

## **CHAPTER IV**

### **RESULTS**

#### **4.1 Background:**

The survey was carried out in Paro and Punakha, Bhutan. It was done over a period of three weeks and completed at the end of January 2004. The total number of respondents for the community-based survey was 150 in each area, for a total of 300 respondents. The subjects for the community-based survey were all women of reproductive age. (15years- 49 years).

The secondary data were collected from emergency obstetric register in Paro and Punakha hospitals. The secondary data was collected for a period of three years i.e from January 2001 till December 2003. This is 18 months before the start of the program till 18 months after the start of the program. In the secondary data on complications of pregnancy there were also diagnoses not specifically listed as one of the five danger signs, but that could have been closely related to one or more signs. These were discussed with the technical advisor of the program and recorded as she advised.

The Data collected includes:

1. Demographic characteristics of the sample population.
2. Descriptive explanations of the Knowledge level of women on the danger signs of Pregnancy.
3. Demographic characteristics of the women who utilized the hospital for delivery and treatment of complications of pregnancy.

Steps in the presentation of results

1. The socio demographic variables of interest for both Primary and secondary data are presented in frequencies, percentage, SD and means.
2. The association between the dependent and independent variables are presented in tables showing statistical significance.
3. The association of the education program on the level of knowledge between Paro and Punakha is presented in tables showing statistical significance.
4. The rate of hospital utilization before, during and after the program is presented in line graphs and tables.
5. The association of hospital utilization before and after the program in Paro and Punakha are presented in tables showing statistical significance.

## 4.2 Demographic Features

### 4.2.1 Age:

#### a) Primary Data:

The minimum age of the women in both areas was 16 and maximum was 49 in Paro 45 in Punakha. The mean age in Paro was 26.66 and 27.88 in Punakha. The standard deviation value in Paro was 6.49 and in Punakha were 6.71. Majority of the respondents were between the age of 20-29 years, 58% in Paro and 50.7% in Punakha. There were 17 (11.5) in Paro and 14 (9.4) respondents from age less than 20 years and 40 (27.0) in Paro and 47 (31.5) in Punakha from 30-39 years age. Age between 40-49 years constituted the minimum respondents of 2.7% in Paro and 8% in Punakha. Independent T-test was done to see the distribution of surveyed population according to age and it was not statistically significant. (p-value 0.097)

**Table 3 : Age distribution of the surveyed population in Paro and Punakha.\***

Area	Number	Minimum	Maximum	Mean	Standard deviation
Paro	148	16	49	26.60	6.50
Punakha	149	16	45	27.88	6.71
<b>Total</b>	<b>297</b>	<b>16</b>	<b>49</b>	<b>27.24</b>	<b>6.63</b>

\* Independent T-test (equal variances assumed) p-value= 0.097

### **b) Secondary Data**

Age distribution of women who attended the hospital for delivery and treatment of Complications of pregnancy in Punakha and Paro (2001-2003)

Secondary data was collected for three years from 2001-2003. In Paro the age of women who utilized the hospital over three years ranged from 16-44 years. The mean was 25.81 in 2001, 26.42 in 2002 and 25.46 in 2003. The standard deviation was 6.11 in 2001, 5.84 in 2002 and 5.73 in 2003. In Punakha the age range was from 17-45 years with mean of 25.20, 25.34 and 25.94 respectively in 2001, 2002 and 2003. The standard deviation in 2001 was 5.69 and in 2002 and 2003 it was 6.27 and 6.17 respectively.

Majority of the patients who utilized the hospital were between the age of 20-29 years, consisting of 63.8% in Paro and 66.4% in Punakha. Among women utilizing the hospital in Paro 17.7%, 12.8%, 11.8% were less than 20 years in 2001, 2002 and 2003 respectively. Among women utilizing hospital in Punakha 12.9%, 14.4%, 10% were less than 20 years in 2001, 2002 and 2003 respectively. Among the women utilizing the hospital in Paro, 64.6%, 54.2%, 62.9% were aged between 20-29 years in 2001, 2002 and 2003 respectively. Among the women utilizing the hospital in Punakha 66.4%, 60.8%, 61.3% were aged between 20-29 years in 2001, 2002 and 2003 respectively. Among women utilizing hospital in Paro 14.3%, 30.0%, 22.7% were in the age group 30-39 years in 2001, 2002 and 2003 respectively. In Punakha women utilizing hospital were 16.4%, 20.8%, 22.7% were in the age group 30-39 years in 2001, 2002, and 2003 respectively. In the age group 40-49 years women who utilized the hospital in Paro were 3.4% in 2001, 2% in 2002 and 3% in 2003. In Punakha it was 4.3% in 2001, 4% in 2002 and 6% in 2003.

