

WILLINGNESS TO PAY FOR REPRODUCTIVE HEALTHCARE SERVICES: A CASE STUDY OF PATNA

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ABSTRACT

The present study focused on the importance of reproductive healthcare and aims to find out the willingness to pay for reproductive healthcare services in Patna. There are various sources of health care financing in India namely government budgetary allocations, loans and grants obtained from multilateral and bilateral agencies, private sector contributions and the out of pocket payment. Among all the sources, the worrisome picture is the heavy out of pocket expenditure on health which adversely affects access to health care as it is catastrophic to poor households and further impoverishes them. Thus the study aims at converting this out of pocket expenditure on reproductive health into reproductive health insurance programme on the basis of willingness to pay by applying contingent valuation method. Study also aims to identify the determinants which influence the willingness to pay for reproductive healthcare services in Patna. Primary survey was conducted in all government and private hospitals in the year 2011. Questionnaire was conducted from 528 respondents out of which 391 respondents revealed their Willingness to Pay. Response validity is tested by relating WTP response to respondent's socio-economic and demographic characteristics. The final result shows that age of the respondent and joint-family type are negatively related while household monthly income, chance of caesarean delivery, complications in earlier delivery, RHCS offered by the hospitals, private-hospital type are significant and are positively related to WTP for reproductive healthcare services in the present study.

Keywords: Reproductive Health Insurance, User costs, Out Of Pocket Expenditure, Contingent Valuation Method, Open Ended Questions, Binary Logistic Model.

1. INTRODUCTION

Reproductive health is one of the most important factors for the growth and development of the country. The concept of reproductive health emerged from the International Conference on Population and Development held in Cairo, Egypt, in 1994. Conference focused on Women's Sexual and Reproductive Rights and constituted the framework for the development of United Nations Millennium Development Goals in 2000 which aimed at good health of mother and children which is the most precious assets of human being. Being the second largest populated country of the world, India should aim at building strong human resources for its future development.

As improvements in the health indicators of the country have a positive influence on economic growth. For instance rapid improvement in health in East Asia in 1940s created conditions for a favourable demographic transition. An initial reduction in infant mortality swelled the youth population and after a time lag, the working age population began growing faster than the dependent population. This change in demographic structure of the population intern created an opportunity for higher rates of economic growth and can explain perhaps a 1/3 to 1/2 the "Economic Miracle", experienced by East Asia during 1965 to 1999(Bloom and Williamson 1998).

Reproductive health sector of India over the years present a mix scenario. While on the one hand, India has a remarkable achievements in the form of latest technological breakthroughs especially in the maternity healthcare like success in the technique of reduction of infertility by modern method like Invitro fertilisation, birth of the test-tube baby, reduction of maternal mortality and infant mortality, reduction of total fertility rate, immunisation and vaccination programme of newly born babies and remarkable achievements in the reduction of birth rate and death rate. But on the other side, there has been extreme inequality among the people in getting reproductive healthcare service. Poor reproductive health outcomes such as early pregnancies, unintended pregnancies, high fertility rate, high infant and maternal mortality rates and poorly managed obstetric complications, unsafe motherhood, unsafe abortion, traditional harmful practices would have negative effects on overall health and development of the country (Wardlaw, 2004).

To improve maternal and new-born health by reducing mortality and morbidity related to pregnancy and child birth, it is essential to build continuum of care that increases access to and use of skilled care during pregnancy, birth and the post par took period. Having a pool of

skilled manpower for provision for this continuum of care is a major challenge for India towards improving its maternal health situation (WHO, 2011).

