the highest wealth quintile and living in NWFP were more likely to possess overall correct knowledge compared to those who have no education, fall in lowest wealth quintile and living in Punjab province (OR=2.072, p<0.001; OR=2.568, p<0.001; OR=1.642, p<0.001 respectively). The model further illustrates that women living in districts where ACSM activities were not yet started had slightly better knowledge than those living in districts with ACSM activities (OR=1.240, p<0.005).

8. Discussions and conclusions

One of the primary purposes of 2006-07 PDHS was to assess the current knowledge and practices on health-related issues in the country. Most of the figures reported in the DHS will form the baseline or benchmark for the formulation of future health and health related policies. In 2006-07 PDHS a number of questions were asked to assess the knowledge about TB of ever-married women aged 15-49 years. As these women represents entire Pakistan as part of adult general population and also integral part of households, therefore survey findings may somewhat extended to general adult population's level of awareness about TB. Furthermore, ever married women play a pivotal role in the family setup being a wife on one hand and a mother

on the other and therefore an important part of the chain in the family with respect to transmission of communicable diseases.

Tuberculosis, especially pulmonary tuberculosis, is a major killer disease in Pakistan. Public sector, in cooperation with private sector, is running a nationwide TB-DOTS program since last 10 years. It is highly desirable to evaluate the awareness about it and determine the level of awareness, TB, a major killer disease, in correct-term, in the general public, is silent killer among the people of Pakistan. This paper is also examining the factors associated with this TB awareness knowledge and forwarding certain recommendations to overcome knowledge barrier especially to address the issue of TB spread among ever married women. It is reveals from the PDHS survey that although every ninth women heard of TB but hardly one in ten bear the correct knowledge.

The present study reveals that more congested households (households where 5 and more persons per sleeping room) had significantly lower knowledge about TB and its associated factors. These households are more at high-risk and if, God forbids, someone has TB in such households, there is higher chances of spread of TB among other members of the household.

As expected, education played a vital role. A significant differential has been observed between educated women and husbands to uneducated women and husbands. There is a need to strengthen the slogan "Education for all" and implement the education policy more efficiently. Furthermore, it is essential to impart the "Health education" widely and efficient strategies should be developed to address the female especially women of reproductive age.

In this study, we also try to establish the linkages of TB control programme especially comparison between districts where ACSM activities are carried out and where such activities have not yet started. Unexpectedly the districts having ACSM activities had lower prevalence of overall correct knowledge compared to those districts having no ACSM activities. This finding is a matter of concern for the managers of the programme.

The study disclosed that although high proportion of women had some knowledge that TB can spread through air, is curable disease and even had myths associated, but majority of women had no knowledge about the duration of treatment of TB. Although, NTP is also focusing on the

awareness of treatment duration in its campaign but only one in ten correctly reported about the same.

Pakistan is among the 22-burden countries and stood at 7th in the world. With this pathetic situation, there is a need to enhance the scope of TB awareness programme in the country by strengthening the existent NTP programme. Success of TB awareness programme is the key to reduce the TB prevalence in the country.

9. Recommendations

Education, especially, women's education, is the most important factor to increase the level of awareness for Tuberculosis. Therefore, promoting female education is the most effective means to increase awareness about the disease.

The highest priority should be given to mass awareness campaign through more comprehensive strategy, focusing more on eliminating the myths associated with TB. There is an urgent need for concerted efforts to fight against tuberculosis, a fatal disease that is again spreading fast, especially in rural parts of the country. It is also recommended to enhance coordination between health officials, media persons and involvement of all segments of society in the fight against the disease.

NTP is going to launch a nationwide campaign in the print and electronic media to create awareness among the people based on correct knowledge about TB without any misconception. But in view of a large proportion of illiterate women in Pakistan who hardly have correct knowledge about TB, simple and easy to understand slogans and jingles be prepared, so as to increase awareness about dangers of TB as well as eradicate the myths and misconceptions associated with TB.

Table 1: Percent Distribution of Women age 15-49 who Heard About TB: Indicators used in the Analysis by Place of Residence

Heard about TB by		Urban	Rural	Total	Number of women
Women age	< 25	88.9	81.7	83.7	2067
	25 - 34	93.4	85.4	88.2	3805
	35 - 44	94.5	85.7	88.8	2958
	45 - 49	92.6	89.4	90.5	1191
Education	No education	87.9	82.8	84.0	6546
	Upto primary (1-5)	95.1	90.7	92.4	1386
	Upto middle (6-8)	95.7	90.7	93.5	633
	Upto secondary (09-10)	97.5	97.3	97.4	809
	Secondary + (11+)	97.9	98.4	98.0	646
Husband's education	No education	86.8	80.8	82.2	3542
	Upto primary (1-5)	89.4	85.0	86.2	1588
	Upto middle (6-8)	94.6	87.1	89.6	1318
	Upto secondary (09-10)	95.2	89.5	91.8	2061
	Secondary + (11+)	97.7	92.9	95.6	1499
Education status of family	Majority (> 60)	95.5	90.2	92.6	5559
	Mostly (30-60)	84.4	83.5	83.7	2472
	Few (> 00-30)	84.9	80.2	80.9	1064
	All uneducated	82.6	76.0	76.8	927
Marital status	Currently married	92.8	85.1	87.7	9556
	Not currently married	93.3	85.0	87.8	466
Working women	Currently working	93.9	84.4	86.8	2594
	Else	92.6	85.4	88.1	7428
Number of persons sleeping per room	1	93.8	87.4	89.7	207
	2	96.3	85.6	89.6	1199
	3	94.6	86.7	89.6	2160
	4	92.8	84.3	87.1	2088
	5 +	90.8	84.4	86.4	4307
Availability of Radio and TV in the HH	Both available	95.8	93.0	94.1	2169
	Only Television	85.0	86.0	85.9	1193
	Only Radio	93.8	86.5	90.4	3652
	None of them	85.6	79.7	80.6	3008
Wealth index	Poorest	78.6	79.1	79.1	1944
	Poorer	84.5	83.4	83.5	2001
	Middle	86.5	88.0	87.6	1943
	Richer	92.2	89.4	90.7	2055
	Richest	97.0	96.7	97.0	2078
Region	Punjab	92.4	83.8	86.5	5800
	Sindh	94.0	86.9	90.4	2410
	NWFP	91.2	86.3	87.1	1350
	Balochistan	92.2	89.9	90.4	462
Knows about AIDS	Those who heard	98.4	98.0	98.2	4426
	Those who had not heard	80.3	79.2	79.4	5596
Knows about STIs other than AIDS	Those who heard	99.7	97.7	98.5	955
	Those who had not heard	92.0	83.9	86.6	9067
Districts having ACMS activities	ACSM activities	92.7	86.0	88.2	3584
	No ACSM activities	93.0	84.7	87.5	6438
Heard of TB among all women 15-49 years		92.9	85.1	87.7	10022

Table 2: Percentage Distribution of Women age 15-49 who knows about ways of spread of TB Among those who heard about TB: Indicators used in the Analysis

Background characteristics		Through the air when coughing or sneezing	By sharing utensils	By touching a person with TB	Through sharing foods	Through sexual contact	Through mosquito bites	Others	Don't know	Number
Women age	< 25	44.9	35.5	11.6	48.7	8.9	1.5	1.8	21.5	1730
	25 - 34	53.2	36.0	14.1	54.6	9.4	2.0	1.5	15.5	3356
	35 - 44	56.6	38.1	15.5	55.3	10.5	2.4	1.6	13.6	2626
	45 - 49	57.1	37.6	17.7	59.9	11.0	2.2	1.7	12.0	1079
Education	No education	47.8	37.4	13.8	54.8	9.6	1.8	1.4	17.3	5495
	Upto primary (1-5)	53.1	38.3	14.1	56.2	11.3	2.4	1.4	14.5	1281
	Upto middle (6-8)	59.5	29.9	16.4	53.6	8.6	2.3	2.6	16.2	591
	Upto secondary (09-10)	65.2	32.2	13.2	51.6	8.3	2.9	2.7	13.6	788
	Secondary + (11+)	77.9	39.8	20.4	50.9	11.3	2.4	2.0	6.6	634
Husband's education	No education	47.9	37.1	13.7	53.5	8.9	1.7	1.4	18.1	2911
	Up to primary (1-5)	48.3	36.8	14.4	55.2	11.1	1.6	1.3	17.9	1369
	Up to middle (6-8)	53.9	34.9	15.9	56.2	9.0	2.1	1.7	14.7	1181
	Up to secondary (09-10)	53.9	37.7	13.0	56.3	10.5	2.5	1.4	14.4	1891
	Secondary + (11+)	66.3	35.7	16.9	51.1	10.2	2.6	2.6	11.4	1432
Education status of family	Majority (> 60)	58.2	36.5	15.1	55.2	10.3	2.2	1.9	13.3	5149
	Mostly (30-60)	47.1	37.9	14.8	53.6	9.8	2.1	1.2	16.9	2068
	Few (> 00-30)	44.4	35.1	11.0	51.5	7.4	1.1	1.6	22.7	861
	All uneducated	43.9	36.9	13.5	53.5	9.2	1.6	.8	21.1	712
Marital status	Currently married	52.7	36.6	14.5	54.0	9.8	2.0	1.6	15.9	8382
	Not currently married	60.2	38.5	13.6	60.3	8.9	2.2	2.3	11.9	409
Working women	Currently working	49.9	43.2	14.9	56.6	11.5	2.0	1.7	15.9	2250
	Else	54.1	34.5	14.3	53.5	9.2	2.0	1.6	15.6	6541
Number of persons sleeping per room	1	55.2	39.5	14.0	49.0	10.9	4.3	2.3	15.7	186
	2	57.1	35.4	17.8	53.3	10.3	2.4	1.1	14.4	1075
	3	54.4	34.5	14.7	54.3	10.7	2.2	2.3	14.8	1934
	4	53.8	38.6	15.3	56.1	9.6	2.1	1.6	14.7	1819
	5 +	50.6	37.0	13.0	54.0	9.2	1.7	1.4	17.1	3721
Availability of Radio and TV in the HH	Both available	61.6	37.5	17.5	53.4	10.6	2.2	2.2	12.6	2042
	Only Television	50.2	41.4	13.7	55.8	10.3	1.3	1.2	13.9	1025
	Only Radio	55.5	33.5	14.3	55.8	9.9	2.3	1.8	13.8	3300
	None of them	43.8	38.4	12.5	52.4	8.8	1.9	1.0	21.7	2424
Wealth index	Poorest	39.9	40.2	11.0	52.3	8.8	1.2	1.2	22.2	1538
	Poorer	51.0	35.9	13.7	53.7	9.9	2.0	1.4	17.1	1671
	Middle	51.2	36.8	15.9	58.2	11.1	2.1	1.3	14.7	1703
	Richer	53.7	37.7	16.0	57.0	10.7	2.5	1.3	13.9	1864

Background characteristics		Through the air when coughing or sneezing	By sharing utensils	By touching a person with TB	Through sharing foods	Through sexual contact	Through mosquito bites	Others	Don't know	Number
	Richest	65.9	33.7	15.1	50.6	8.5	2.2	2.7	12.1	2015
Region	Punjab	49.7	38.6	16.4	56.3	10.3	2.2	1.9	15.9	5018
	Sindh	54.2	31.8	9.8	54.2	10.8	1.6	1.3	17.0	2179
	NWFP	59.4	39.3	9.4	44.9	7.4	1.9	1.5	14.2	1177
	Balochistan	70.2	32.7	30.2	57.5	4.7	3.1	.1	11.4	417
Place of residence	Urban	60.4	34.8	14.3	53.6	9.1	2.2	2.1	14.2	3111
	Rural	49.1	37.7	14.5	54.7	10.2	1.9	1.4	16.5	5680
Knows about AIDS	Those who heard	61.3	36.7	15.0	56.9	11.2	2.6	2.1	11.1	4347
	Those who had not heard	45.0	36.8	14.0	51.8	8.4	1.5	1.1	20.2	4443
Knows about STIs other than AIDS	Those who heard	59.5	43.6	17.2	62.8	22.7	4.5	2.1	5.3	940
	Those who had not heard	52.3	35.9	14.1	53.3	8.3	1.8	1.6	17.0	7851
Districts having ACMS activities	ACSM activities	50.6	40.1	17.4	56.1	10.0	1.6	1.1	15.9	3160
	No ACSM activities	54.4	34.8	12.8	53.3	9.7	2.3	1.9	15.6	5631
Overall knowledge about ways of spreadout of TB		53.1	36.7	14.5	54.3	9.8	2.0	1.6	15.7	8791

Table 3: Percent Distribution of Correct Knowledge about Ways of spread of TB among women 15-49 who heard about TB: Indicators used in the Analysis