**Table 4: Age distribution of women who utilized the hospital for delivery and treatment of complications of Pregnancy. (Punakha and Paro from 2001-2003)**

	Number			Minimum			Maximum			Mean			Standard deviation		
	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003	2001	2002	2003
<b>Paro</b>	149	205	238	17	16	17	44	44	43	25.8	26.4	25.4	6.11	5.84	5.73
<b>Punakha</b>	116	128	145	18	17	18	45	43	44	25.2	25.3	25.9	5.69	6.27	6.17

**Table 5: Age distribution of women who utilized the hospital for delivery and treatment of complications of Pregnancy in Paro and Punakha. (2001-2003)**

Age	2001		2002		2003	
	Paro	Punakha	Paro	Punakha	Paro	Punakha
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
<20 Years	26 (17.7)	15 (12.9)	26(12.8)	18 (14.4)	28 (11.8)	15 (10.0)
20-29 years	95 (64.6)	77 (66.4)	112 (54.2)	76 (60.8)	149 (62.9)	92 (61.3)
30-39 years	21(14.3)	19 (16.4)	61 (30.0)	26 (20.8)	53 (22.4)	34 (22.7)
40-49 years	5 (3.4)	5 (4.3)	4 (2.0)	5 (4.0)	7 (3.0)	9 (6.0)
Missing	2	-	2	3	1	1
<b>Total</b>	<b>149</b> <b>(100.0)</b>	<b>116</b> <b>(100.0)</b>	<b>205</b> <b>(100.0)</b>	<b>128</b> <b>(100.0)</b>	<b>238</b> <b>(100.0)</b>	<b>151</b> <b>(100.0)</b>

#### 4.2.2 Education

##### a) Primary Data

##### Education level of surveyed population in Paro and Punakha.

The community based survey result showed that 27.3% in Paro and 53.7% in Punakha were uneducated, both comprising the majority in each areas. In the Non-formal, Primary, Lower secondary and the higher secondary group, Paro had 20.7%, 15.3%, 17.3% and 18.7% respectively compared to Punakha which had 12.8% in the non

formal, 10% in the primary, 7.4% in the lower secondary and 15.4% in the higher secondary group. There was only 0.7% attendance from university and college group in both areas.

**Table 6: Education level of women from the survey in Paro and Punakha.**

Education Level	Paro	Punakha
	Frequency (%)	Frequency (%)
None	41 (27.3)	80 (53.7)
Non-Formal	31(20.7)	19 (12.8)
Primary	23 (15.3)	15 (10.0)
Lower secondary	26 (17.3)	11 (7.4)
Higher secondary	28 (18.7)	23 (15.4)
University/college	1(0.7)	1(0.7)
Missing	-	1
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

**b) Secondary Data:**

**Education level of women who utilized the hospital for delivery and treatment of complications of pregnancy in Paro and Punkha. ( 2001 to 2003)**

There is increase in hospital utilization by the non-educated women over the three-year period in both the areas. In Paro it was 51.7% in 2001, 52.0% in 2002 and 58.1% in 2003. Punakha was 53.3% in 2001, 58.3% in 2002 and 62.7% in 2003. In the non-formal group there is decrease utilization from 2001 to 2002 in both the areas, Paro had 16.8% in 2001, 11.6% in 2002, Punakha had 19.0% in 2001, 13.4% in 2002. This was followed by slight increase in 2003 in both areas, Paro 14.4% and Punakha 15.2%. In Paro Hospital utilization by women with primary education was 11.9%, 15.2%, 10.5% in 2001, 2003 and 2004 respectively. In Punakha hospital utilization by women with

primary education was 10.5%, 13.4% and 7.6% in 2001,2002,2003 respectively. Hospital utilization in Paro by women with lower secondary education was 9.1% in 2001, 7.6% in 2002 and 7% in 2003 and in Punakha it was 8.6%, 6.3% and 5.5% over the same period of time. Among women who utilized the hospital in Paro 10.5% in 2001, 13.6% in 2002 and 10% in 2003 were from higher secondary education. In Punakha it was 8.6% in 2001, 8.7% in 2002 and 9.0% in2003. In the university and college level there was none in both the areas over the three-year period.