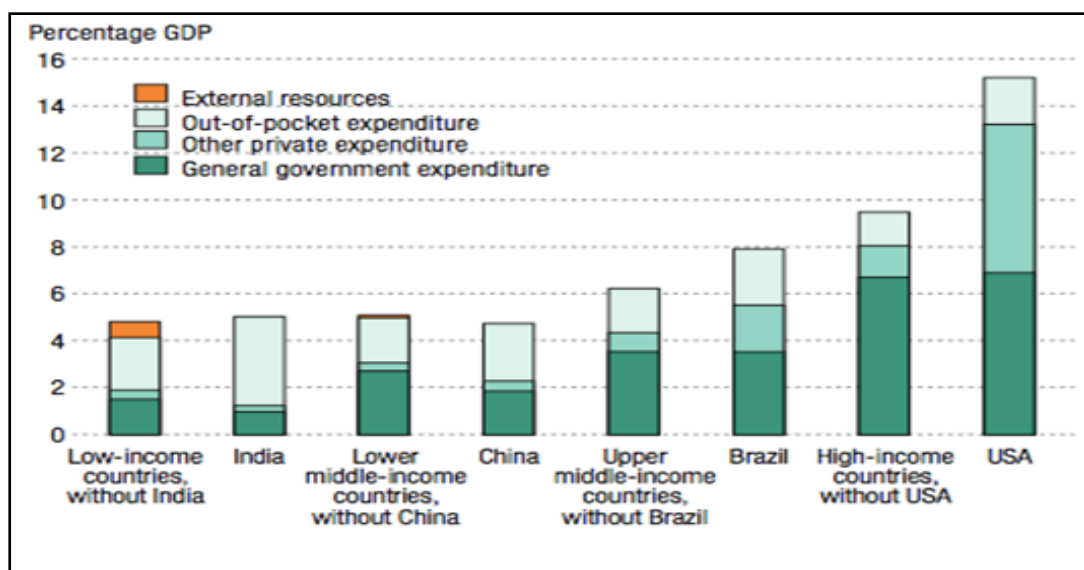
There is a need to focus on reproductive healthcare financing in India. Financing the reproductive healthcare by the poor section of population becomes more acute problem. Since large number of population in India are still not able to spend huge money on the high cost of reproductive health services this in turn deteriorate the human resources and adversely affect the growth and development of the country. There are however, varied sources of health care financing in India. These include budgetary allocations from the government at all levels of the federal structure (local government, state and federal); loans and grants obtained from multilateral and bilateral agencies in the form of international aid; private sector contributions and the out of pocket payment (WHO, 2000). Rapid escalation of medical cost and other related services results in heavy out of pocket expenditure on the reproductive healthcare, which is worrisome for those who cannot afford and they go without services. Major causes of maternal mortality in India remain haemorrhage (38%), sepsis (11%), abortions (8%), hypertensive disorders (5%), obstructed labour (5%) and other conditions including anaemia, medical disorders during pregnancy contributing to 34% of all maternal deaths (GoI,2011)

The impact of user fees on women's health outcomes and reproductive health service utilization reminds us of the urgent need to examine how women cope with health care costs and what trade-offs they make in order to pay for health care. Such studies need to collect gender disaggregated data in relation to women's health service utilization and in relation to the range of reproductive health service taking into account not only out-of-pocket fees charged by public health providers but also by private and traditional providers (Lule, et al.,1998).

It has been widely recognized that investment in the reproductive health of the poor can enhance growth and reduce poverty. At present India spends nearly 6% of our GDP on health and the share of government expenditure is less than 1% as against the recommended rate of 5% by the WHO. A major share (75%) in this expenditure is that of private out of pocket expenditure (WHO, 2010). It is estimated that out of pocket payment dominates the bulk of health care financing in India. The immediate effect of this method of health care payment is catastrophic to poor households and further impoverishes them (WHO, 1999). India ranked

third in the South-East Asia region and 42nd in the list of countries with highest out of pocket expenditure on health (World Health Organization 2012).

Figure 1: Spending on Health in Different Economies of World



(Percentage of GDP used for health, 2005)

Source: United Nation Development Report, Human Development Report 2010.

"If a household spends more than 10 per cent of household expenditure on health care, then it is termed as a catastrophic expenditure. Whereas in India, 13.68 per cent of household expenditure is spent on health care" (Selvaraj, 2009). It generates four major effects namely untreated morbidity, reduced access to health care, long term impoverishment, irrational drug use. This reinforces the well known vicious circle of poverty (Whitehead, et al.,2001). A study done by Gupta in 2009 states that the out of pocket expenditure accounts for an average increase in poverty by as much as 3.6 and 2.9 percent for rural and urban India respectively (Gupta, 2009).

This heavy out of pocket spending is troublesome for the poor women undergoing reproductive healthcare. Women who are more prone to delivery complications and other diseases are likely to push in the poverty trap. Out of pocket spending not only pushes poor households deeper into poverty, but also pushes households that were poor into extreme poverty (World Development Report, 2004).

2. REVIEW OF LITERATURE

Investment in the health of the poor raises their educational ability and productivity. It gives them both the assets they need to lift themselves from poverty and the immediate welfare gains of relief from physical sufferings (Wuensch & Poteat, 1998).

Keeping in view the State's shrinking budgetary allocations for health and its inability to fulfil the health care needs of the disadvantaged section, inefficient public health care system, problem of inflation in healthcare services and heavy out of pocket expenditure on health have created a strong need for a relatively new concept of 'Health Insurance' based on the willingness to pay of the households for reproductive healthcare services. Health Insurance play an important role in household's access to healthcare, it turns the unexpected health expenditures into predictable payment in the form of insurance which in turn encourages households to further invest in the wellbeing and further reduces the crunching effects of poverty(Asgary, et al.,2004).