Correct knowledge about TB by		Correct knowledge about ways of spread of TB				Total		TB can be cured[a]	Correct duration of treatment known[b]
		Correct knowledge *	Correct knowledge with myths**	Lack of knowledge with myths***	No knowledge ****	Percent	Number		
Women age	< 25	11.7	33.2	32.7	22.4	100.0	1730	85.8	9.6
	25 - 34	13.7	39.6	30.8	16.0	100.0	3356	89.5	12.0
	35 - 44	14.2	42.4	29.4	14.0	100.0	2626	90.7	12.6
	45 - 49	12.4	44.7	30.3	12.6	100.0	1079	87.8	12.2
Education	No education	10.9	36.9	34.5	17.7	100.0	5495	85.6	10.9
	Upto primary (1-5)	13.3	39.8	32.0	14.9	100.0	1281	91.0	13.5
	Upto middle (6-8)	16.4	43.1	23.9	16.7	100.0	591	96.3	13.7
	Upto secondary (09-10)	18.5	46.8	19.6	15.2	100.0	788	95.8	13.9
	Secondary + (11+)	24.8	53.1	15.2	7.0	100.0	634	98.5	10.6
Husband's education	No education	11.5	36.4	33.5	18.6	100.0	2911	83.9	11.0
	Upto primary (1-5)	11.6	36.7	33.3	18.4	100.0	1369	87.4	12.5
	Upto middle (6-8)	13.8	40.1	30.7	15.4	100.0	1181	88.4	12.4
	Upto secondary (09-10)	13.0	40.9	31.3	14.8	100.0	1891	92.8	12.6
	Secondary + (11+)	18.5	47.8	21.8	12.0	100.0	1432	96.0	10.8
Education status of family	Majority (> 60)	15.4	42.7	27.9	13.9	100.0	5149	92.5	13.4
	Mostly (30-60)	11.1	36.1	35.6	17.3	100.0	2068	85.9	10.1
	Few (> 00-30)	10.2	34.2	32.4	23.2	100.0	861	81.7	8.1
	All uneducated	7.9	36.0	34.4	21.7	100.0	712	80.5	9.0
Marital status	Currently married	13.3	39.4	30.9	16.4	100.0	8382	88.9	11.6
	Not currently married	12.1	48.2	27.1	12.7	100.0	409	89.7	13.7
Working women	Currently working	10.5	39.4	33.6	16.4	100.0	2250	88.3	9.3
	Else	14.2	39.9	29.7	16.2	100.0	6541	89.2	12.5
Number of persons sleeping per room	1	19.5	35.7	27.2	17.5	100.0	186	91.7	11.9
	2	16.2	40.9	27.7	15.2	100.0	1075	90.2	11.1
	3	14.4	40.0	30.2	15.3	100.0	1934	89.4	11.3
	4	12.0	41.8	31.2	15.0	100.0	1819	88.3	12.2
	5 +	12.2	38.4	31.8	17.6	100.0	3721	88.8	12.0
Availability of Radio and TV in the HH	Both available	15.4	46.1	25.3	13.1	100.0	2042	93.6	9.1
	Only Television	10.3	40.0	35.7	14.1	100.0	1025	85.4	7.7
	Only Radio	15.1	40.4	30.0	14.5	100.0	3300	92.8	16.0
	None of them	10.2	33.6	34.1	22.1	100.0	2424	81.2	9.8
Wealth index	Poorest	7.7	32.2	37.4	22.7	100.0	1538	79.1	7.1
	Poorer	12.0	39.0	31.7	17.3	100.0	1671	84.6	10.0
	Middle	12.4	38.8	33.4	15.4	100.0	1703	89.1	12.9

Correct knowledge about TB by		Correct knowledge about ways of spread of TB				Total		TB can be cured[a]	Correct duration of treatment known[b]
		Correct knowledge *	Correct knowledge with myths**	Lack of knowledge with myths***	No knowledge ****	Percent	Number		
	Richer	12.0	41.7	32.0	14.3	100.0	1864	93.5	13.6
	Richest	20.6	45.3	21.2	12.9	100.0	2015	95.7	14.0
Region	Punjab	13.4	36.3	34.0	16.3	100.0	5018	86.8	15.6
	Sindh	11.3	42.9	28.1	17.7	100.0	2179	94.2	6.7
	NWFP	18.2	41.2	25.9	14.7	100.0	1177	93.3	5.6
	Balochistan	8.3	61.9	17.8	12.0	100.0	417	75.3	9.1
Place of residence	Urban	16.1	44.3	24.6	15.0	100.0	3111	93.0	12.4
	Rural	11.7	37.3	34.0	16.9	100.0	5680	86.7	11.3
Knows about AIDS	Those who heard	16.0	45.3	26.9	11.8	100.0	4347	96.0	12.3
	Those who had not heard	10.6	34.4	34.4	20.6	100.0	4443	82.1	11.2
Knows about STIs other than AIDS	Those who heard	14.9	44.6	35.2	5.4	100.0	940	91.9	9.0
	Those who had not heard	13.1	39.2	30.2	17.5	100.0	7851	88.6	12.0
Districts having ACMS activities	ACSM activities	11.3	39.3	33.1	16.3	100.0	3160	85.6	11.8
	No ACSM activities	14.4	40.0	29.4	16.2	100.0	5631	90.8	11.7
Overall Correct knowledge reported by 15-49 year of women (Based on Q902)		13.3	39.8	30.7	16.2	100.0	8791	88.9	11.7

* Correct knowledge means: Knows that TB spread out through air and no misconception about TB reported

** Correct knowledge with myths mean: Knows that TB spread out through air and at least one misconception about TB reported

**** No knowledge means: Does not know that TB spread out through air but no misconception about TB reported

*** Lack of knowledge with myths means: Does not know that TB spread out through air and has misconception about TB reported

a TB can be cured means: Knows that TB is curable disease

b. Knowledge about correct duration of TB treatment, i.e. 6-months or more, known

Table 4: Percent Distribution of Women According to Overall Knowledge Index about TB among Respondent women 15-49 who heard about TB: Indicators used in the Analysis

Background characteristics		No knowledge	Correct knowledge with myths and not aware that TB is curable	Correct knowledge with myths and aware that TB is curable	Correct knowledge without myths and not aware TB is curable	Overall accurate knowledge ***	Total Percent	Number
Women age	< 25	55.1	3.0	30.0	1.1	10.8	100.0	1730
	25 - 34	46.8	2.0	37.2	1.2	12.8	100.0	3356
	35 - 44	43.4	2.3	39.9	.9	13.4	100.0	2626
	45 - 49	42.9	3.3	41.2	.9	11.6	100.0	1079
	Chi-square	**85.93; P<0.001**						
Education	No education	52.2	3.1	33.6	1.2	9.8	100.0	5495
	Upto primary (1-5)	46.9	2.0	37.7	1.1	12.3	100.0	1281
	Upto middle (6-8)	40.5	1.3	41.4	.2	16.6	100.0	591
	Upto secondary (09-10)	34.8	.9	45.2	1.1	18.1	100.0	788
	Secondary + (11+)	22.1	.6	52.1	.5	24.7	100.0	634
	Chi-square	**393.97; P<0.001**						
Husband's education	No education	52.1	4.1	32.1	1.0	10.7	100.0	2911
	Upto primary (1-5)	51.7	2.2	34.5	1.3	10.3	100.0	1369
	Upto middle (6-8)	46.1	2.3	37.7	1.1	12.7	100.0	1181
	Upto secondary (09-10)	46.1	1.2	39.5	1.0	12.2	100.0	1891
	Secondary + (11+)	33.7	1.0	46.2	1.0	18.1	100.0	1432
	Chi-square	**242.84; P<0.001**						
Education status of family	Majority (> 60)	41.8	1.6	40.9	.9	14.8	100.0	5149
	Mostly (30-60)	52.9	3.3	32.6	1.4	9.9	100.0	2068
	Few (> 00-30)	55.6	3.5	30.6	1.4	9.0	100.0	861
	All uneducated	56.1	5.2	30.6	.7	7.3	100.0	712
	Chi-square	**229.92; P<0.001**						
Marital status	Currenty married	47.3	2.5	36.7	1.0	12.5	100.0	8382
	Not currently married	39.8	2.0	46.1	1.6	10.5	100.0	409
	Chi-square	**17.50; P<0.01**						
Working women	Currently working	50.1	2.6	36.6	.9	9.8	100.0	2250
	Else	45.9	2.4	37.3	1.1	13.3	100.0	6541
	Chi-square	**24.00; P<0.001**						
Number of persons sleeping per room	1	44.8	.1	35.6	.3	19.2	100.0	186
	2	42.9	2.3	38.5	.9	15.3	100.0	1075
	3	45.6	1.9	37.6	1.1	13.7	100.0	1934
	4	46.2	3.4	38.1	1.1	11.3	100.0	1819
	5 +	49.4	2.3	36.0	1.1	11.2	100.0	3721
	Chi-square	**49.57; P<0.001**						
Availability of	Both	38.4	1.5	44.4	.7	14.9	100.0	2042

Background characteristics		No knowledge	Correct knowledge with myths and not aware that TB is curable	Correct knowledge with myths and aware that TB is curable	Correct knowledge without myths and not aware TB is curable	Overall accurate knowledge ***	Total Percent	Number
Radio and TV in the HH	available							
	Only Television	49.8	4.3	35.5	1.2	9.3	100.0	1025
	Only Radio	44.5	1.2	38.8	.9	14.6	100.0	3300
	None of them	56.2	4.2	29.3	1.5	8.8	100.0	2424
	Chi-square	**286.92; P<0.001**						
Wealth index	Poorest	60.1	4.2	27.9	1.6	6.3	100.0	1538
	Poorer	49.0	4.4	34.5	1.2	11.0	100.0	1671
	Middle	48.8	2.3	36.3	1.0	11.5	100.0	1703
	Richer	46.3	1.2	40.4	.8	11.3	100.0	1864
	Richest	34.1	.8	44.0	.8	20.2	100.0	2015
	Chi-square	**436.09; P<0.001**						
Region	Punjab	50.3	2.9	33.3	1.3	12.2	100.0	5018
	Sindh	45.8	.8	41.6	.6	11.2	100.0	2179
	NWFP	40.6	1.8	39.3	.6	17.7	100.0	1177
	Balochistan	29.8	8.0	53.1	2.1	7.0	100.0	417
	Chi-square	**249.43; P<0.001**						
Place of residence	Urban	39.6	1.4	42.6	.9	15.5	100.0	3111
	Rural	50.9	3.1	34.1	1.2	10.8	100.0	5680
	Chi-square	**156.29; P<0.001**						
Ever heard about AIDS	Yes	38.7	1.0	44.0	.4	15.9	100.0	4347
	No	55.0	3.9	30.4	1.7	9.1	100.0	4443
	Chi-square	**423.75; P<0.001**						
Knows other sexual-contact diseases other than AIDS	Yes	40.5	2.8	41.2	1.3	14.2	100.0	940
	No	47.7	2.4	36.6	1.0	12.2	100.0	7851
	Chi-square	**17.42; P<0.01**						
Districts having ACMS activities	ACSM activities	49.4	3.1	36.1	1.3	10.1	100.0	3160
	No ACSM activities	45.6	2.1	37.6	.9	13.8	100.0	5631
	Chi-square	**39.17; P<0.001**						
Overall knowledge reported by 15-49 years of women		46.9	2.5	37.1	1.1	12.4	100.0	8791

*** Overall accurate knowledge means: Correct Knowledge about ways of spread of TB (without myths) and knows that TB is curable disease

Table 5: Odd Ratios obtained from the Bivariate Binary Logistic regression model for Overall Accurate Knowledge about Tuberculosis

Indicators		Odd Ratios	Sig
Respondent's age	< 25 - Ref		0.051
	25 - 34	1.203	
	35 - 44	1.294	
	45 - +	1.097	
Respondent's education	No education - Ref		0.000
	Upto primary	1.298	
	Upto middle	1.804	
	Upto secondary	1.966	
	Secondary +	3.001	
Husband's education	No education - Ref		0.000
	Upto primary	0.972	
	Upto middle	1.231	
	Upto secondary	1.170	
	Secondary +	1.816	
Education status of family	All uneducated-Ref		0.000
	Majority (>60)	2.203	
	Mostly (30-60)	1.386	
	Few (>00-30)	1.249	
Marital status	Not currently married - Ref		0.268
	Currently married	1.200	
Working women	Else - Ref		0.000
	Currently working	0.703	
Number of persons sleeping per room	5 + Ref		0.000
	1	1.907	
	2	1.446	
	3	1.232	
	4	0.984	
Availability of TV/Radio	None of them - Ref		0.000
	Both available	1.808	
	Only TV	1.055	
	Only Radio	1.730	
Wealth quintile	Poorest - Ref		0.000
	Poorer	1.862	
	Middle	1.966	
	Richer	1.923	
	Richest	3.775	
Region	Punjab - Ref		0.000
	Sindh	0.874	
	NWFP	1.563	
	Balochistan	0.522	
Place of residence	Rural - Ref		0.000
	Urban	1.517	
Knows about HIV/AIDS	Not heard - Ref		0.000
	Heard	1.857	
Knows about STIs other than AIDS	Not heard - Ref		0.172
	Heard	1.148	
Districts having ACMS activities	ACSM activities - Ref		0.000
	No ACSM activities	1.403	

Table 6: Odd Ratios obtained from the Multiple Binary Logistic regression models for Overall Accurate Knowledge about Tuberculosis