**Table 7: Education level of women who utilized the hospital for delivery and treatment of complications of pregnancy in Paro and Punakha. (2001 to 2003)**

	2001		2002		2003	
	Paro	Punakha	Paro	Punakha	Paro	Punakha
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
None	74 (51.7)	56 (53.3)	103 (52.0)	74 (58.3)	133 (58.1)	91(62.7)
Non-Formal	24 (16.8)	20 (19.0)	23 (11.6)	17 (13.4)	33 (14.4)	22 (15.2)
Primary	17 (11.9)	11(10.5)	30 (15.2)	17 (13.4)	24 (10.5)	11(7.6)
Low.sec	13 (9.1)	9 (8.6)	15 (7.6)	8 (6.3)	16 (7.0)	8 (5.5)
High.sec	15 (10.5)	9 (8.6)	27 (13.6)	11(8.6)	23 (10.0)	13 (9.0)
Missing	6	11	7	1	9	6
<b>Total</b>	<b>149</b> <b>(100.0)</b>	<b>116</b> <b>(100.0)</b>	<b>205</b> <b>(100.0)</b>	<b>128</b> <b>(100.0)</b>	<b>238</b> <b>(100.0)</b>	<b>151</b> <b>(100.0)</b>

### 4.2.3 Occupation:

#### a) Primary Data

#### Occupation distribution of women from the survey in Paro and Punakha.

The majority of the respondents in the survey were Housewives, 67.3% in Paro and 73.2% in Punakha. Women in other occupation group were more in Paro(12%) than in Punakha(3.3%).

**Table 8: Occupation distribution of women from the survey in Paro and Punakha.**

	Paro	Punakha
	Frequency (%)	Frequency (%)
House wife	101(67.3)	109 (73.2)
Government servant	22 (14.7)	22 (14.8)
Business	9 (6.0)	8 (5.4)
Others (farming/day laborer)	18 (12.0)	5 (6.6)
Missing	-	1
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### b) Secondary data:

#### Occupation of women who utilized the hospital for delivery and treatment of complications of Pregnancy in Paro and Punakha. (2001 –2003).

In 2001 majority of the women who attended the hospital were housewife with 76.8% in Paro and 78.2% in Punakha. There was none in the farming category in both the areas. In 2002 also majority were in the housewife category with 71.7% in Paro and 76% in Punakha. Second highest users were government servant (15.2%) in Paro and Business (10.7%) in Punakha. In 2003 also women as housewives were the majority to



utilize the hospital it comprises of 73.3% in Paro and 77.6% in Punakha. There was none in the farming group in both the areas. Women having occupation in the others category utilized the hospital least in all three years in both Punakha and paro.

**Table 9: Occupation of women who utilized the hospital for delivery and treatment of complications of Pregnancy in Paro and Punakha. (2001 – 2003).**

	2001		2002		2003	
	Paro	Punakha	Paro	Punakha	Paro	Punakha
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
H/ wife	109 (76.8)	86 (78.2)	142 (71.7)	92 (76.0)	166 (73.1)	114 (77.6)
Gov. servant	17 (12.0)	13 (11.8)	30 (15.2)	12 (10.0)	31(13.7)	14 (9.5)
Business	10 (7.0)	6 (5.5)	22 (11.1)	13 (10.7)	24 (10.6)	15 (10.2)
Day laborer	1(0.7)	3 (2.7)	4(2.0)	4(3.3)	5 (2.2)	1(0.7)
Others	5 (3.5)	2 (1.8)	0	0	1(0.4)	3 (2.0)
Missing	7	6	7	7	11	4
<b>Total</b>	<b>149</b> <b>(100.0)</b>	<b>116</b> <b>(100.0)</b>	<b>205</b> <b>(100.0)</b>	<b>128</b> <b>(100.0)</b>	<b>238</b> <b>(100.0)</b>	<b>151</b> <b>(100.0)</b>