At present health insurance penetration in India is only 5.5%, a large part of the sum is poised to be paid out-of-one's pocket. India has a number of insurers- few government and many private players. But none of the general insurance firms provide complete insurance policy for pregnant women. There are no particular parameters or consistency among the various pregnant women insurance benefits. Female employees are entitled to maternity benefits, but when it comes to pregnancy insurance, the chances of obtaining it are dim. However, there are few firms offering maternity insurance policies e.g. Apollo DKV, ICICI Lombard, United India Insurance, Cholamandalam General Insurance and Star Health but they rarely cover the whole maternity expenses that take place within the nine months of buying the scheme as they consider insurance is usually meant for unexpected risk and pregnancy is not regarded as such a risk in India. Insurance companies advise mothers to wait until her baby is three to six months old before trying to get cover. If a pregnant woman has managed to get life insurance cover she can expect to pay up to 50% more on her premiums. Any complications recorded during pregnancy will increase the premiums when cover is available. we are now seeing a

new generation of higher risk pregnancies in older women being made available by the advancements in medical technology with in-vitro-fertilisation treatment. They are also more at risk from the complications of higher blood pressure, a high risk of multiple births, again putting a strain on the woman's health. In this case, most carriers will not make an offer of life insurance to the prospective buyer. Normally, medical checkups during pregnancy, expenses incurred on medicines, termination of pregnancy within the first 12 weeks is also excluded from insurance coverage. Many insurance policies neither incorporate expenses met during monthly medical checkups after pregnancy nor does it envelops costs incurred towards medications consumed during pregnancy. Mediclaim policies in India such as maternity insurance are offered by insurance firms as a component of group insurance policies to corporate houses where premium of insurance policy depends on the company's profile, employee designation, her age group, etc. Female employees working with the government get maternity insurance coverage under the Employees' State Insurance Scheme in which an employee contributes 1.75 percent and the employer contributes 4.75 percent of the wages earned every month. In times of pregnancy, the employee becomes eligible for 12 weeks of confinement as well as for miscarriages and any complication arising out of pregnancy. Pregnancy insurance stipulations vary from insurer to insurer. Some insurers may require the insured to inform them immediately of hospitalization for delivery or any pregnancy-related reason. Failure to comply with simple formalities could jeopardize a person's insurance benefits (The Indian Express 2011).

If user fees and other out-of-pocket costs are retained in resource poor settings, then there is a need for research to demonstrate how user fees can be successfully and equitably implemented. User fees work in terms of their ability to recover a sufficient proportion of recurrent costs to justify their continuation. Converting this out-of-pocket expenditure on healthcare into a prepayment scheme is a big challenge for the country at present (Wardlaw, 2004).

Of the several methods that exist for estimating monetary values for healthcare programs, one that is popular is the willingness-to-pay (WTP) survey technique, known as contingent valuation method (Brien,et al.,1996).

Thus the study aims at converting this out of pocket expenditure into prepayment schemes for reproductive healthcare financing through insurance premium on the basis of household's willingness to pay so that they do not have to live with the risk of large and unpredictable

health care bills. Premiums are paid voluntarily and often depend on the risk category of the buyer of health insurance (Rexford, et al., 2001).

The method of willingness-to-pay (WTP) is used for the valuation of reproductive health services benefits which is consistent with the principles of welfare economics and cost-benefit analysis. In general, willingness-to-pay questions can be used in the analysis of both private and public decision making (Gafni, 1991). This technique is conceptually simple and intuitive, even if not always easy to undertake and its theoretical foundation can be located in conventional economic theory (Birch and Donaldson,2003). WTP was sufficient to cover household costs for health care, it focused to what extent households would substitute private for public care and increase in the use of pre-financing for the reproductive health care services (Lofgren, et al., 2008). The study done by Foreit for examining the reliable, theoretical and predictive validity of willingness to pay surveys for setting prices for reproductive health services in developing countries found that the higher income and more highly motivated users had higher WTP than lower income and less motivated users(Forfeit, 2003).

The study done in Iran in 2004 on health insurance stated that health insurance plays an important role in reducing the influence of high cost of healthcare on the economic wellbeing of the household. It also encourages longer term investment in the wellbeing of the households (Ali,et al.,2004).

Mandy study in Australia on Current economic evaluation of Assisted Reproductive Technology Programme using willingness to pay found that WTP was positively related to income and desire for more child but it was negatively related to the increasing age of the respondents(Mandy,1994).

Another Study on reproductive health insurance stated that it was primarily a financial mechanism for bringing supply and demand into a satisfactory and mutually sustaining relationship. The evidence supports the view that health insurance has probably stimulated greater utilization of all medical services for the people (Malcolm,et al.,1999).