Indicators		Model-1				Model-2			
		Exp(B)	Sig	CI		Exp(B)	Sig	CI	
				Lower	Upper			Lower	Upper
Respondent's age	< 25 - Ref		0.133						
	25 - 34	1.094		.903	1.325				
	35 - 44	1.261		1.029	1.546				
	45 - +	1.138		.879	1.474				
Respondent's education	No education - Ref		0.000				0.000		
	Upto primary	1.132		.914	1.401	1.140		.933	1.393
	Upto middle	1.504		1.147	1.972	1.468		1.138	1.892
	Upto secondary	1.463		1.129	1.895	1.451		1.147	1.835
	Secondary +	2.071		1.555	2.758	2.072		1.629	2.636
Husband's education	No education - Ref		0.019						
	Upto primary	.808		.644	1.014				
	Upto middle	.823		.652	1.039				
	Upto secondary	.687		.553	.852				
	Secondary +	.770		.603	.982				
Education status of family	All uneducated-Ref		0.366						
	Majority (>60)	1.333		.932	1.904				
	Mostly (30-60)	1.171		.834	1.644				
	Few (>00-30)	1.260		.863	1.840				
Marital status	Not currently married - Ref		0.524						
	Currently married	1.114		.799	1.554				
Working women	Else - Ref		0.034						
	Currently working	.833		.704	.986				
Number of persons sleeping per room	5 + Ref		0.125						
	1	1.440		.965	2.148				
	2	1.042		.843	1.289				
	3	.982		.822	1.173				
	4	.862		.716	1.038				
Availability of TV/Radio	None of them - Ref		0.259						
	Both available	1.172		.937	1.466				
	Only TV	.966		.742	1.258				
	Only Radio	1.205		.975	1.488				
Wealth quintile	Poorest - Ref		0.000				0.000		
	Poorer	1.449		1.099	1.909	1.584		1.216	2.063
	Middle	1.426		1.059	1.920	1.697		1.304	2.206
	Richer	1.210		.869	1.684	1.525		1.166	1.995
	Richest	1.955		1.362	2.806	2.568		1.958	3.368
Region	Punjab - Ref		0.000				0.000		
	Sindh	.871		.729	1.041	.881		.745	1.041
	NWFP	1.674		1.371	2.045	1.642		1.358	1.986
	Balochistan	.707		.471	1.063	.702		.470	1.046
Place of residence	Rural - Ref		0.795						
	Urban	.977		.822	1.162				
Knows about AIDS	Not heard - Ref		0.094						
	Heard	1.159		.975	1.376				
Knows about other than AIDS	Not heard - Ref		0.855						
	Heard	1.020		.826	1.258				
Districts having ACMS activities	ACSM activities - Ref		0.008				0.005		
	No ACSM activities	1.234		1.057	1.441	1.240		1.066	1.443

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5

Media Messages Persuading Couples to Use Contraceptives: An Analysis in the Back Drop of Socio-Economic Factors

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1. Introduction

Population is an important issue to be given due importance by planners. Pakistan had a population of 32.5 million at her independence, which reached 158.5 million in 2008 (NIPS, 2006-7). Pakistan still has an unacceptably high growth rate compared to other developing countries therefore, the government of Pakistan is attaching highest priority to lowering of the population growth rate to reach replacement level of fertility by 2020 (MoPW, 2002). For achieving the goal of "Health For All", the Information Education and Communication (IEC) has been playing a vital role, and is also very important for providing knowledge about family planning (FP) services to those who are interested in postponing/spacing or limiting child bearing, The use of media is considered vital to promote awareness on contraceptives and mobilize individuals for using contraceptive methods. Hence, it is crucial to investigate the nexus between media messages and their effectiveness in persuading couples to use contraceptive methods. In other words, the present endeavor is an attempt to understand the present IEC activities and find out about the role of media messages of family planning in persuading couples to use contraceptives. Furthermore, efforts are made to examine socio-economic and demographic correlates of the effectiveness of media messages.

To work on the media messages of family planning it is necessary to observe genesis of media campaigns by the Ministry of Population Welfare, that is what are media messages and how media campaigns have evolved in Pakistan. The main sources of media messages are Radio, TV, News Papers, pamphlets, and Neon signs. Contraceptives are sold along with pamphlets explaining the need for family planning and briefing on the use of the methods. The Pakistan Family Planning Program started in 1953 in private sector and worked through voluntary organizations. In 1960 the Government officially adopted the program. The family planning (FP) awareness program started with full strength in 1965 under an independent organization and named as "Information, Education Communication" (IEC). Since then government has adopted different approaches for creating awareness about FP. TV and Radio was utilized during this period laying stress on FP, Mother and Child Health (MCH), Nutrition and responsible parenthood.

Effectiveness, of the media is defined as "means of getting the maximum out of available resources. It does not mean only the number of persons being

covered by program, but it is measured in terms of the level of awareness of the messages received by the community through the program, as well as its impact on their decision making process related to family planning and overall health seeking behavior". In other words, the effectiveness of the program is the ratio of the input and the outcome of the program (Bhandari, 2005).

2. Theoretical Context

The Pakistan population welfare program primarily focuses on creating awareness among the people about small family size norms, to promote family planning and motivate the married couple to adopt family planning methods. Similarly (Rogers, 1960) reported the contribution of communications media to awareness creation and the adoption of new ideas. Demographers also believe that the dissemination of information, education, and communication can change couples reproductive behaviors (Bongaarts et al. 1990; Hakim, 2001). The attitudes and perceptions of individuals toward contraceptive use are important in influencing their contraceptive behaviors, which can be changed by effective media campaign (Bankole, 1999).

The association between social and demographic characteristics, family planning communications campaigns and contraceptive behavior was assessed in Tanzania Demographic and Health Survey. The relationship between specific media messages and contraceptive use showed that more types of media that women are exposed to, the more likely they are to practice contraception (Ngallaba et. el., 1993). Fikree in her study concluded that multiple media sources of information on contraception reinforce one another and extend the reach of a family planning campaign. The study recommended that varied media should continue to be used to promote family planning and other reproductive health issues as a woman who recalled six media sources of family planning messages were 11 times more likely as women who recalled no media sources to be using modern contraceptives. (Fikree, et. al. 1999).

However, according to Balatao a logical first step of a media campaign would be to increase public approval (Blatao, 1993). It is observed that in El Salvador, where contraceptive prevalence was 35 percent, over 90 percent of reproductive-aged women reported having heard a media message

concerning family planning (Bertrand et al., 1982). Similarly in Pakistan also, it is observed that current usage is only 30 percent where as 98 percent of the women reported having heard a media message in the past month (Ahmed and Mumtaz, 2008).

Also in an analysis of the 1989 Kenya Demographic and Health Survey found that contraceptive prevalence was nearly 50% among women who recalled hearing or seeing family planning messages in three media (radio, print and television), compared with 14% among those who did not recall any family planning messages in the media.

In order to test the effectiveness of family planning messages it is hypothesized that women perceive that the Family Planning Messages through electronic media are effective in persuading couples to use Contraceptives, and there are socio-economic factors affecting the thinking of women in persuasion of couples to use contraceptive.

Keeping in view the empirical observations, we wish to investigate in this study whether women perceive that the media messages are effective in persuading couples to contraceptives use. We will also investigate the factors that affect the perception of women in persuading/ convincing couples for intention of contraceptive use.

3. Data and Methodology

This analysis is based on data of the Pakistan Demographic and Health Survey (NIPS, 2006-07). There were Total 10,601 women in the survey and 10,023 were interviewed. It is a nationally representative survey of ever-married women age 15-49. In the survey there is detailed Household and IEC information in its questionnaires which includes questions such as "In the last month, Have you heard a message about FP on radio or TV", "Which messages did it convey to you ? "Do you think that message you heard was effective or not effective in persuading couples to use family planning" etc. It may be borne in mind that PDHS data is not only the current best source of data for analyzing the factors associated with the effectiveness of media messages but also for information on certain variables that have not been utilized and tested before e.g. maternal mortality rate, in a Pakistani context. Data is selected due to its timing, their importance, size,

focused respondents and their status by type of residence, and is rich for this kind of study.

The limitation of the paper is that in the PDHS 2006-7 family planning messages delivered through TV and radio were only observed and not other sources , therefore, we are not able to analyze other media sources like print material bill boards as well as interpersonal communication. However, we strongly believe that the data do signify useful material to give findings for policy-makers and service providers.

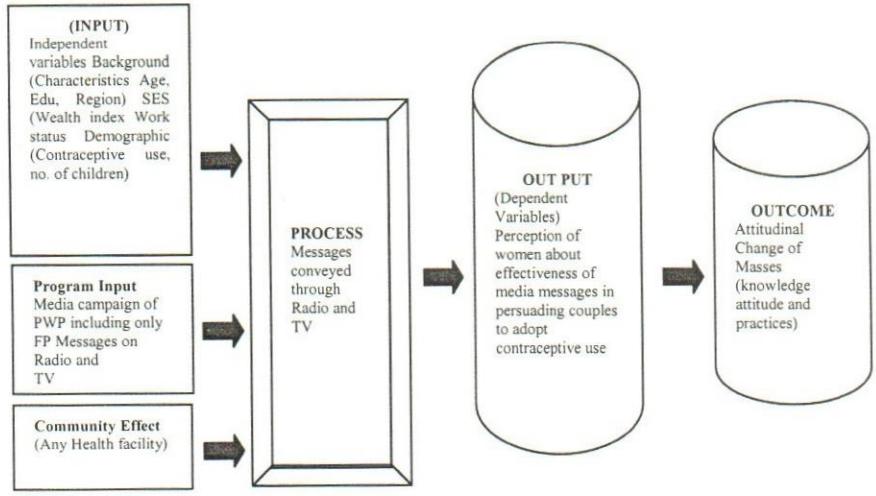
The paper objectives are:

1. Comparing different media like (TV and Radio) in their effectiveness to change perception of women in persuading couples for using contraceptives.
2. Observation of perception of women about effectiveness of Media messages by background characteristics
3. Association between socio-economic factors and perception of women about effectiveness of media messages in persuading couples to contraceptive use.
4. Recommendations for future research and policy making

4. Conceptual Frame Work

The conceptual framework shows the connections among relevant contextual factors and IEC messages in persuasion of contraceptive use. It is a pathway for undertaking research in the light of objectives. Literature helped us to identify variables associated, input factors are region of residence , women's age, education, number of children, socioeconomic status), and program factors (FP messages, availability of health facility) which affect the effectiveness of media messages in persuading couples to contraceptive use. Hence, analysis can be framed that the individual factors are affecting the performance of media messages conveyed through radio and TV which helps to change the perception of women, when the perceptions of women are changed which in turn will change the attitude and practices of people, the frame work is as under:

CONCEPTUAL FRAMEWORK`
LINKING SOCIO-ECONOMIC VARIABLES AND IEC, INPUTS TO OUTCOMES



5. Methods of Analysis

Initially the analysis is carried out on total ever married women in the PDHS 2007. There were total 10023 ever married women who have responded in the survey. Later, out of total women a sub sample of only those women (4176) who have heard family planning messages on Radio, TV were taken for further analysis.

The analysis is based on two approaches- simple cross tabulations and multivariate technique. The cross tabulation is used to show unadjusted geographical, economic and demographic differentials of effectiveness of media messages in persuading couples in contraceptive use. Initially simple percentages are observed to select the variables. Then correlation matrices are created to drop variables with very strong association among predictor variables.

Secondly among multivariate techniques, association was observed through application of the logistic regression technique. The multiple logistic regression is used to fit the three models and the relative effects of exposure to any one of the media sources of family planning messages by both

medium like radio and TV and also Radio and TV separately, while controlling for all media and socio-economic, community as well as demographic background variables. The odds ratios obtained from this analysis estimates the relationship of each independent variable to the outcome (dependent) variable, while simultaneously taking into account all other variables.

The dependent variable in the analysis is a dichotomous variable where value '1' is assigned to Perception of women about effectiveness of Media Messages in persuading couples to use FP otherwise a value of '0' is given.

Women were asked whether they had heard, or seen any family planning messages in the last month on two media channels— radio, and television. All those who responded in affirmative were asked "What messages did it convey to you?" And in the subsequent question the respondents were asked "Do you think that the message you heard was effective in persuading couples to use family planning?" The three models were run for women who were exposed to family planning via radio, TV and either medium.

1. Among the predictor or independent variables in the first model were geographical variables including regional residence (Punjab, Sindh, Balochistan and NWFP), and back ground characteristics including age (<25, 25-34, 35+) education (No education, 1-10, 11+) and number of children at interval scale and contraceptive use (current use =1 and not use=0).
2. In the second model economic variables i.e. wealth index (poor, poorest, middle, richer, and richest) and women's work status (working and not working) were added to model-1.
3. In the third model a community variable which is availability and non availability of any health service within 5 km of urban and rural, all media messages and ownership of TV and Radio were added to the model-2

6. Geographical, Social, Economic and Demographic Differentials of Effectiveness of Media Messages

Pakistan has a large population. On the one hand, it is argued that the social and economic conditions which constrain in convincing the couples to adopt family planning must be evaluated and changed to generate more than a marginal decline in fertility. On the other hand, the emphasis on the

provision and improvement of supply-side activities of family planning is considered important for an increased and sustained use of contraceptives even with low levels of socio-economic development and casual attitudes towards fertility control. Given this situation, it becomes crucial to determine what policy prescriptions would be more effective in changing the behavior of Pakistani couples to persuade them to adopt family planning.

The tables constructed from the PDHS data relating to family planning messages and effectiveness of media messages in persuading couples to contraceptive use are presented in the paper. The percentage of currently married women age 15-49 who have heard or watched a family planning message on either medium, radio or television in the month preceding the survey, according to background characteristics, is presented in Table 1 and explained in the following passages. It unfolds that over half (57 percent) of the women have not been exposed to family planning messages either through radio or TV or both medium. TV is the most popular medium as over one third of the women have seen FP message on TV. It is worth noting that a small number of women (2.4 percent) have listened FP message on radio.

Pakistan consists of four provinces and each province has different characteristics. There are differences by residence in exposure of radio and TV messages. Variation by province in hearing any media messages reveals that a very large number of Balochistan women (87.6 percent) did not hear or watch a FP message on radio or TV as compared to Punjab women (50 percent). There is not much regional variation among those who heard message on radio as highest (2.8 percent) are in NWFP and lowest (1.4 percent) in Balochistan respectively. Age is an important demographic variable. However, the three age groups do not show much variation from the youngest women to older women

Level of education and wealth of a person help describe the socio-economic status of women. Data show a positive trend that exposure to FP messages through the media increases with the increase in level of education, from 22.9 percent to 55.6 percent for TV watchers while exposure on radio declines with increase in education from 2.6 to 1.3 percent. Similar trend is observed for wealth quintile that from 5 percent to 59 percent in poorest to richest wealth group and it is reversed for radio as more poor people have heard media message on radio as compared to rich people. This shows that, in

general, reported exposure to media messages increases with increase in wealth and education.