#### 4.2.4 Parity of women

##### a) Primary Data

Parity of women who participated in the community-based survey showed that majority of the women had parity of 1-2, 48.3% in Paro and 47.3% in Punakha. The maximum number of parity was 8 both in Paro and Punakha. There were also respondents with no children. (34.2% in Paro and 23.3% in Punakha). The difference in distribution was not statistically significant. (p-value .091)

**Table 10: Parity of women from the survey in Paro and Punakha.\***

Area	Number	Minimum	Maximum	Mean	Standard deviation
Paro	149	0	8	1.54	1.60
Punakha	146	0	8	1.84	1.49
<b>Total</b>	<b>295</b>	<b>0</b>	<b>8</b>	<b>1.69</b>	<b>1.55</b>

\*Independent T-test (equal variances assumed) p-value .091

**Table 11: Parity of women from the survey in Paro and Punakha.**

	Paro	Punakha
	Frequency (%)	Frequency (%)
None	51(34.2)	34(23.3)
1-2 children	72 (48.3)	69 (47.3)
3-5Children	26 (17.5)	45 (29.4)
Missing	1	4
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### **b) Secondary data:**

#### **Parity of women who utilized the hospital for delivery and treatment of complications of Pregnancy in Paro and Punakha. (2001- 2003)**

Majority of the women who utilized the hospital in 2001 were having children 1-2, 63.1% in Paro and 53.9% in Punakha. Those with first pregnancy (Primigravida) also attended the hospital comprising 26.8% in Paro and 37.9% in Punakha. In 2002 also women having 1-2 children utilized the hospital more in both the areas, 61.2% in Paro and 52.8% in Punakha. In 2003 also more women having 1-2 children utilized the hospital more. 56.4% in Paro and 49.0% in Punakha. However there were 1.3% of women who had more than 5 children utilizing the hospital in Punakha but Paro had none in that category.

**Table 12: Parity of women who utilized the hospital for delivery and treatment of complications of Pregnancy in Paro and Punakha. (2001- 2003**

	2001		2002		2003	
	Paro	Punakha	Paro	Punakha	Paro	Punakha
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Primi*.	40 (26.8)	44 (38.3)	49 (25.0)	39 (31.2)	60 (25.4)	45 (30.6)
1-2 children	94(63.1)	62 (53.9)	120 (61.2)	66 (52.8)	133 (56.4)	72 (49.0)
3-4 children	15 (10.1)	9 (7.8)	27 (13.8)	20 (16.0)	43 (18.2)	28 (19.0)
≥5 children	0	0	0	0	0	2 (1.4)
Missing	0	1	9	3	2	4
<b>Total</b>	<b>149</b>	<b>116</b>	<b>205</b>	<b>128</b>	<b>238</b>	<b>151</b>
	<b>(100.0)</b>	<b>(100.0)</b>	<b>(100.0)</b>	<b>(100.0)</b>	<b>(100.0)</b>	<b>(100.0)</b>

\*Primigravida: Women who is pregnant for the first time. (Dorland's illustrated medical dictionary, 29<sup>th</sup> edition, W.B. Saunders Company 2002).

### 4.3 Marital Status

#### Marital Status of Women from the survey in Paro and Punakha

The survey data showed that most of the respondents were married women both in Paro (81.3%) and Punakha (85.8%). Unmarried women were the second highest respondents with 16% in Paro and 13.5% in Punakha. There was one widow (0.7%) interviewed in each area. Respondent with divorced status amounted to 2.7% in Paro and 1.3% in Punakha. Single women (unmarried, divorced and widow) were 18.7% in Paro and 14.2% in Punakha. The difference in marital status of women in Paro and Punkha was not statistically significant. (p value-.188)

**Table 13: Marital status of the surveyed women in Paro and Punakha.**

Marital Status	Paro	Punakha
	Frequency (%)	Frequency (%)
Single*	28 (18.7)	21 (14.2)
Married	122(81.3)	127(85.8)
Missing	-	2
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### 4.3.1 Association of marital status with area.