3. METHODOLOGY

Of the several methods that exist for estimating monetary values for healthcare programme, one that is popular is willingness to pay survey technique, known as Contingent Valuation Method (Oslen and smith, 2001). Contingent valuation method is employed to directly

measure individuals maximum WTP. It is a direct stated preference technique wherein hypothetical market for the goods or services in question is created and asking respondents to state their willingness to pay. This method is consistent with the principles of welfare economics and cost-benefit analysis (Gafni,1991). The technique is conceptually simple and intuitive, even if not always easy to undertake and its theoretical foundations can be located in conventional economic theory (Birch and Donaldson, 2003). This technique is a guide to the process of setting fees for services (Hanemann, 1994). It is also used in several countries to predict demand for clinical services and social marketing products (Diener,et al.,1998;Foreit and Foreit, 2003). And also enables producers to assess the revenue potential for developing improved characteristics of existing products (Hammar and Johansson-Stenman, 2004).

In circumstances where markets do not yet, or will never exist, stated WTPs can therefore be interpreted as shadow reservation prices. Much of WTP analysis in developing countries appear to be undertaken specifically to inform price-setting, for example, studies of reproductive health care programmes(Foreit and Foreit, 2003), community-based insurance(Dong, et al., 2003) and the primary health care system (Maine, et al., 2004). A comparison of the consumer surpluses, easily derivable from the shadow demand functions, will indicate which of the candidates for inclusion is the most highly valued by the potential beneficiaries (Johansson, 1995).

3.1 AIMS AND OBJECTIVES OF THE STUDY

1. To understand and analyse the present status of reproductive healthcare in Patna. And to estimate the household total actual expenditure on reproductive healthcare services (TACRHS).
2. To find out willingness to pay (WTP) for reproductive healthcare services of the households in Patna by applying the contingent valuation methodology (CVM).
3. The aim of the study is how to convert the reproductive healthcare expenditure into reproductive health insurance programme.
4. To identify the determinants which influence the willingness to pay for reproductive healthcare services in Patna.

3.2 HYPOTHESIS

1. Individual is willing to pay for reproductive healthcare services.

2. The households expenditure on reproductive health is not dependent on the absolute level of income.

3.3 CONTINGENT VALUATION METHOD- SURVEY DESIGN

The present study aims to find out willingness to pay for reproductive healthcare services in Patna, capital of Bihar which is the third most populous state in India. Among 38 districts of Bihar, Patna has the highest share of urban population. A Primary survey was conducted in Patna in the year 2011. All private and government hospitals namely, Patna Medical College and Hospital, Nalanda Medical College and Hospital and Guru Govind Singh College and Hospital providing maternity healthcare services were visited during this period. The interview was conducted with 528 respondents. A hypothetical market for reproductive health insurance scheme was presented to them. All respondents were asked whether they would be prepared to pay at least some amount as monthly premium for eight months as an insurance for next RHCS. Those who response positively is asked to state the maximum amount they would be WTP per month as a premium? The format of the questions use to elicit valuations is continuous ('open-ended') format (Frew, Wolstenholme and Whynes, 2001; 2003). The payment vehicle was monthly premium for eight months, the amount of the premium varied according to the age, socio economic status, total cost of previous delivery and complication to the women in the previous delivery etc. Income is an important predictor variable in WTP analysis (McDaniels et.al., 1992). The questions in the survey consist of both multiple-choice form and open ended form. Response validity is tested by relating WTP response to respondent's socio-economic and demographic characteristics. Open ended questions give a continuous measure of WTP using Ordinary Least Square but for dichotomous choice questions Logit or Probit models are used for estimation of valuation function.

4. ANALYSIS OF THE DATA

Analysis has been divided into two sections: Section-I aims to study the Total Actual Cost of Reproductive Healthcare Services (TACRHS) i.e., pre-delivery, delivery and post delivery taken together which include doctors fees, hospitals fees, clinical tests and medicines, delivery fees, post delivery cost like immunization and vaccination. Time cost, transport cost and other opportunity costs of the respondents and their attendants are not included in the present study.

Section-II consists of two parts; the first part of this section is devoted to Identify the Determinants of Participating in Hypothetical Insurance Programme for RHCS. As some of

the respondents are not willing to pay and their WTP becomes zero and reject the scenario, therefore identifying the determinants of decision making is insight research question. Logit model used to identify the determinants of participating in RHCS insurance scheme. The second part of this section provides an overview on the MWTP focusing on contingent valuation methodology for the next reproductive healthcare and how it varies with the specified determinants.

Identifications and description of the variables

Dependent Variables=Willingness to pay for reproductive healthcare WTP/MWTP (insurance) scheme.