Table 1: Percent of all ever married women age 15-49 who have heard or watched a family planning message on by radio and Television in the month preceding the survey, according to background characteristics, Pakistan 2006-07

	Heard on both	Heard on Radio only	Heard on TV only	Heard on neither	Total No
Total	8.3	2.4	32.6	56.7	10023
Region of Residence					
Punjab	9.5	2.4	38.1	50.0	5800
Sindh	8.1	2.4	28.8	60.7	2410
NWFP	5.5	2.8	23.8	67.9	1351
Balochistan	2.6	1.4	8.4	87.6	462
Age					
Less than 25	8.3	2.8	31.4	57.5	2068
25-34	8.2	2.5	34.5	54.8	3792
35+	8.4	2.1	31.4	58.1	4163
Education					
No education	6.6	2.6	22.9	67.9	6511
Up to secondary (1-10)	11.2	3.0	43.0	42.8	1423
secondary+ (11+)	11.7	1.3	55.6	31.3	2089
Current Use					
Yes	11.2	2.0	42.6	44.2	2829
No	7.2	2.5	28.7	61.6	7194
Wealth index					
Poorest	2.0	3.9	5.3	88.8	1944
Poorer	6.6	3.4	18.5	71.4	2001
Middle	9.8	3.0	34.0	53.1	1944
Richer	11.0	1.3	44.4	43.4	2055
Richest	11.8	0.5	58.7	29.0	2078
Respondent currently working					
Yes	9.7	2.8	25.7	61.9	2595
No	7.8	2.3	35.0	54.9	7428
Availability of Health service					
Not available in rural area	17.2	12.5	70.3	--	188
Available in rural area	7.6	2.9	23.5	66.1	6486
Available in urban area	9.2	0.9	48.1	41.8	3350
No of Media Messages seen or heard					
Heard one message	3.1	1.8	22.6	0.0	7842
Heard two messages	24.6	5.1	70.2	0.0	1501
Heard three messages	31.0	3.5	65.5	0.0	506
Heard four messages	37.1	2.1	60.8	0.0	103
Heard five plus	29.8	4.6	65.6	0.0	71
Owner ship of Radio					
Yes	17.4	6.1	27.4	49.1	3240
No	4.0	0.6	35.0	60.4	6783
Owner ship of TV					
Yes	12.8	0.6	51.7	34.9	5550
No	2.8	4.6	8.8	83.8	4473

Work status of a woman does not bring perceptible change. However, among those who reported to have heard or watched a message, a majority reported to have watched or heard two or more family planning messages on TV.

Ownership of TV brings a difference in the reported family planning messages. It is observed that people who own a TV 52 percent say that they have heard media messages on TV as compared to 9 percent who do not own a TV Likewise, ownership of radio brings a difference among those who reported that they have heard family planning message on radio.

As discussed in our paper various other studies also supports the point this media exposure communicated through various medium increases awareness of modern ideas about family, childbearing, consumption, individualism, and related issues. (Westoff, 1999). Information on the level of public exposure to particular type of media messages allows policy makers to assess the most effective medium for various target groups in the population.

The further analysis of this paper is carried out on a sub sample of women who have heard family planning messages on Radio, TV or either media. The relationship of perception of women about media messages in persuading couples to adopt FP with back ground characteristics, and socio-economic variables are exhibited in the Table 2. "Media campaigns are an effective way to inform and convey messages to the people. It can be made more effective if messages appear on different media simultaneously e.g., television, radio " (Hakim, 2001).

Table 2: Percent Distribution of currently married women age 15-49 who cited effectiveness of family planning message on the radio or television in the month preceding the survey, according to background characteristics, Pakistan 2006-07

Background Characteristics		Effective	Else	Total	Numbers
Total		84.1	15.9	100.0	4176
Region of residence					
Punjab		83.3	16.7	100.0	2793
Sindh		86.5	13.5	100.0	902
NWFP		87.0	13.0	100.0	424
Balochistan		63.9	36.1	100.0	56
AGE					
< 25		77.9	22.1	100.0	865
25 – 34		87.1	12.9	100.0	1677
35 +		84.3	15.7	100.0	1634
Education					
No education		80.1	19.9	100.0	1999
Up to secondary (1-10)		84.8	15.2	100.0	783
Secondary + (11+)		89.2	10.8	100.0	1395
No of Children					
0		77.3	22.7	100.0	553
1-2		84.8	15.2	100.0	1199
3-4		87.1	12.9	100.0	1216
5+		83.5	16.5	100.0	1207
Currently using any method					
No		81.9	18.1	100.0	2597
YES		87.7	12.3	100.0	1578
Wealth index					
Poorest		78.4	21.6	100.0	205
Poorer		80.2	19.8	100.0	546
Middle		78.4	21.6	100.0	872
Richer		86.4	13.6	100.0	1118
Richest		88.1	11.9	100.0	1433
Current Work Status					
Not working		84.0	16.0	100.0	3254
Working		84.4	15.6	100.0	922
Availability of any health facility (within a radius of 5)					
Not available		71.2	28.8	100.0	188
Available in Rural area		84.0	16.0	100.0	2113
Available in Urban area		85.4	14.6	100.0	1875
Owner ship of TV					
	No	83.8	16.2	100.0	2597
	Yes	84.6	15.4	100.0	1578
Owner ship of Radio					
	No	80.2	19.8	100.0	205
	Yes	84.9	15.1	100.0	546
limiting the family	No	79.9	20.1	100.0	1866
	Yes	87.5	12.5	100.0	2309

Background Characteristics		Effective	Else	Total	Numbers
Higher age at marriage	No	83.8	16.2	100.0	3896
	Yes	87.6	12.4	100.0	280
Spacing of children	No	80.3	19.7	100.0	2411
	Yes	89.3	10.7	100.0	1765
Use of contraceptives	No	83.9	16.1	100.0	2172
	Yes	84.2	15.8	100.0	2004
Welfare of family	No	82.6	17.4	100.0	3311
	Yes	89.9	10.1	100.0	866
Maternal/child health	No	82.4	17.6	100.0	3515
	Yes	93.3	6.70	100.0	661
Fewer children means prosperous life	No	83.4	16.6	100.0	3759
	Yes	90.7	9.30	100.0	417
:More children means poverty and starvation	No	83.7	16.3	100.0	3963
	Yes	91.3	8.70	100.0	212
Importance of breastfeeding	No	83.9	16.1	100.0	4096
	Yes	93.1	6.90	100.0	80
Index of Media Messages					
Heard one message		77.1	22.9	100.0	2074
Heard two messages		90.2	9.8	100.0	1443
Heard three messages		92.8	7.2	100.0	488
Heard four messages		94.3	5.7	100.0	101
Heard five plus		90.0	10.0	100.0	70

As revealed in Table 2 only 16 percent women including don't know said that media messages are not effective and 84 percent were of view that messages are effective. Effectiveness by region of residence exhibits less difference in the three provinces other than Balochistan where 63 percent women perceived media messages are effective, while in other three provinces more than 80 percent respondents stated similar views about perception of women about effectiveness of FP messages.

Age is an important variable, it shows increasing trend in perception of women about effectiveness of media messages with increase in age from less than age 25 i.e., (78 percent), to the age 35+ i.e. to 88 percent.

Perception of women about effectiveness of media messages increases with increase in women's level of education as well, from 80.2 percent with no education to 89.2 percent with higher education. It is expected that working women owing to their outside exposure would be more likely to be saying that messages are effective; however, the data reveals that the relationship is more complex as there is no difference among working or non working women in endorsing effectiveness of media messages.

Availability of Any health services does not show any marked difference by urban rural residence, but at places where health facility is not available less percentage of women perceive that the media messages are effective.

Possession of household amenities does not reveal any marked difference; it is observed that 85 percent women who own a TV or a Radio say that media messages are effective. However the respondents who do not own radio or TV are also in high number (83 percent) reporting the same views.

A multiple choice question was asked from women about their perception of media messages and among the women who saw or heard the media messages perceived that more effective messages were "Importance of Breast feeding" (93 percent), "MCH" (93 percent), "Spacing of children" (89 percent), "Welfare of family" (89 percent) and "Use of contraceptives" (84 percent). In other words, nearly all women were of the view that messages are effective.

An index of media messages was composed of women who has listened at least one message and maximum of five plus messages. It was observed that women perceiving effectiveness of media messages increases with the increase in number of messages from 77 percent to 94 percent from one message to hearing of four messages and then declined a little to 90 percent. Overall, the proportion of those who admit that the messages are effective increases with the increase in the number of messages heard.

7. The Multivariate Analysis Results

Bivariate analysis does not necessarily depict the true relationship until we control the effect of other variables that are affecting the dependent variable. In order to examine the net effect of selected predictor variables on perceived effectiveness of messages, the logistic regression method technique of multivariate analysis was used to estimate the association. This is done to assess the effect of the explanatory variables after controlling for the impact of other variables. A large number of socio-economic and demographic characteristics in addition to community availability of health service, ownership of TV and Radio variables were considered as the factors affecting a women's perception of the effectiveness of family planning messages.

After using various combinations of the selected variables in the regressions equations three basic models were selected to show the effects of the theorized variables on perception of women about persuasion of couples to adopt contraceptives The three equations are for either media, TV and radio sources Model 1 is considered here as equation with, control variables like Region of residence (four provinces including Punjab, Sindh, NWFP, and Balochistan) with Punjab as reference category, age (three age groups including less than 25, 25-34, and 35+) with less than 25 as reference , education (three education levels- no education, up to secondary and plus) with no education as reference, surviving children (no children, 1-2, 3-4, 5+) with no children as reference, , and contraceptive (using or not using). In model 2 Wealth status (poorest, poor, middle, rich, richest) with poorest as reference, and women's current work status (working and not working) are in addition to previous variables of model 1. Model 3 (Table 3) consists of variables in model-2 and additional variables like family planning messages and any health (including availability of any health services with in radius of 5 km and not available in rural area and availability in Urban areas and ownership of radio and TV. The results including odds ratios and Confidence interval on Perception of women about Effectiveness of Media Messages in Persuading Couples to adopt Family Planning, By Either medium, TV and Radio are presented in Table 3, and are interpreted as follows:

Table 3: Odds Ratio of Selected Predictor Variables and Confidence Intervals on Perception of women about Effectiveness of Media Messages in Persuading Couples to adopt Family Planning, By Either medium, TV and Radio

	Either Medium			TV			Radio		
	Odds Ratio	95.0% C.I Lower	Upper	Odds Ratio	95.0% C.I Lower	Upper	Odds Ratio	95.0% C.I. Lower	Upper
Region of Residence (Punjab [a])									
Sindh(1)	*1.250	.978	1.598	1.198	.930	1.543	***2.366	1.348	4.152
NWFP(2)	*1.336	.966	1.846	*1.394	.987	1.970	1.231	.631	2.402
Balochistan(3)	**.349	.187	.651	**.379	.194	.741	*.234	.073	.752
Age (Less than 25[a])									
25-34	**.733	.550	.978	.780	.579	1.052	**.357	.183	.696
35+	1063	.844	1.340	1.080	.850	1.371	.728	.428	1.236
Education (No education[a])									
Primary	1.196	.937	1.527	*1.248	.967	1.611	.827	.481	1.421
Secondary	***1.647	1.271	2.134	***1.702	1.305	2.219	1.124	.618	2.044
No of children (0 child[a])									
1-2	**1.577	1.197	2.077	**1.561	1.173	2.077	1.433	.760	2.699
3-4	**1.618	1.183	2.213	**1.722	1.244	2.383	.595	.291	1.216
5+	*1.387	.983	1.956	**1.477	1.035	2.108	*.364	.162	.820
Contraceptive Use (not use[a])									
Currently Using	*1.210	.983	1.489	1.179	.952	1.460	*1.601	.995	2.576
Wealth index (Poorest[a])									
Poorer	1.015	.663	1.554	1.409	.868	2.286	.687	.327	1.444
Middle	.956	.633	1.444	1.381	.867	2.201	.742	.352	1.564
Rich	*1.613	1.041	2.497	**2.308	1.422	3.745	1.760	.736	4.210
Richest	*1.684	1.052	2.698	**2.453	1.466	4.106	.592	.237	1.476
Current Work Status (Not Currently Working [a])									
Currently Working	*1.219	.976	1.522	*1.327	1.049	1.679	.732	.466	1.150
Health Facility (not Available [a])									
Available in rural area	**1.710	1.191	2.455	**1.788	1.215	2.631	1.706	.825	
Available in urban area	***1.189	.809	1.748	1.229	.819	1.845	1.258	.567	2.788
Media Messages (Not Heard) [a]									
Limiting the family	***2.036	1.686	2.458	***2.038	1.676	2.477	*1.788	1.142	2.801
Higher age at marriage	.931	.624	1.390	.939	.616	1.432	1.039	.569	1.899
Spacing of children	***2.092	1.727	2.535	***2.107	1.724	2.575	***3.151	2.066	4.805
Use of contraceptives	***1.495	1.231	1.816	**1.397	1.142	1.710	***2.552	1.625	4.008
Welfare of family	***1.697	1.312	2.193	***1.610	1.241	2.087	1.272	.750	2.159
Maternal and child health	***2.660	1.911	3.704	***2.743	1.947	3.864	**2.762	1.323	5.768
Fewer children means prosperous life	***1.936	1.347	2.785	**1.897	1.306	2.756	*2.275	1.088	4.759
More children means poverty and starvation	*1.627	.976	2.710	*1.664	.983	2.819	1.579	.577	4.319
Importance of breastfeeding	1.550	.613	3.919	1.538	.593	3.985	4.053	.391	42.028
Own TV(1 [a])	1.039	.817	1.321	1.012	.772	1.327	1.068	.665	1.714
Own radio(1 [a])	.965	.800	1.163	.966	.791	1.180	*.668	.419	1.066
Total Numbers	3922			3713			999		

Source: PDHS data 2006-07; *Significance at 05 level; **Significance at .01 level= *** Significance at.001 level; [a] Reference category

8. Media Messages

The most important component of Population Welfare Program is media campaign. In our findings women think that some specific messages appear to be more important in persuasion of couples in promotion to adopt contraceptive use. In all three models (Table 3) nearly all media messages are statistically significant other than a few messages and the association is positive. This is also supported by the evidence from research that "Individuals exposed to various media improve their knowledge as well as shape their perceptions and attitudes about, among other things, their sexual and reproductive behaviors" (Thapa Mishra, 2003), therefore, we can state that perception of women about effectiveness of media messages in persuading couples can also lead to contraceptive use. Similar kind of trends emerged for radio, TV and either medium using all other independent variables.