Chi-square test was done to find the association of marital status with area. The marital status was classified into single and married. The association was not statistically significant. (p-value 0.188).

**Table 14: Chi-square for association of marital status with area.**

Marital status	Paro	Punakha		
Single*	28 (18.7)	21 (14.2)		
Married	122 (81.3)	127 (85.8)		
<b>Total</b>	<b>150 (100.0)</b>	<b>148 (100.0)</b>	<b>1.087</b>	<b>.188</b>

\*Single-Unmarried, divorced, widowed

## 4.4 Transportation:

### Availability of Transportation among surveyed women in Paro and Punakha.

On the availability of transportation (including motor vehicle/motorcycle/ scooter) 20.7% of the respondents in Paro and 12.1% in Punakha had some forms of transportation.

**Table 15: Availability of Transportation**

Transportation	Paro	Punakha
	Frequency (%)	Frequency (%)
Yes	31(21.2)	18 (12.2)
No	115 (78.8)	130 (87.8)
Missing	4	2
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### 4.4.1 Transportation used for going to hospital:

Most of the women walk to hospital and the percentage was equally distributed in both the areas. (57.8% in Paro and 57.1% in Punakha). Only 1.6% in Paro and 2.7% in Punakha utilized the ambulance for going to hospital.

**Table 16: Transportation used for going to hospital.**

	Paro	Punakha
	Freq. (%)	Freq. (%)
Walk	85 (57.8)	84(57.1)
Ambulance	2 (1.6)	4(2.7)
Own vehicle	30 (20.6)	19 (12.9)
Others	29 (20.0)	40 (27.3)
Missing	4	4
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

### 4.5 Chi Square Test for Association of Independent Variables Between Paro and Punakha

Chi-square test was done to find the association between independent variables between Paro and Punakha. Age was found to be statistically significant (p-value.021),

Education was highly statistically significant (p-value< .001) Occupation was not statistically significant (p-value=0.197). Number of children was also found to be not statistically significant. (p-value=0.027), transportation was also statistically significant between Paro and Punakha.(p-value=0.026)

**Table 17: Chi-square test for association of independent variables in Paro and Punakha from the survey.**

Age	Paro	Punakha	Chi square	p-value
	Frequency (%)	Frequency (%)		
<15-29 yrs	106 (54.4)	89 (45.6)	<b>4.655</b>	<b>.031</b>
30-49 yrs	42 (41.2)	60 (58.8)		
Missing	1	1		
<b>Total</b>	<b>148 (49.8)</b>	<b>149(50.2)</b>		
<b>Education</b>				
No education	41(33.9)	80 (66.1)	<b>21.556</b>	<b>&lt;.001</b>
Educated	109(61.2)	69 (38.8)		
Missing	-	1		
<b>Total</b>	<b>150 (50.2)</b>	<b>149 (49.8)</b>		
<b>Occupation</b>				
Housewife	102 (48.3)	109 (51.7)	<b>.956</b>	<b>0.328</b>
Others	48(54.5)	40 (45.5)		
Missing	-	1		
<b>Total</b>	<b>150 (50.2)</b>	<b>149 (49.8)</b>		
<b>No. Of children</b>				
Nil	50 (59.5)	34(40.5)	<b>4.233</b>	<b>0.040</b>
1 or more	100 (46.3)	116 (53.7)		
Missing	1	4		
<b>Total</b>	<b>150 (50.0)</b>	<b>150 (50.0)</b>		
<b>Transport</b>				
Yes	31(63.3)	18 (36.7)	<b>4.354</b>	<b>0.037</b>
No	115 (46.9)	130 (53.1)		
<b>Total</b>	<b>146 (49.7)</b>	<b>148 (50.3)</b>		

## 4.6 Knowledge on Danger Signs of Pregnancy

### 4.6.1 Common Danger signs:

Among the danger signs bleeding was the highest in both the areas, which 55% of the respondents knew in Paro and 7.4% in Punakha. 12% of the respondents in Paro and 2.7% in Punakha knew the danger sign fever. 10.75% of respondents in Paro and 2.7% in Punakha knew headache as danger sign. 10.1% of the respondents in Paro knew fits as danger sign but none in Punakha.