Explanatory variables

- X₁** = (AOR) Age of the respondent in years (wife age)
- X₂** = (FT) Family type (Nuclear family =0, Joint family=1)
- X₃** = (HUSED) Educational attainment of the husband
- X₄** = (HMI) Household monthly income
- X₅** = (IAIS) Insurance awareness among the households (No=0, Yes=1)
- X₆** = (DELTYPE) Delivery type (Normal delivery=0, Caesarean delivery=1)
- X₇** = (SEXCB) Sex of child born (Boy=0, Girl=1)
- X₈** = (BOOC) Birth order of children
- X₉** = (COMPCED) Complications in Earlier delivery (No=0, Yes=1)
- X₁₀** = (HOSTYPE) Hospital type for RHCS (Government hospitals =0, Private Hospital=1).
- X₁₁** = Reproductive healthcare services offered by the hospital
- X₁₂** = (WIFEWORKST) Wife Working Status
- X₁₃** = (NOEFM) Number of earning members in the family

X₁₄ = (TCRHCS) Total Cost of RHCS

MODEL-1 Total Actual Cost of Reproductive Health Care services (TACRHS): A statistical analysis.

Table 1: Explaining descriptive statistics of the variables for the analysis of the Total Actual cost of Reproductive Healthcare Services.

Descriptive Statistics	
	Mean
Total cost of RHCS	16827.85 (Rupees)
Age of Respondent	24.95 (years)
Household monthly income	16688.07 (Rupees)
Birth order of children	2.08

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Table 2: Determinants of the Total Actual Cost of Reproductive Healthcare Services

Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-14475.17	3664.34		-3.95	.000		
AOR	645.21	97.65	.195	6.60	.000***	.59	1.69
FT	-6368.23	953.96	-.168	-6.67	.000***	.81	1.23
HUSED	800.60	531.03	.061	1.50	.132	.31	3.19
HMI	.374	.040	.349	9.37	.000***	.37	2.70
IAIS	-2195.56	1130.14	-.058	-1.94	.053**	.57	1.72
DELTYPE	3040.00	1044.61	.094	2.91	.004***	.48	2.05
SEXCB	-496.49	774.33	-.015	-.64	.522	.90	1.10
BOOC	-212.00	392.05	-.013	-.54	.589	.85	1.16
COMPCED	4657.95	1185.64	.137	3.92	.000***	.42	2.38

HOSTYPE	7061.35	999.56	.219	7.06	.000***	.53	1.87
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**indicates 10% level of significance, ** indicates 5% level of significance,*

**** indicates 1% level of significance*

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

The regression analysis table shows that TACRHS in the present delivery is directly or positively related to Age of respondent, Husband's education, Household's monthly income, Caesarean Delivery, Delivery complication, Hospital type (private hospitals).

TACRHS is inversely related to joint-family type, insurance information, birth of girl child, birth order of child in the present delivery. Here seven variables out of total ten variables are found to be significant.

Table 3: Test Statistics for the Regression Model for TACRHS

R	.857
R squared	.735
Adjusted R square	.730
F	143.16
Significance of F	.000
Degree of freedom	10
Durbin- Watson	1.80

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Above test statistic of the regression model is quite robust with F statistic value of 143.16 with over 99% level of confidence. The value of R-square reveals that 73% variation in the dependent variable (TACRHS) is explained by the variations in the independent variables. Adjusted R square value .730 gives us the idea of how well our model generalizes. Regression coefficient R value is .857 shows that there is high positive correlation between the dependent variable and all independent variables in the model. Variance Inflation Factor (VIF) value is less than 10 and Tolerance level is more than .1 which show that given model is free from the problem of multicollinearity.

MODEL-2: Logistic Regression Approach for Finding the Determinants for Participating in Reproductive Healthcare Services

Binary logistic regression analysis used for predicting the outcome of a categorical criterion variable based on one or more predictor variables to predict the decision (Yes/NO) of total 528 respondents for participating in WTP for reproductive health care services. It provides us with the probability of an event occurring. And this event is captured in binary format, i.e. 0 or 1. (Wuensch, 1998).

Binary Logistic Model

$$\log(p/1-p) = b_0 + b_1 * X_1 + b_2 * X_2 + b_3 * X_3 + b_4 * X_4 + b_5 * X_5 + \dots + b_n * X_n$$

where p is the **Probability of Willingness to Participate** in the insurance programme for Reproductive Health Services (Yes=1, No=0).

Explaining the predictive capacity of the Logistic Regression Model

Beginning Block Or STEP=0 (non model, includes only the intercept)

Table 4: Classification Table for Binary Logistic in step 0(initial step)

Classification Table					
	Observed		Predicted		
			WTP		Percentage Correct
			No	Yes	
Step 0	WTP	No	0	137	.0
		Yes	0	391	100.0
	Overall Percentage				74.1

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Table 5: Description of variables for the intercept (constant) for Binary Logistic in step 0(initial step)

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	1.049	.099	111.580	1	.000	2.854

Under Variables in the Equation we see that the intercept (only) model is in (odds) =1.049. If we exponentiate both sides of this expression we find that our predicted odds [Exp(B)] = 2.854. That is, the predicted odds of deciding WTP for RHCS are 2.854.

Table 6: STEP 1(model) Omnibus Tests of Model Coefficients

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	327.802	17	.000
	Block	327.802	17	.000
	Model	327.802	17	.000

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Now at the Block 1 output. Here SPSS has added the variables as a predictor. Omnibus Tests of Model Coefficients gives us Chi-Square of 327.802, significant beyond .001 levels.