Overall the results are encouraging. Main purpose of the study was to prove whether media messages play an important role if so which messages are the most effective in persuading couples to adopt contraceptives. According to Table 3, across three mediums informative results have been achieved, where all predictor variables are included, the net effect of the media messages is highly significant, while that of having heard a media message on TV and Radio also show similar results.

The results predicts that women perceive that the most effective messages of family planning are "limiting the family", "spacing of children", "Maternal and child health", which are two times more likely to be perceived by the women to be effective in persuading couple to adopt FP than all other messages (Table 3, for either medium, TV and Radio). For equation on TV, top important message is similar to the equation on either media (Table 3), i.e. it is perceived by women that odds are two times more likely to persuade couples for contraceptive use if they have heard the message..

It is interesting to note that according to women, radio listeners and TV viewers have different preferences for different messages but most of the radio results are less significant (Table 3,) as compared to TV and Either medium. For radio "Spacing of Children" "Maternal and child health" "Use of Contraceptive"' are perceived two to three times more likely to persuade

couples for contraceptive use and results are highly significant While for some other messages odds ratio are high but not significant.

Another finding reveals that women think that the message "Higher age at marriage" does not have effect on persuading couples as it is 0.9 times as likely to be persuading couples and the effect is also not significant (Table 3, for either medium, TV and Radio), therefore, not much importance is given to these results.

It emerged that the television is the most important medium for reaching women with information about family planning. This point is indeed consistent in another study showing TV as the most important electronic medium (Hakim, et al, 2001). To be specific there is evidence that, exposure to family planning messages in television and radio is important in convincing people for FP. (Agha Rossem 2002; Sharan Valente 2002; Olenick 2000; Westoff Bankole 1999).

9. Region of Residence

Punjab is taken as reference category. Contrary to the fact that Punjab is most developed and hence women are likely to be here motivated. However, it is reflected while comparing odds ratio of perception of women about effectiveness of media messages in the other two (Sindh, and NWFP) provinces increased substantially and odds ratio are statistically significant as well. The regional variations show that the women in Sindh followed by NWFP are 1.2 times and 1.3 times more likely to be persuaded by FP messages respectively. In the province of Balochistan which is sparsely populated and relatively under-developed, the accessibility and proximity of facilities is the lowest as compared to other provinces of Pakistan and their number is relatively small (Ali, 2000). As expected women perceive that couples in Balochistan are 65 percent less likely to be persuaded to adopt contraception than Punjab. When radio was observed in model 3 (see table 3), Sindh odds are high and women are 2.4 times more likely to be persuaded than Punjab and this relationship is also highly significant.

9.1 Age

The effect of age is negative in age group 25-34 and in older age women it becomes positive, this relationship between women's age and perception of effectiveness of persuasion of media messages in contraceptive use is attained across all models. Therefore we can say that at older age, a person becomes more mature and make better decisions.

9.2 Number of Children

The number of children does explain some variation in the 3 equations (Table 3) on perception of women about effectiveness of media messages. The number of living children is a highly significant predictor of perception of women in persuasion of couples to contraceptive use in the first two equations i.e. for either medium and for TV. The association is positive but effectiveness of media messages decreases for women who have 5+ children. However, the results remain significant. In Module 1 and 2 (Table 3), with reference to women without children, the ones with up to 4 children, women are 1.6 times more likely to be persuaded for FP. This implies that having children make people more conscious to media messages as they do consider it more important. When radio results were observed (Table 3) women perceive that with three to five plus children women are less likely to be convinced for adopting FP.

9.3 Contraceptive Use

As expected logs odds of using Contraceptives has positive effect on the persuasion of couples and it reveals that that couples are more likely persuaded by media messages as observed in Table 3 in all three medium and this relationship is statistically significant for equations 1 and 3. It is quite obvious that that people who are already using contraceptives might pay more attention to messages as they are already motivated and persuaded. The literature supports this point as Bhandari et. al. (2005) in his study indicated that the exposure to audio media was important in shaping contraceptive attitudes and that the exposure to audio-visual media was important in shaping contraceptive practice.

9.4 Education

The women's education has been established as one of the strongest and important predictors of socio economic and demographic behavior in Pakistan. (Ali, 2000) and it plays an important role in changing behavior of population, therefore it was included in the analysis. The odds ratio of being persuaded for using contraceptives according to women perceptions are much higher for more educated women than those with no education and up to secondary education across all models and the results are highly significant across equations of 'either medium' and 'TV'. It is because increase in education brings rationality in women's attitude (Ali, 2000; Satthar, and. Kazi, 1987).

9.5 Wealth Status

Wealth status is another variable, which should bring differentials in the effectiveness of media messages. As expected the effect of the wealth quintile on effectiveness was found positive across first two models, with the exception of those with middle class. According to the odds, perception of rich women are 1.6 times more likely to be persuaded by media messages than poorest women (Either Medium, Table 3). For TV, rich people are 2.3 times more likely to be persuaded to adopt family planning methods than poorest people. This shows that with increase in wealth, women are more likely to be persuaded for family planning.

9.6 Work Status

Working women are considered to have better status in the society and have more autonomy. There is positive association showing that women perceive that working women are 1.2 times more likely to be influenced by media messages (Either Medium, Table 3). In the case of TV (Table 3) odds are also positively associated and the association is significant but for radio (Table 3) it is negatively associated. This implies that work status of women has good effect on persuasion of couple to adopt FP. By doing work women attain better status and decision making power and also have more worldly knowledge to deal with fertility issues.

10. Availability of Any Health Service

Availability of any health services within 5 km is also important variable. Community predictor variable like availability of any health services is positively associated and results are significant for either medium and for TV. In rural areas where health services are available, they are 1.7 times more likely to be persuaded to adopt for contraceptives than non availability of health services and this association is highly significant [Table 3] where as for urban areas women are 1.2 times more likely to be persuaded to adopt family planning methods. This proves that in rural areas where health services are available, people residing in these areas have more awareness and women tend to be persuaded better by media messages for adoption of family planning methods.

11. Ownership of Radio and TV

Generally it is assumed that people who own Radio or TV are more inclined to listen to media messages, therefore, we have included ownership of Radio and TV to observe the effect of media messages on persuading couples to adopt FP. Unexpectedly a negative association was found for radio ownership and the results are significant at 5 percent level for radio only. There is positive association of odds ratio with ownership of TV or either medium but their effect is statistically not significant. This implies that ownership of TV is irrelevant with regard to the women who reported to be persuaded by media messages for adoption of family planning methods.

12. Discussion and Conclusions

Media (electronic, print, radio etc) campaign is an essential component of the population welfare program (PWP) of Pakistan. Its basic aim is to provide awareness and sensitize the masses about consequences of rapid population increase due to large family size. It also aims at bringing a change in the attitude and behavior of the people. Since the inception of PWP in Pakistan in the mid 60s, the main focus of the Planners and the Policy makers has been on supply side of the program. The demand side has since remained either weak or un-met. The PWP adopted measures to cater to this flaw. Hence the media campaign has been considered an integral part of the PWP.

Overall, the results in model 3 (table3) indicate that media messages to persuade couples to use FP are correctly predicted. The results of our analysis make it evident that women's perceptions are that persuasion of couples to use family planning in Pakistan is influenced by a number of demographic and socio-economic factors as well as supply-related indices of health related services including family planning. Women exposed to specific family planning messages in the media were more likely than other women to be persuaded to use family planning. These effects persist even after the effects of place of residence, women age, education, number of surviving children are taken into account. The paper concludes that a majority of the women perceived effectiveness of TV messages.

It is also inferred from our analysis that increase in the level of women's education, more wealth and economic opportunities as well as increased level of availability of health services and promotion of some media messages, can be conducive to the promotion of contraceptive use among couples. We can say that women perceive that multiple media sources of information like radio and TV on persuading couples for contraception reinforce one another and extend the reach of a family planning campaign. Complementary messages also help to create an environment where the practice of contraception is perceived as a social norm. Varied media should continue to be used to promote family planning and other reproductive health issues. Another finding emerged here is that some messages are more effective than others and also some messages are more convincing on radio than on TV.

Recent research based on nationally representative survey confirms a strong association between exposure to family planning messages in the mass media and contraceptive use, even after the effects of social and demographic variables are controlled for (Mahmood, and Karin 1996). Similar results have emerged from the findings of this paper and it has also proved that women perceive that some messages like "limiting the number of children", "Spacing of Children" and "Maternal and child health" are more important in persuasion than others. People generally know that FP advertisements and messages only provide information and sensitize them but there is no compulsion of using any contraceptive method.

Effectiveness of communication media and the messages conveyed through these media depends on various factors. These are, recognition of the socio-cultural context of the audience and setting of the message, use of multiple strategies and different media channels for disseminating information. There

is a need for an alternative model of information dissemination that can reduce existing differences between the Provinces; a pre-requisite in the flow of information is the use of media formats which facilitate grassroot -level communication and provide different strategies for different area. As far as the media in general are concerned, not all are equally effective. All media messages are not used for all programs. In general, it has been felt convenient to include one or two media messages. The finding emerged that TV as communication medium seems to be more effective than radio as findings exhibit that TV is most watched even in rural areas. However, since radio is the cost effective medium and also listened quite widely in rural areas, where majority of our population lives, so most popular messages on radio may be aired more often so that couples are persuaded to adopt use of contraceptives. On the other hand, TV being most effective medium be used for the selected messages that emerged effective in persuading couples to use contraceptives.

13. Policy Implications

Effectiveness of communication media and the messages conveyed through these media depends on various factors like socio-cultural context of the audience and setting of the message, use of multiple strategies and different media channels for disseminating information.

The findings emerged from our analysis indicate that TV is a more effective communication medium than radio. However, since radio is a cost effective medium and also listened quite widely in rural areas, where majority of our population lives, selective FP messages which emerged in persuasion of couples to use contraceptives, may be advertised more often on radio.

It is observed that middle age (25-34 years) women have negative association, so more messages may be evolved targeting these women. Balochistan also exhibits negative association; therefore more efforts are needed there so as to bring a change in the attitudes of Balochi women.

Results have emerged from the findings of this paper and it has also been proved that women perceive that some messages like "limiting the number of children", 'Spacing of Children" and "Maternal and child health" are more important in persuading couple for the adoption of family planning methods. In all of the three models (Table 3) nearly all media messages are statistically

significant other than a few messages and the association is positive. This is also supported by the evidence from research that "Individuals exposed to various media improve their knowledge as well as shape their perceptions and attitudes about, among other things, their sexual and reproductive behaviors" (Thapa, 2003), therefore, we can state that perception of women about effectiveness of media messages in persuading couples can also lead to contraceptive use.

It emerged that the television is the most important medium for reaching women with information about family planning. This point is indeed consistent in another study showing TV as the most important electronic medium (Hakim, et al, 2001). There is another evidence that, exposure to family planning messages on television and radio is important in convincing people for FP. (Agha Rossem 2002; Sharan Valente 2002; Olenick 2000; Westoff Bankole 1999).

Overall the results are encouraging. Main purpose of the study was to prove whether media messages play an important role and if so which messages are the most effective in persuading couples to adopt contraceptives. According to Table 3, across three mediums informative results have been achieved, where all predictor variables are included, the net effect of most media messages is highly significant.

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6

Effect of Birth Interval and Birth Size on Child Survival in Pakistan

By

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1. Introduction

A primary goal of Third World countries is to increase the survival chances of their children. To this end, a substantial amount of research has been undertaken to explore the advantages of practices like birth spacing between children for infant and early childhood survival. In the developing countries child survival programs focus on the post-neonatal period for interventions of effective treatments and preventive medicines to reduce infant and child deaths.

New birth spacing research shows that three to five year intervals save more lives than two years intervals or less (Davanzo, et. al. 2007; Andoh, et al. 2007; Hosseinpoor et. al, 2006). Rustein's study (2005) found that the risk of dying decreases with the increasing birth interval length upto 36 months and birth interval of 24 to 36 months are still associated with mortality risk.

More than 20 million infants worldwide, representing 15.5 percent of all births are born with low birth weight, 95.6 percent of them in developing countries. The level of low birth weight in developing countries (16.5 percent) is more than double the level in developed regions (7 percent) (UNICEF, 2004).

This paper presents the effect of birth spacing and birth size, on child survival controlling the potentially confounding factors, such as mother's age at birth of child, the order of birth, gender composition of children, social status and place of residence. The objective of this research is to determine more conclusively the magnitude and direction of the impact of birth size and birth spacing on child survival. The findings of this research will provide a useful base for policy formulation and future intervention in the family planning service delivery program.

The study starts with the hypothesis, research question and conceptual framework indicating dependent and independent variables. A brief description of data available from Pakistan Demographic and Health Survey (PDHS) 2006-07 and subsets of data used in this research is discussed under data and methodology. A bivariate analysis of status of children (Died or Survived) for neonatal and infant according to demographic and socio-economic characteristics of their mothers is presented under Age Specific

Child Survival by Background Characteristics of Women. The results of logistic regression and conclusion are presented at the end.