**Table 18: Danger signs taught in the educational program as cited by the respondents in Paro and Punakha**

	Paro	Punakha
	Frequency (%)	Frequency (%)
Fever	19 (12.0)	4(2.7)
Headache	16 (10.7)	4(2.7)
Fits	15 (10.1)	0
Bleeding	82 (55.0)	11(7.4)
Prolonged labor	46 (30.9)	1(0.7)

### 4.6.2 Level of Knowledge:

Women in two areas had different level of knowledge. 36.7% in Paro and 87.3% in Punakha did not know a single sign or gave answer other than the five danger sign. In Paro more women knew two right answers (27.3%) than one right answer (21.3%). 5% in Paro knew five right answers but in Punakha there was no one who knew 5 right answers.

**Table 19: Level of knowledge of women on Danger signs in Paro and Punakha.**

Level of knowledge	Paro	Punakha
	Frequency (%)	Frequency (%)
None or other than five danger sign.	55 (36.7)	131(87.3)
1 right answer	32 (21.4)	9 (6.0)
2 right answers	41(27.3)	5 (3.3)
3 right answers	14 (9.3)	3 (2.0)
4-5 right answers	8 (5.3)	2 (1.4)
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### **4.6.3 Frequency distribution of more than one known danger signs from the survey in Paro and Punakha. (see Appendix III)**

The survey in Paro showed that two signs bleeding and prolonged labor was 22.1% followed by headache and bleeding (10.1%) bleeding and fits (8.7%) and fits and prolonged labor 3.4%. Among the three signs headache/ bleeding/ prolonged labor was 3.4%, headache /fits /bleeding was 2.7% and headache/fits/prolonged labor was 2%. In Punakha 2.7% knew fever, headache and bleeding and 0.7% Fever/headache/bleeding and prolonged labor.

#### **4.6.4 Other signs as cited by the respondent in Paro and Punakha. (Appendix IV)**

There were some other signs that the participants of the survey thought were dangerous during pregnancy. Among them 'vomiting' was common in both in Paro (8%) and Punakha (1.4%). 'Baby not moving' was another common sign in Paro (5.4%) and



Punakha (1.4%). Swelling 4(2.7) in Paro 2(1.4) in Punakha, Giddiness 3 (2.0) in Paro, Big baby, twins, overdue and loss of appetite were other signs.

#### 4.7 Education Program Attendance in Paro:

56 women (37.6%) in the survey in Paro did not attend the education Program and 96 women (62.4%) had attended. Among those who had not attended the program 76.8% had low knowledge and 23.2 % had high knowledge. Among those who had attended the program 52.7% had high knowledge and 47.3% had low knowledge. The percentage of women with high knowledge was more among those who had attended the education program. This is also one of the indications that the program has been successful. The association of program attendance with level of knowledge was statistically significant. (p-value <.001). 38% did not attend the education program and among them 16% did not know about the program and 22% did not have time to attend. The knowledge level of educated was higher than non-educated and also the program attendance was higher in educated (67.7%) than non-educated (32.3%).

**Table 20: Program Attendance in Paro**

<b>Attended program</b>	<b>Frequency (%)</b>
Yes	93 (62.4)
No	56 (37.6)
Missing	1
<b>Total</b>	<b>150 (100.0)</b>

**Table 21: Association between knowledge on danger sign and program attendance.**

	Program not attended	Program attended	X <sup>2</sup>	p-value
	Frequency (%)	Frequency (%)		
Low knowledge ≤ 1 sign	43 (76.8)	44 (47.3)		
High Knowledge ≥ 2 sign	13 (23.2)	49 (52.7)	<b>12.497</b>	<b>.001</b>
<b>Total</b>	<b>56 (100.0)</b>	<b>93 (100.0)</b>		

#### 4.8 Source of Information

In Paro among 150 surveyed women 62% heard the sign from the education program, 12.7% heard it from relatives and friends, and 9.3% from the hospital, 15.3% were not asked the question because they did not know any danger signs. In Punakha 19.5% had heard of the danger from relatives and friends. This was the only source of information in Punakha.