Table 7: Classification Table for binary logistic

		Observed	Predicted		
			WTP		Percentage Correct
			No	Yes	
Step 1	WTP	No	103	34	75.2
		Yes	18	373	95.4

	Overall Percentage			90.2
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Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

In the classification table of the model, movement from 74.1% accuracy in the initial step (Step 0) to 90.2% accuracy in the final step (Step 1), when the full regression model is applied to the data. This 26.1% jump represents a major improvement in predictive capability of the model.

Table 8: Model summary of binary logistic

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	268.024a	.471	.691

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

MODEL SUMMARY

We see that the -2 Log Likelihood statistics is 268.024. Cox and Snell R square is .47 which is acceptable for the model. Nagelkerke R square figure for the 'goodness of fit' of the model is good at .69 implies that 69% of variability in dependent variable explained by independent variables and the model is strong.

Table 9: Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	19.200	17	.014

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

In Hosmer and Lemeshow test, smaller the value of chi square, more impressive is the model. The likelihood ratio chi-square statistics is 19.20 which is significant, it implies that together all the regressors have a significant impact on the Willingness to participate for RHCS.

Table 10: Contingency Table for Hosmer and Lemeshow Test

		WTP = No		WTP = Yes		Total
		Observed	Expected	Observed	Expected	
Step 1	1	53	50.741	0	2.259	53

	2	42	42.505	11	10.495	53
	3	19	23.429	34	29.571	53
	4	12	10.435	41	42.565	53
	5	3	4.970	50	48.030	53
	6	3	2.515	50	50.485	53
	7	3	1.411	50	51.589	53
	8	0	.652	53	52.348	53
	9	2	.264	51	52.736	53
	10	0	.079	51	50.921	51

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Contingency Table for Hosmer and Lemeshow Test predicts probabilities in 10 categories, based on size from 1 to 10 categories and counts the number of people 528. The deviation between expected probability and observed value is less, implies predictive capacity of the given model is high.

Determinants for participating in the reproductive healthcare services insurance scheme: Binary Logistic Regression Approach

In the study 74.1% of the respondents were found to participate in the reproductive health insurance. The coefficients of the logistic regression model are used for identifying the determinants for reproductive health insurance presented in the Table as follows:

Table 11: Determinants for participating in RHCS: Empirical Estimates from Binary Logistic Model

Variables in the Equation						
	B	S.E.	Wald	df	Sig.(P)	Exp(B)
AOR	-.116	.052	4.889	1	.027**	.891
FT	-.755	.626	1.458	1	.227	.470
NOFM	-.663	.278	5.704	1	.017***	.515

HUSED	.521	.222	5.505	1	.019***	1.683
HMI	.000	.000	17.687	1	.000***	1.000
NOEFM	1.127	.259	18.932	1	.000***	3.088
WIFEWORKST	1.944	.468	17.242	1	.000***	6.988
Own house	.907	.403	5.053	1	.025**	2.477
Television	1.852	.394	22.064	1	.000***	6.371
IAIS	.767	.430	3.179	1	.075*	2.154
DELTYPE	.167	.466	.129	1	.720	1.182
TCRHCS	.000	.000	.156	1	.693	1.000
SEXCB	-1.126	.359	9.851	1	.002***	.324
BOOC	-.159	.179	.782	1	.376	.853
COMPCED	.374	.660	.322	1	.571	1.454
HOSTYPE	.364	.498	.535	1	.465	1.439
RHCS Offered	.928	.283	10.729	1	.001***	2.529
Constant	1.156	1.853	.389	1	.533	3.178

indicates 10% level of significance, ** indicates 5% level of significance, * indicates 1% level of significance*

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Analysis of the Results of Binary Logistic Regression

Logistic regression analysis shows that out of total seventeen independent variables, eleven variables emerged significant in the logistic model. While variables like age of the respondents, joint- family type, number of family members, increasing birth order of children, expectation of the birth of girl child in the next delivery are assumed to be negatively related with payment programme for RHCS. Thus all the variables have the hypothesised sign in the logistic regression analysis at 1%, 5% and 10% levels of significance respectively.

MODEL-3a Determinants of Willingness to Pay for Reproductive Healthcare Services: A Regression Model-(Step- I)

Total 391 respondents who have shown their monthly WTP for RHCS as insurance premium for eight months. This model will help in identifying the variables which are responsible for accepting the scenario.