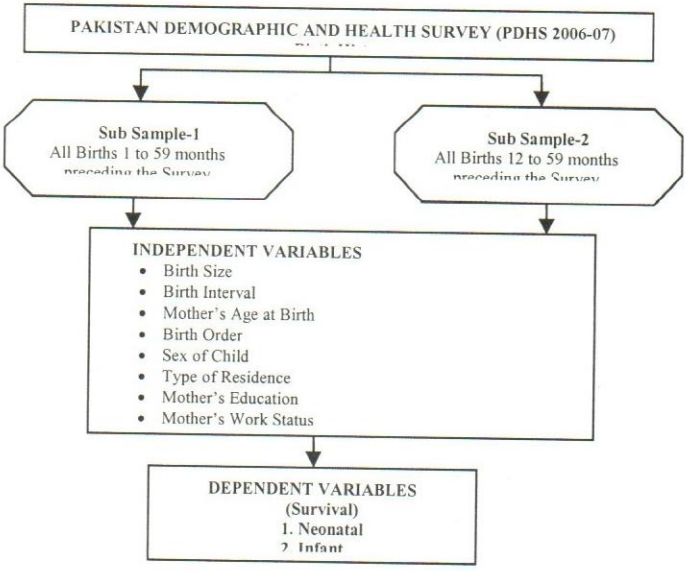
Conceptual Hypothesis:

1. It is hypothesized that children having either smaller or larger than average birth size along with short birth interval (i.e. less than two years) have more chances of dying within first month of life.
2. The net effect of socio-economic variables on survival would be greater with the advancing age of children.

This study addresses the following research questions:

- To what extent does the length of preceding birth interval and birth size affect child survival?
- At what age of child is the birth interval effect greatest?
- Does the effect of inter birth interval on child survival vary in two sub samples when other factors are controlled?

CONCEPTUAL FRAMEWORK



2. Data and Methodology

Data for this study are drawn from 2006-07 Pakistan Demographic and Health Survey (2006-07 PDHS). The PDHS 2006-07 is the largest household survey ever conducted in Pakistan. Data is collected from 95,000 households. Information on fertility, mother and child mortality, maternal and child health indicators is collected from nationally representative sample of 10,023 ever married women aged 15-49 years.

In this paper data have been taken from birth history section of the women's questionnaire. Background characteristics are taken from this section of the report. This section provides information on child bearing experience of women.

The first birth is excluded in the analysis because there is no previous birth whose interval can be measured. The analysis is carried out by selecting two sub-samples of data from the birth history of ever married women interviewed in PDHS 2006-07.

- The first sample includes only all singleton births (6843) occurred within 1 to 59 months preceding the survey.
- The second sample includes all singleton births (5434) occurred during 12 to 59 months preceding the survey.

The analysis started with simple bivariate analysis followed by applying multivariate technique (logistic regression). In bivariate analysis, cross tabulation is used to show the unadjusted percent distribution of deaths and survival of children in association with size of child, birth spacing and other demographic and socio-economic variables.

It was observed that cross tabulation do not present a complete picture of association between dependent and independent variables. In order to examine net effect of all predictor variables on the dependent variable, a multivariate technique that takes care of dichotomous dependent variable is applied on the data.

The Logistic regression is statistically defined as:

$$\ln\left(\frac{\pi}{1-\pi}\right) = a + \sum_{i=1}^{k} b_j X_i$$

Where "∏" is the probability that whether the child is survived or not, "a" is the intercept (constant), "bj" are estimated regression coefficients (slopes) and "Xi" are background characteristics (predictor variables). The interpretation of logit results is that a positive coefficient on a variable indicates that children are more likely to survive when the characteristic is observed. The reverse is true with a negative coefficient.

3. Variables Included

This study considers the following dependent and independent variables:

3.1 Dependent Variables

Dependent variable (Child Survival) based on two different equations are as under:

- Neonatal Survival:
  Whether a child survived in the first month of life? This analysis uses a sample of (6843) live singleton births reported in PDHS.
- Infant Survival:
  Whether a child who survived in the first month of life (5434) survived until his or her first birth day?

3.2 Independent Variables

On the basis of observed correlation, mother's age at birth, birth order, birth size, birth interval, mother's education, wealth status and work status of mother are included in the regression models as controlling factors for child survival.

The information on birth size (proxy for birth weight) of the child was obtained by asking mothers whether the child was very small, small, average, large or very large in size at birth. Smaller then average and very small size is merged into small birth size and Larger and Larger than average size are merged into large birth size The interval between two births is estimated from the age of child as reported by women.

Birth interval is a key variable; included in the model with the expectation that optimal preceding birth interval positively affects the survival of child. For each of our samples we investigate the effects of four categories of birth interval i.e. less than 12 months, 12-24 months, 25-48 months and 49 months and above.

Mother's age at birth is measured into two categories as, less than 25 years and 25 years and above. Birth order is included in the study to see how birth order from low to high influences the survival of children. Birth order is categorized into three orders of birth i.e. 1-2, 3-5, 6 and above.

It is expected that urban living has a positive influence on survival of child. To observe whether the urbanized and developed regions in the cumulative framework effects more on survival of children than the less developed regions The place of residence is added in the analysis and is classified into two major categories according to dwelling status. It is used as dummy variable where '0' stands for rural residents and '1' for urban residents.

Education of mothers is expected to have positive effect on the survival of children. Mother's education is defined as categorical, consisting of three categories. The value '0' is given for no education, the value '1' for primary education, '2' for middle and above.

Wealth status is ranked into three categories as 1 'poor' 2 'middle' 3 'rich'. Mother's work status is expected to influence on child's survival. Therefore, this variable is used in the analysis as a dummy variable with '0' for working and '1' for not working.

In each dataset, for each of our dependent variable we analyze two equations that explain the influence of birth interval, birth size and all other explanatory variables on survival.

Due to sub-samples of data in which the total number of cases reported in this research may not be the same as in the main report of PDHS 2006-07. Total number of cases in bivariate and multivariate analysis to some extent different from each other because of all the missing and don't know categories in the independent variables, have been excluded from the analysis.

4. Age Specific Child Survival by Background Characteristics of Women

Differentials in child survival by birth size, length of birth interval, mother's age at birth, birth order, sex of child, residence, education, working status and wealth status is presented in Table1. Survival differentials for neonatal and infant are shown separately for two sub samples. Unadjusted estimates of child survival associated with all independent variables are presented for all births occurred during 1 to 59 months and 12 to 59 months preceding the survey.

Table 1 shows that the proportion of deaths is very small, a total of 351 children died among all live births. The differentials among neonatal and infant show that, more deaths (86 percent) occurred in first month of life. A total of 302 children did not survive beyond their first month of life. Among all deaths a total of 49 children died before reaching their first birthday.

Table 1: Percent Distribution of Neonatal and Infant Survival by Demographic and socio Economic Characteristics: Pakistan Demographic and Health Survey2006-07

Predictors	Neonatal (All Births 1 to 59 Months Preceding the Survey)			Infant (All Births 12 to 59 Months Preceding the Survey)		
	Survived atleast 1 Month	χ^2	TOTAL	Survived atleast 12 Month	χ^2	TOTAL
Birth Size						
Average Size ®	97.2		3148	95.8		2546
Small Size	95.5	26.435***	1576	94.2	38.590 ***	1266
Large Size	94.3		2029	91.1		1540
Birth Interval (Months)						
<12 ®	89.6		414	86.9		360
12-24	95.8	37.531***	2162	93.6	28.810 ***	1724
25-48	96.1		3197	94.1		2562
49 and Above	96.0		1070	94.6		789
Mother's Age At Birth (Years)						
<25 ®	95.0	2.020	2038	92.6	3.066 *	1643
25 and Above	95.8		4804	93.9		3792
Birth Order						
1-2 ®	95.7		1613	94.0		1240
3-5	95.5	0.086	3355	93.5	0.748	2642
6 and Above	95.6		1876	93.2		1552
Sex of Child						
Male ®	95.2	2.445	3574	93.8	0.538	2843
Female	96.0		3269	93.3		2591
Residence						
Rural ®	95.5	0.105	4906	93.4	0.676	3911
Urban	95.7		1937	94.0		1524
Education						
No Education ®	95.2		4732	92.8		3782
Primary	95.9	8.229 **	955	94.3	15.137 ***	756
Middle and Higher	97.1		1156	96.2		896
Working Status						
Working ®	92.9	41.052***	1812	91.3	16.866 ***	1442
Not Working	96.5		5031	94.4		3992
Wealth Status						
Poor ®	94.8		2599	92.6		2078
Middle	95.3	11.973 **	2203	92.6	17.969 ***	1744
Rich	96.6		2040	95.7		1611
Total	**6541**		**6843**	**5083**		**5434**

'*' 10 percent level of significance, '**' 5 percent level of significance, '***' 0.1 percent level of significance

Table 1 shows that, with the increase in birth interval neonatal and infant survival increased from 6 to 8 percent, respectively. The bivariate estimates show that survival chances increases as the age of the children increases.

The bivariate estimates show that children of small size has 1.7 percent lower survival than children of average size whereas children with large size at birth have 3 percent lower survival than average size neonates. The association of infant having small and large size shows 1.6 percent and 5 percent (respectively) lower chances of survival as compared to children of average size.

Previous research has demonstrated that lower risks of mortality for children whose birth neither follows the preceding birth closely, nor is closely followed by the succeeding birth, as compared to closely spaced births. Both the samples of this research have observed that the larger the birth interval the greater the survival of neonates and infants which confirms the previous findings.

It is expected that birth to the younger mothers is at greater risk of dying, as these mothers do not have experience and are not better care taker of their children. Bivariate relationship of child survival with age of mother at the time of birth shows that child survival is greater where mothers are in old age groups i.e. 25 years and above.

Previous studies [Wrady J.D 1971; Heady et al. 1955] have shown "U" shaped pattern of relationship of birth order and mortality of children. Same pattern is observed in this research, the chances of neonatal survival are higher in first 1-2 birth order, which is slightly lower in 3-5 birth order and higher for 6 and above order of children.

Gender differential is not significant in bivariate analysis. The proportion of male survival is lower (0.6 percent) in neonatal where as the proportion of male survivors are 0.5 percent higher among the infant.

The association of residence with neonatal and infant survival is not prominent. In both the data sets, the proportion of neonates and infants is more in urban area as compared to rural areas with the small variation of 0.2 percent and 0.6 percent respectively [Table 1].

The proportion of neonatal and infant survival is more for the rich women as compared to poor. Wealth status of mothers has shown greater association with infant survival as compared to neonatal [Table 1]. The similar pattern has been observed by Jamaluddin and Hossain, 2008.

Education of mother has been found most important factor associated with the survival of child. It was argued that by acquiring education, women are exposed to outside world which brings a positive change to their perspectives and attitudes to child's health care [Ali, 2000]. Table 1 shows that survivorship of both neonatal and infant is accounted for educated mothers.

As majority of women do no enter into the labor market and are around the house they made available to their children all the time. As a result they can better take care of their children's health. They spend more time with their children. Normally a Pakistani woman, besides her gainful jobs, is responsible for the welfare of her husband and children. In carrying out these duties, she become overburdened and in the process children are ones who suffer the most. [Ali, 2000]

Due to dual responsibilities, home and job, mothers cannot give adequate time to the health care of their children that increases the risk of child mortality. As indicated in Table 1, child survival is greater for non working mothers as compared to working women for the children of both age groups.

5. Multivariate Analysis

The logistic regression estimates on the sample of all births showing odds ratio, confidence interval and level of significance are presented in Table 2. This is done in order to investigate the differentials in the effect of independent variables on dependent variables in two subgroups (i.e. neonatal and infant).

Table 2, shows the results of logistic regression for neonates and infants with controlling the demographic and socioeconomic variables. The first model explains the net effect of each predictor on neonatal survival and the second model show the regression estimates for infant.

shown significant effect on infant survival and the odds for neonates and infant are very close to each other.

Jamaluddin and Hossain (2008) investigated the similar phenomena that child survival increases with increase in birth spacing and shorter birth interval i.e. less than 12 months, increases the children deaths.

8. Working Status

Working status of mothers has been found to be statistically highly significant factor effecting the neonatal or infant survival. It has shown significance at 0.1 percent level [Table 2].

The effect of working status on survival of neonates is greater (OR 2.129; 95% CI 1.650-2.748) than infant (OR 1.582; 95% CI 1.238-2.021) [Table 3].

9. Wealth Status

In the logistic regression, when other demographic and socio-economic factors are controlled, wealth status has shown statistically low significance [at 5 percent and 10 percent level) [Table 2; Model 1] as compared to bivariate analysis (at 10 percent and 5 percent level) [Table 1].

As expected, rich women have greater chances of child survival. Wealth status has shown no significant effect on infant survival.

It is interesting to note that in the results of regression mother's age at birth, birth order, sex of child, residence and education of mother, when controlled with other factors, have no significant effect on survival of the children [Table 2]. Whereas in bivariate analysis mother's age at birth and education of mother, have shown strong association with both neonatal and infant survival [Table 1].

10. Conclusion and Policy Implication

Results of bivariate and multivariate analysis have shown that among demographic indicators, birth interval and size of child at birth has shown statistically strong significant effect on child survival and among socio-

economic indicators, working status of mother and social status have been found to be the most significant factor (at 0.1 percent level of significance) that are positively affecting neonatal and infant survival.