Table 12: Determinants of Willingness to Pay for Reproductive Healthcare Services: Step- I

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-222.74	214.48		-1.03	.30
AOR	-8.86	6.02	-.059	-1.47	.14
FT	-84.62	54.23	-.052	-1.56	.12
HUSED	24.67	33.68	.037	.73	.46
HMI	.008	.002	.168	3.29	.001***
IAIS	67.27	84.17	.027	.79	.42
DELTYPE	98.64	63.96	.065	1.54	.12
SEXCB	-2.04	50.11	-.001	-.041	.96
BOOC	-2.70	25.33	-.003	-.107	.91
COMPCED	473.09	71.75	.314	6.59	.00***
RHCS offered	.027	.004	.354	7.62	.00***
HOSTYPE	87.57	58.34	.057	1.50	.13

*indicates 10% level of significance, ** indicates 5% level of significance,

*** indicates 1% level of significance

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Table 13: Test Statistics for the Extended Regression Model for MWTP for RHCS (Step-I)

R	.817
R squared	.668
Adjusted R square	.658
F	69.183
Significance of F	.000
Degree of freedom	11

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Model is quite robust with F statistic value of 69.1 with over 99% level of confidence. Regression coefficient R value is .81 shows that there is high positive correlation between the dependent variable and all independent variables. R square implies that 66% variation in dependent variable monthly WTP is explained by independent variables in the model. Adjusted R square value .65 gives us the idea of how well our model generalizes.

MODEL-3b Determinants of Willingness to Pay for Reproductive Healthcare Services: A final regression Model- (step II)

In the final regression model (step II), only seven independent variables are taken into consideration for studying the final determinants for the Monthly Willingness to Pay of 391 respondents who accepted the programme for participating in insurance programme of - monthly WTP for RHCS. The coefficients of the variables presented in the previous regression model –I may be influenced by the omitted variables bias. To remove this biasness out of the final regression model, this model is considering only those variables which appear to be significant in the earlier model and inclusion of those insignificant variables may lead to over specifying the model.

Table 14: Determinants of Willingness To Pay for Reproductive Healthcare Services: A final Regression model- (Step-II)

Coefficients ^a				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

	B	Std. Error	Beta		
(Constant)	-161.790	198.711		-.814	.416
AOR	-8.557	5.602	-.056	-1.527	.127
FT	-97.662	52.763	-.059	-1.851	.065**
HMI	.009	.002	.192	4.321	.000***
DELTYPE	109.431	62.684	.072	1.746	.082*
COMPCED	473.257	70.490	.314	6.714	.000***
RHCS offered	.027	.004	.350	7.665	.000***
HOSTYPE	108.316	55.031	.071	1.968	.050**
a. Dependent Variable: MWTP					

*indicates 10% level of significance, ** indicates 5% level of significance, *** indicates 1% level of significance

Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

Table 15: Test statistics of Determinants of Monthly WTP for Reproductive Healthcare Services

R	.816 ^a
R squared	.666
Adjusted R square	.660
F	109
Significance of F	.000
Degree of freedom	7
Durbin Watson statistic	1.864

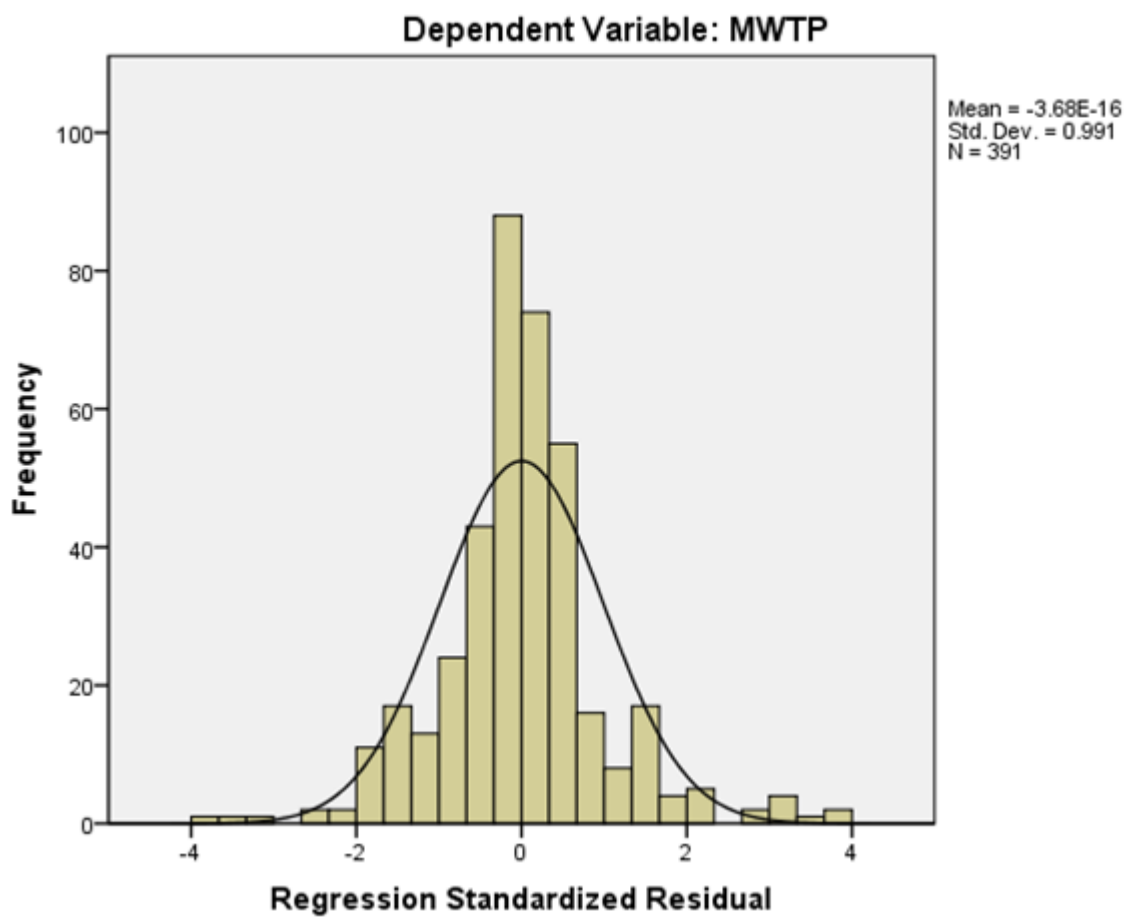
Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