The findings of this study show that among all the predictors birth interval is the most significant factor affecting the survival of children. This study suggests that child survival could be increased if all births would have at least 2 years interval. The awareness of merits of birth spacing should be a part of National Media Campaign. As mother's nutrition during pregnancy affects the size of their babies therefore, mothers should be aware of importance of their nutrition. They should have healthy and nutritional food during pregnancy. Specific educational programs with more emphasize on women and child health care should be introduced especially for poor, less educated and rural women. The status of nutrition could be improved only through the social status of women by enhancing their access to financial resources. This will eventually improve the health of babies and improve the birth spacing. This study recommends that program managers may take the following initiatives:

- Policy makers will have to create message about new birth spacing norms that do not confuses the beneficiaries with old message of 2 years.
- Nutritional program emphasizing on educating mothers about balanced diet and health care during and after pregnancy, may be initiated under the umbrella of public private partnership.
- More employment opportunities for women should be given with the objective to increase their social status and health family of fewer children.
- The birth spacing should be a part of national reproductive health campaign.

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7

Demographic, Social and Economic Factors Influencing the Treatment Seeking from Health Facilities for Acute Respiratory Diseases (ARI) among Pakistani Children: An Insight of PDHS 2006-07

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1. Introduction

Access to healthcare is a basic human right that leads to good health and survival of human beings particularly the young children suffering from deadly diseases like diarrhea, acute respiratory infection and malaria (Ali, 2000). It is disturbing that at the global level these three causes accounts for about 65 percent of all child deaths. The acute respiratory tract infections (ARI) alone kills 3.6 million children each year. Diarrhoeal diseases are responsible for about 2.2 million child deaths and immunization preventable diseases viz measles, tuberculosis, tetanus, diphtheria, polio, and pertussis kill some 2.1 million children deaths every year. (http//rehydrate.org/ diarrhea / index.html #65)

In the South-Asian region the persisting high burdens of diarrhoeal disorders, acute respiratory infections, and hepatitis A and E reflect the poor state of basic public health services, especially clean water and sanitation, and a general lack of hygiene awareness (Bhutta, et.al. 2004). According to PDHS data on child mortality, the major cause of death during the postnatal period is pneumonia, one of the symptoms of ARI, (25.7 percent) and diarrhea (27 percent) (Bhutta et.al. 2008).

2. Literature review

In Pakistan, persistently high mortality rate among children of ages less than five years is mainly contributed by prevalence of diarrhea, malaria and acute respiratory infections (ARI) or commonly known as pneumonia. In the incidence of ARIs, a child could survive if treatment is sought from a health facility at an early stage.

The latest national data of Pakistan clearly shows the socio-economic diversity in healthcare seeking behavior of mother and child [Zafar and Cross (2008); Mahmood and Sultan (2008)]. Particularly, women do not always seek health care from medical professional for their own sickness (antenatal care received from health professionals by 61 percent of women) or are even reluctant to take their sick child to a health facility. It is evident that only 21 percent of women have received postnatal

facility (Mahmood and Sultan, 2008). The severity of the illness might lead to unbearable loss in the form of death of a child.

The Acute Respiratory Infections, (ARI) according to a WHO definition are acute infections of the ear, nose, throat, larynx, trachea, bronchi, bronchioles or lungs. Statistics from WHO and national health data show that acute respiratory illnesses, particularly pneumonia, rank among the top killers of children in developing countries, even today. (Awedoba, 1999)

One of the study based on Pakistani data shows that the children living in urban area are more likely to utilize healthcare facilities and its effect remains significant after controlling for economic and demographic variables (Ali, 2000).

Ali (2000) while analyzing the national level data demonstrates that the sick children living in a nuclear family are in disadvantage position as they are less likely to utilize healthcare facilities as compared to the ones living in a joint family (Ali, 2000).

Education of mother is viewed as important in health seeking behaviour which has a great influence on the health and survival of young children [Caldwell, (1979); Eckstein, (1984)].

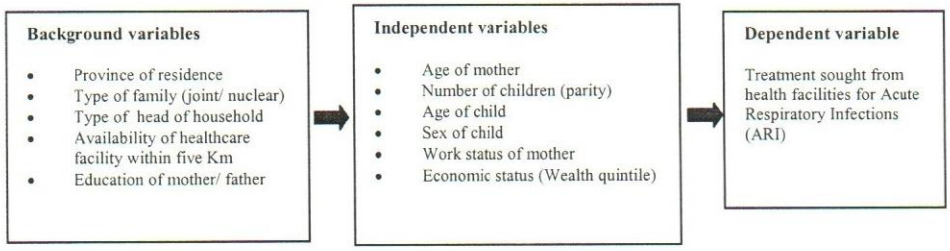
Ali (2000) observed that mother's participation in gainful employment has a worsening impact on the immunization status of children as their children are less likely to receive immunization shots and drops against diseases. The same study reveals that sex of a child did not make them privileged or underprivileged whenever the healthcare utilization is sough for the sickness of child (Ali, 2000).

An extensive literature on this topic compels the authors to investigate the factors persuading a mother to seek treatment from health facilities in case her child has suffered from acute respiratory infections. There might be multiple factors that influence the treatment seeking from health care for a sick child. These factors include the background characteristics of household members, the socio-economic status of the parents and the demography of the child and mother besides availability of health facilities and many other factors.

3. Theoretical framework

The conceptual framework is a pathway for undertaking the research in the light of objectives of the study. Literature available to us, help in identifying the variables associated with the treatment seeking from health facilities for children suffering from ARI. It is assumed that the treatment seeking could be directly effected by the demographic and economic variables (independent). Furthermore, these factors are influenced by the background characteristics of children and their parents. Hence the analysis for the healthcare seeking in case of ARI sickness can be framed as under.

CONCEPTUAL FRAMEWORK



Conceptual Hypotheses:

(1) Demographic, social and economic variables are likely to influence the use of healthcare services for child illness (ARI).

(2) Availability of healthcare services is likely to increase the utilization of services in case of ARI diseases.

(3) Background characteristics of mother and father are likely to relate with the use of healthcare services in child sickness.

4. Data and Methodology

Data

This research is based on cross sectional data. The data for the analysis come from a nationally representative household survey "Pakistan Demographic and Health Survey 2006-07" undertaken by National Institute of Population

Studies. More than 10,000 ever-married women of age 12-49 and their children (8,367) born 0-59 months prior to survey were included in the analysis. Therefore a file is created for the sample of children age 0-59 months including all variables of household and mother. A list of 1,178 surviving children (weighted), who have suffered from ARIs during last two weeks whether or not health facility for the treatment is utilized, was obtained from that file. This excludes the missing, non-eligible, and non-response cases for the questions relating to ARI and treatment sought from any health facility.

Variables

In this study, the **dependent variable** is "Whether or not treatment was sought for acute respiratory infections (ARI)?" The variable is dichotomous in nature, value 1 is assigned to treatment sought for the disease and "zero" otherwise.

Independent and control variables

The predictor variables are composed of a set of socioeconomic and demographic variables. The selection of control variables is guided by theoretical reasons (conceptual framework), availability of data and prior research on treatment sought for ARI children.

The variables were divided into two groups namely **background variables** include (i) province of residence (ii) type of the family (joint vs nuclear) (iii) gender of the head of household and (iv) availability of health facility within 5 Km. of the locality (sampling cluster). And the **independent variables** were identified as (i) age of mother (ii) education of mother/ father (iii) work status of mother (iv) economic status of the household (wealth quintile) (v) number of living children (parity) (vi) age of the child, and (vii) sex of the child.

Methods of Analysis

The data was analyzed with two approaches. In the first part of the analysis, an unadjusted bivariate relationship between predictor variables and dependent variable is measured by using the technique of cross tabulation. Having established the unadjusted relationship, we move on to second level of analysis.

In this section we estimate the net effect on the treatment sought for ARI child, controlling for the demographic and socio-economic characteristics of women. Given the dichotomous nature of the dependent variable the binary-logistic regression technique is used for the analysis of the data. The dependent variable was equal to '1' if healthcare is sought and '0' otherwise. The independent variables are grouped into three models, the first one (Model 1) comprised of background variables such as:

- Region of residence was categorized into provinces viz. Punjab, Sindh, NWFP and Balochistan.
- Type of family was classified into nuclear family and joint family;
- Gender of the head of household was categorized as male and female;
- Access to health facility is measured in term of availability of any health facility within five kilometer radius and categorized in three groups: (i) Facility not available in rural areas; (ii) Facility available in rural areas and (iii) Facility available in urban areas.
- In this study education of both mothers and their husbands were taken as the highest grade passed and categorized in three categories: (i) No education; (ii) Upto middle (1-8 grades) and (iii) Upto secondary and above (9 +).

For the second model (2) the economic variables are taken:

- We hypothesize that mother's current work status could influence child health through lack of time for child care. This variable was categorized as (i) currently working and (ii) not working.
- Economic status of the household is measured from wealth quintile and categorized into five classes poorest, poor, rich, richer and richest.

The third model (3) consists of demographic variables such as:

- Age of woman was taken at categorical scale within the range of 15-49 years.
- Number of living children was categorized into groups of 1-2; 3-4; 5-6; 7+ children.
- Sex of the child categorized as male and female.
- Age of the child is classified at interval scale within the range of 0-4 years.

For ease of interpretation, the results are discussed in terms of the odds ratios. The odds ratio is a measure that approximates how much more likely,

(or unlikely) is the outcome, in this case, for example, being utilized health facility, to be present among those with a given attribute relative to the reference category. The odds ratio for the reference category is equal to 1.0. If an odds ratio is greater than 1.0 this indicates an increased likelihood of the event occurring, while an odds ratio less than 1.0 indicates a decreased likelihood of its occurring. A variable was considered significantly associated with utilization of healthcare when its p value was below 0.05.

5. Results

The PDHS data reveals that among the children of ages less than five years, only 14 percent have suffered from ARI symptoms, commonly called pneumonia (cough with difficult or rapid breathing and chest indrawing) during two weeks preceding the survey. For severe pneumonia, hospitalization is recommended. Otherwise, ambulatory treatment with antibiotics is recommended. Without early and effective treatment for an ARI, children can die very rapidly. (Mahmood and Sultan, 2008)

The research findings of this study are presented in tables 1 and 2 and explained in the following passages. The bivariate analysis is based on the cross tabulation of the prevalence and treatment sought from any health facility for children suffering from ARI and the background variables as mentioned in table 1. On the whole, the prevalence of ARI was 14 percent among children of ages less than 5 years and thirty percent of them did not seek treatment from a health facility. Moreover, there was visible differential according to selected background characteristics of children and their parents.

5.1 Social, economic and demographic differentials of treatment seeking from health facilities

In this paper, the prevalence of ARI and treatment seeking from a health facility have been analyzed by background characteristics of children and their parents as presented in table 1. Firstly it is mentioned that Pakistan is administratively divided into four provinces (region of residence). Punjab province is the most populous and relatively developed followed by Sindh, NWFP and Balochistan. The data indicates a visible differential as more than seventy percent of children residing in the provinces of Sindh and Punjab sought treatment as compared to Balochistan and NWFP where only fifty percent sought treatment from a health facility.

The care seeking behavior may be influenced by the culture of family living arrangements. The table 1 shows that children suffering from ARI and living in a joint family have sought care from health facility slightly more (71.4 percent) than those children living in nuclear family system (65.3 percent).

It was thought that healthcare seeking would positively be associated with the availability of services within a vicinity of five Km. But surprisingly; the present study indicates that healthcare seeking is not effected by availability of health facilities in rural areas as the proportion was similar for both categories (65.1 percent). However, in urban areas the treatment seeking was found quite high (80.5 percent) as the availability of health facility within 5 Km was assumed universal.

In Pakistan most of the households are headed by a male member. This cultural indicator has been analyzed in relation to utilization of healthcare facilities for children ill with ARI and found no substantial differential as the proportion was around seventy percent for both type of head of household (male/female).

Age of the mother is taken as a demographic variable for the present study and its relationship with the treatment seeking from health facility is analyzed. The data reveals interesting result, the young mothers, aged less than 25 years, are found more cautious about taking her ill child to health facility (73.8 percent) and as the age of mother increases, the treatment seeking decreases steadily for middle aged mothers (70.4 percent) and substantially declined to 61.5 percent for old aged mothers (age 35-49).

The parity of a mother is another demographic indicator taken for the analysis and result shows that mothers having upto four living children indicate similar healthcare seeking behaviour (73 percent) whereas a sharp decline (51 percent) in utilization by the mother with seven or more children is witnessed.

Generally, the social status can be determined by the educational attainment of a person. In particular, female education has positive association with demographic indicators and also healthcare seeking behaviour (Ali, 2000). It is evident from the data that the treatment seeking from health facilities for ill children increases for educated parents as compared to those who have no education. Furthermore, it is observed that mother's education shows better results as compared to father's educational attainment.

The working status of a woman considered to be good indicator of empowerment and enhances her participation in decision-making. But in case of seeking treatment for her sick children, the data reveals not substantial difference among working and non working mothers as about two third of children whose mothers were working sought treatment (66.9 percent) as compared to 70 percent non-working mothers.

The sex of the child suffering from ARIs shows that there is no substantial differential on the basis of sex. This indicates that mothers do not differentiate among her sons and daughters if the treatment is needed for the sick child and visit a health facility without the consideration of sex of their children.

It is encouraging to note that about three fourth of the infants (age less than 1 year) have been provided treatment from a facility if he/she has suffered from ARI disease (74.5 percent). But the treatment seeking from health facility declined to 63.8 percent as the age of child reaches four year.

For the PDHS data, the economic status of a household is determined by calculating the wealth index based on standard variables and all the households were distributed by wealth quintiles (see the main report of PDHS). The result shows a positive trend as only 58 percent of the children belonging to poorest class have sought treatment from a health facility as compared to children living in economically richest households (86 percent).