The test statistic of the final model is quite robust with F statistic value of 109 with over 99% level of confidence. Regression coefficient R value is .81 shows that there is high positive correlation. Coefficient of determination R square implies 66% variation in dependent variable explained by variations in the independent variables in the model.

Thus, the final regression model reveals that out of total seven variables taken into study, six variables are found to be significant. The variables namely age of respondents and joint-family type are negatively related while households monthly income, private- hospital type, chance of caesarean delivery, RHCS offered by the hospitals and complications in the earlier delivery are

found to be positively related with the monthly willingness to pay for reproductive healthcare services.

Figure 2: Histogram of Analysis



Source: As per survey on Willingness To Pay for Reproductive Health Care Services in Patna

In the given model, Histogram looks like a normal distribution (a bell shape curve). It shows that the variables are normally distributed in the final regression model -II.

In a nutshell, the overall findings of the final multiple regression model-II are satisfactory and quite in line with the findings of the previous studies on reproductive healthcare services like Chinyelu, B, et al., 1994; Wallace, H.M,1995; Malcolm Potts, et al.,1999; Schneider H, et al., 2000; Priya Nanda,2002; Foreit, J.2000:Daniel McFadden, 1994; Mandy, 1994.

Limitations of the study

Willingness-to-pay method has been criticised for being too hypothetical, with expressed values bearing little relation to actual values (Smith, R.D, 2003). To present the WTP question using answering categories by simply asking the maximum amount that a respondent would be willing to pay poses a large cognitive task for a respondents (Gafni, et al., 1996). In addition to this, when open-ended questions are used, an important concern for WTP analysis is the treatment of outliers (Berwick, et al.,1985; McDaniels, et al.,1992). Open-ended questions are likely to be biased and erratic (Johannesson,1997;Bergmo, et al., 2007).The CVM technique produces biased results when interviews are abstract and respondents are unfamiliar with the good or service being valued (Niringiye, et al., 2010)

Conclusions

Inspite of these limitations, present study reveals that people have a definite preference for health insurance. They are ready to pay monthly premium for their reproductive healthcare in accordance with their paying capabilities. Purchasing insurance for financing reproductive health care service is a very nascent concept which can be proved to be very successful in increasing the health of mother and child in the country. By encouraging people's participation for accepting this type of pre-payment for health care services and make their healthcare cost less burdensome.

Such studies should be conducted more and more in India. Thus, the results may help the planners, policy makers and administrators in formulating policies relating for mobilisation of additional resources for healthcare through health insurance and educating the importance of healthcare to the people in general. Reproductive health insurance especially for the disadvantaged might be one of the important methods of generating resources for developing social security system and probability tackle the problem of financial barrier to good healthcare.

The study also supported the fact that if reproductive health insurance programme is run through hospitals both government and private, it will lead to increase in institutionalisation of delivery like government run scheme Janani Bal Suraksha Yojana. The study also focuses the need for Public- Private- Partnership Model for improving health care services. Since there is resource constraint with public sector to provide health service to the large population so corporate should come with corporate social responsibility to provide health services to the people at reasonable cost.

Thus, the onus for future research is to demonstrate whether and how user fees can improve the resources available in primary health care settings without reducing utilization or hurting those who are poor and vulnerable. Such studies need to collect gender-disaggregated data in relation to reproductive healthcare services in particular. Therefore, health economists need to give more importance to the reality of the daily lives of poor women in proposals for such health policies that will impact women's utilization of health services.

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