Table 1: Percentage distribution of children who had symptoms of acute respiratory infections during last two weeks and had taken treatment from a health facility by background characteristics, PDHS 2006-07

Background Characteristics	Children under age five with symptoms of ARI			
	Percentage of children with symptoms of ARI	Number of children	Percentage of children for whom treatment was sought from any health facility (1)	Number of children
Over all	**14.1**	**8367**	**69.3**	**1178**
Region of residence				
Punjab	13.0	4689	70.9	611
Sindh	17.0	2085	78.0	354
NWFP	16.5	1221	50.0	202
Balochistan	3.0	372	54.5	11
Type of family				
Nuclear family	13.2	3087	65.3	406
Joint family	14.6	5280	71.4	772
Availability of health facility (*) within 5 Km				
Not available in rural area	15.2	828	65.1	126
Available in rural area	14.5	5021	65.1	728
Available in urban area	12.8	2518	80.5	323
Gender of the head of household				
Male	14.0	7693	69.1	1078
Female	14.8	674	71.0	100
Age of Mother (years)				
Less than 25	15.6	1942	73.8	302
25-34	13.4	4562	70.4	611
35 and above	14.2	1863	61.5	265
Number of living children				
1-2	15.0	2788	72.9	420
3-4	12.4	2904	72.9	361
5-6	13.9	1643	70.3	229
7 +	16.4	1031	51.2	168
Education of mother				
No education	14.3	5468	63.8	782
Upto middle	14.5	1719	78.8	250
Upto Secondary and above	12.2	1176	83.3	144
Mother's work status				
Currently working	13.7	1985	66.9	272
Currently **not** working	14.2	6383	70.0	906
Father education				
No education	14.1	3031	59.6	426
Upto middle	14.8	2473	72.6	265
Upto secondary and above	13.5	2847	76.8	384
Sex of child				
Male	15.1	4371	70.2	661
Female	12.9	3996	68.1	517

Background Characteristics	Children under age five with symptoms of ARI			
	Percentage of children with symptoms of ARI	Number of children	Percentage of children for whom treatment was sought from any health facility (1)	Number of children
Age of child (year)				
Less than 1	15.3	1782	74.5	271
1	16.6	1521	73.6	254
2	15.1	1667	69.6	253
3	12.9	1825	62.0	237
4	10.4	1570	63.8	163
Wealth quintile				
Poorest	14.6	1920	58.0	281
Poorer	14.4	1741	64.4	250
Middle	13.0	1672	66.1	218
Richer	15.2	1559	77.6	237
Richest	13.0	1473	85.9	191

Note: (*) For the analysis health facilities within 5 Km includes; Government hospital, Rural health center (RHC)/ Mother child health center, Basic health unit (BHU)/ Family welfare center (FWC), Lady health worker (LHW), Private hospital/ clinic, Pharmacy, Private doctor, Homeopath, Dispenser/ Compounder and other public or private medical facility.

5.2 Multivariate analysis results

In previous section, bivariate analysis of healthcare treatment for children suffering from ARI by various background characteristics has been performed to examine the association between these factors and the healthcare treatment. Some distinct associations emerged in bivariate analysis. However, bivariate association between two variables does not necessarily depict the true relationship unless we control the effect of other variables that may be affecting this relationship. Therefore, a multivariate approach was applied to determine which factors explain and predict the treatment sought outcome. To include the dependent variable in the model, the treatment seeking was constructed as follows: The treatment sought is coded as '1' if the treatment from any health facility was sought for a child suffering from ARI and '0' for not seeking treatment.

All important variables which are included in the bivariate analysis are also included in the multivariate analysis and group them in three models. The first one (model-1) consists of background variables viz. (1) region of residence (provinces); (2) type of family (nuclear/ joint); (3) sex of the head of household (male/ female); (4) availability of health facility within 5 Km; (5) mother's education (highest grade passed); and (6) father's education

(highest grade passed). The economic status of the household and the mother is likely to affect the treatment sought from healthcare. Therefore economic variables such as the wealth status (quintile) and the current working status of the mother are added in the equation to form Model 2.

The demographic variables were added to form the third model. These variables are the age of mother; number of living children; sex of child (male/ female); and the age of child (0-4 years). The results of the analysis in the form of significance level, odd ratios and confidence intervals are presented in table 2 and interpreted below.

The analysis of logistic regression yielded interesting results as some of the associations between treatment seeking variable (dependent) and background predictors were found not significant after controlling the effect of other variables, although these predictors have shown conspicuous relationship during bi-variate analysis. The result shows that the predictors that does not significantly effect the treatment seeking from health facility includes (i) the type of family; (ii) sex of the head of household; (iii) work status of mother; (iv) age of mother and (v) sex of child. However, the analysis indicates significant effect of following predictors on the treatment seeking from a health facility.

5.3 Region of residence

The effect of the place of region (province) on healthcare utilization in three equations is highly significant for provinces of Sindh and NWFP. However, some variations become distinct when economic variables (model 2) and demographic variables (model 3) were added in the analysis. Interestingly positive direction was found for Sindh province but NWFP and Balochistan shows opposite direction with reference to Punjab province. The sick children of Sindh have shown highest odd ratios (1.611) as they were more likely to utilized healthcare as compared to Punjab and this trend follows in three models.

5.4 Availability of health services

The availability of healthcare services within five Km shows significant effect on treatment seeking only for urban areas (odd ratios 1.749) as compared to non-availability of health facilities in rural areas. However, the effect of this indicator did not remain significant when the economic and demographic variables are added in the equation.

5.5 Education of mother and father

The female education is considered to be positively influencing the healthcare seeking behavior. As expected its effect on treatment seeking is found positive in three models. Nevertheless, its effect after remaining significant in model 1 becomes not significant when economic and demographic variables are introduced. The gain in mother's education increases the likelihood of treatment from health facility (odd ratios 1.586 to 1.760). But its likelihood decrease when we add the economic (1.287) and demographic variables (1.179) in the equation.

Furthermore, the analysis reveals that the education of father has slightly higher effect on treatment seeking for their children and its effect is significant in models 1 and 2. In other words, education of father does play significant role if he has had higher than middle level of education in seeking treatment from health facilities for children suffering from ARI.

5.6 Economic status- Wealth quintile

As expected the effect of the wealth quintile (economic model) on treatment seeking was found positive and also significant for the upper quintiles (richer and richest). The children belonging to richest quintile are more than three times likely to utilize the healthcare (3.249) as compared to poorest quintile. The addition of demographic variables in the equation has further increased the odds (3.665) of treatment sought from health facility and increase the significance.

5.7 Number of living children

Another demographic indicator is the number of living children a mother has. Its effect is found significant for parity of 3-6 children. The odd ratios of this variable indicate that likelihood of treatment seeking from health facility slightly increases as the parity increase upto six children with reference to mother having seven or more children.

5.8 Age of child

The age of child has negative effect on treatment seeking and significant only for infants (age less than one year). The odd ratios for this variable indicate that younger children are more likely to seek treatment from health facility when down with ARI (odd ratio 1.577). Similarly in Pakistani context, Ali (2000) has found that the utilization of healthcare increases with the rise in age of a male child but young female children are more likely to utilize health facility (Ali, 2000).

Table 2: Logistic Regression effect (Odd ratios) and confidence intervals of selected predictor variables on health services utilization for ARI suffering children

Predictors	Model 1			Model 2			Model 3		
	Odd ratio	Confidence interval		Odd ratio	Confidence interval		Odd ratio	Confidence interval	
		Lower	Upper		Lower	Upper		Lower	Upper
Background variables									
Region of residence									
Punjab (R)									
Sindh	** 1.611	1.170	2.218	** 1.772	1.275	2.462	*** 1.831	1.309	2.562
NWFP	*** 0.472	0.335	0.667	*** 0.475	0.334	0.675	*** 0.500	0.349	0.715
Balochistan	0.682	0.203	2.296	0.794	0.237	2.660	0.766	0.224	2.616
Type of family									
Joint family (R)									
Nuclear family	0.910	0.691	1.197	0.963	0.730	1.272	1.081	0.803	1.455
Sex of the head of household									
Male (R)									
Female	1.132	0.699	1.836	1.216	0.748	1.976	1.201	0.734	1.967
Availability of health facility (within 5 Km)									
Not available in rural areas (R)									
Available in rural areas	1.096	0.723	1.663	1.029	0.675	1.568	0.975	0.634	1.500
Available in urban areas	* 1.749	1.080	2.834	1.230	0.726	2.082	1.124	0.656	1.926
Education of mother									
No education (R)									
Upto middle	* 1.586	1.100	2.287	1.287	0.875	1.894	1.179	0.794	1.752
Upto secondary and above	* 1.760	1.760	2.952	1.148	0.643	2.053	1.093	0.603	1.981
Education of father									
No education (R)									
Upto middle	** 1.550	1.123	2.139	* 1.430	1.028	1.988	1.355	0.968	1.896
Upto secondary and above	** 1.763	1.242	2.503	* 1.507	1.044	2.176	1.409	0.969	2.050
Economic variables									
Wealth quintile									
Poorest (R)									
Poorer				1.414	0.962	2.079	1.445	0.973	2.147
Middle				1.331	0.875	2.025	1.384	0.901	2.127
Richer				** 2.019	1.253	3.252	** 2.238	1.373	3.647
Richest				*** 3.249	1.686	6.261	*** 3.665	1.877	7.156
Mother's work status									
Currently **not** working (R)									
Currently working				1.044	0.756	1.441	1.093	0.788	1.517

Predictors	Model 1			Model 2			Model 3		
	Odd ratio	Confidence interval		Odd ratio	Confidence interval		Odd ratio	Confidence interval	
		Lower	Upper		Lower	Upper		Lower	Upper
Demographic variables									
Age of Mother (years)									
Less than 25 (R)									
25-34							0.852	0.582	1.248
35 and above							0.851	0.514	1.409
Number of living children									
1-2							1.546	0.923	2.588
3-4							* 1.674	1.046	2.677
5-6							* 1.774	1.119	2.814
7 + (R)									
Sex of child									
Female (R)									
Male							1.080	0.826	1.414
Age of child (year)									
Less than 1							* 1.577	0.997	2.494
1							1.521	0.955	2.421
2							1.388	0.884	2.180
3							0.845	0.539	1.324
4 (R)									

Source: Original data file of PDHS 2006-07
Note: * Significant at .05 level.
** Significant at .01 level.
*** Significant at .001 level.
R: Reference category

6. Summary

A serious concern of child mortality is that globally, about two-third of child deaths are due to diarrhea, acute respiratory infection and malaria. According to one estimate about 3.6 million children die annually due to ARIs in the world. The child mortality can be curtailed with timely healthcare seeking from a health facility.

In Pakistan, one of the three major causes of child mortality is acute respiratory infections (ARIs) as revealed by the latest DHS data. According to Pakistan DHS, among children of ages less than five years, during two weeks preceding the survey, the treatment seeking by mothers for their children suffering from ARIs was not up to the mark as thirty percent of children did not receive treatment from a health facility (Mahmood and Sultan, 2008).

The purpose of present study was to determine the association between the treatment seeking from a health facility for children suffering from ARI and

social, economic and demographic variables. Further, the analysis identified the net effect of these variables on the healthcare seeking behavior.

The data reveals that 14 percent children of ages less than five years have suffered from ARI symptoms, commonly called pneumonia (cough with difficult or rapid breathing and chest indrawing) during two weeks preceding the survey. For severe pneumonia, hospitalization is recommended. Without early and effective treatment for an ARI, children could die very rapidly.

The analysis of the study reveals that more than seventy percent of children residing in provinces of Sindh and Punjab have sought treatment from a healthcare facility as compared to Balochistan and NWFP where half of the children sought treatment.

The availability of healthcare services within five Km shows significant effect on treatment seeking for children residing in urban areas (odd ratios 1.749) as compared to non-availability of health facilities in rural areas (model 1). It is encouraging to note that the treatment seeking was high (odd ratio 1.096) in those rural areas where health services are available within the vicinity. This implies that health facilities need to be provided for children residing in rural areas so as to promote the healthcare seeking behaviour.

The female education is considered to be positively influencing the healthcare seeking behavior. The result shows its effect on treatment seeking as positive. The gain in mother's education increases the likelihood of treatment seeking from health facility (odd ratios 1.586 to 1.760). Similarly, the education of father in particular, higher than middle level of education plays significant role in seeking treatment from health facilities for children suffering from ARI.

The effect of the economic status (wealth quintile) on treatment seeking was found positive and significant for the upper quintiles (richer and richest). The children belonging to richest households are more than three times likely to utilize the healthcare (3.249) as compared to poorest.

One of the demographic indicators is the number of living children a mother has (parity) and interestingly the analysis shows its effect as positive and significant. The odd ratios of this variable indicate that the likelihood of treatment seeking from health facility increases with the increase in parity.

The age of child suffering from ARI has shown significant effect on treatment seeking from health facility. The odd ratios for this variable indicate that younger children are more likely to seek treatment from health facility when down with ARI (odd ratio 1.577).

7. Recommendations

The research findings may suggest that the health department should improve the availability and access of health services for poor and under-privileged population particularly in rural areas so that the morbidity and mortality among children can be curtailed. At the same time an advocacy campaign should be designed to promote healthcare seeking behaviour of adult population and the messages should be understandable for the un-educated people.

The research findings reveal that the education of mother and father has positive effect on treatment seeking from health facilities. It implies that the educational status of adult population should be improved and all the stakeholders should pool-up their efforts in this direction.

The children belonging to economically rich households are more likely to seek treatment from healthcare as compared to poorest segment of population. To improve the healthcare utilization among the lower income groups, it is suggested that the free medical services should be made available for poor people under the poverty alleviation strategy.

From the research findings of this study we may conclude that efforts should be made to bring about behavioral change in parents to seek healthcare for all but specifically for those children who suffered illness with ARI as it is one of the major deadly disease among children. This might be possible if all the stake holders play a positive role trying to alleviate disparities among various strata of society and ensuring a provision of healthcare for all.

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