**Table 22: Source of information on Danger signs in Paro and Punakha.**

Source	Paro	Punakha
	Frequency (%)	Frequency (%)
Education Program	93 (62.0)	-
Relatives/ friends	19 (12.7)	29 (19.5)
Hospital and others	15 (10.0)	-
Not applicable	23 (15.3)	120 (80.5)
Missing	-	1
<b>Total</b>	<b>150 (100.0)</b>	<b>150 (100.0)</b>

#### **4.9 Frequency Distribution and Association of Independent Variable with Level of Knowledge**

In the total surveyed population of Paro and Punakha it was found that more women in the age group 15-29 years had high knowledge (50=25.6%) compared to those in the age group 30-49 years. (22=21.6%) association of age with level of knowledge was not statistically significant.(p=0.264) More educated women had high knowledge (53=29.8%). Education was associated with level of knowledge and was statistically significant. (p=.006) Women as housewife had more high knowledge (58=27.5%) compared to those with other occupation (15=17.0%). The association between occupations with level of knowledge was also statistically significant. (p=0.036). The Women having more than one child had less high knowledge (53 = 24.5%) than those with no children.(21=25.6%) Association between Number of children and level of knowledge was not statistically significant. (p-value 0.512). Transportation was associated with level of knowledge and it was statistically significant (p-value 0.003)

**Table 23: Associations between level of knowledge and the independent variables among surveyed women of Paro and Punakha.**

	Low Knowledge ( $\leq 1$ signs)	High Knowledge ( $\geq 2$ to 5 signs)	Chi square	p-value
Age	Frequency (%)	Frequency (%)		
<15-29 yrs	145 (74.4)	50 (25.6)		
30-49 yrs	80 (78.4)	22 (21.6)	<b>0.605</b>	<b>0.264</b>
Missing 3				
<b>Total</b>	<b>225 (75.8)</b>	<b>72(24.2)</b>		
<b>Education</b>				
No education	101(83.5)	20 (16.5)		
Educated	125 (70.2)	53 (29.8)	<b>6.849</b>	<b>0.006</b>
<b>Total</b>	<b>226 (75.6)</b>	<b>73(24.4)</b>		
<b>Occupation</b>				
Housewife	153 (72.5)	58 (27.5)		
Others	73( 83.0)	15 (17.0)	<b>3.670</b>	<b>0.036</b>
<b>Total</b>	<b>226 (75.6)</b>	<b>73 (24.4)</b>		
<b>No. Of children</b>				
No children	61(74.4)	21(25.6)		
1 or more	163 (75.5)	53 (24.5)	<b>.017</b>	<b>0.512</b>
Missing 5				
<b>Total</b>	<b>222(75.3)</b>	<b>73 (24.7)</b>		
<b>Transport</b>				
Yes	29(59.2)	20 (40.8)		
No	194(79.2)	51 (20.8)	<b>8.917</b>	<b>.003</b>
Missing 7				
<b>Total</b>	<b>223 (75.9)</b>	<b>71 (24.1)</b>		

#### 4.9.1 Chi-square Test for association of knowledge level between the intervention area (Paro) and control area. (Punakha)

More women respondents in Paro had high knowledge (58%) and only 42% had low knowledge. Where as in Punakha only 6.7% had high knowledge and rest (93.3%) had low knowledge.

Chi square test was done to see the association and significance of knowledge level between Paro and Punakha. The knowledge level in both the area was classified as low and high knowledge. Women who knew only one danger sign or did not know any danger sign or knew other then danger sign were labeled as having low knowledge. Women who knew two to five danger signs were labeled as having high knowledge. The level of knowledge with area was highly statistically significant (p-value <.001).

**Table 24: Test of association in the level of knowledge between Paro and Punakha.**

	Low Knowledge (≤ 1signs)	High Knowledge (≥ 2 to 5 signs)	X <sup>2</sup>	p-Value
	Frequency (%)	Frequency (%)		
Paro	87 (58.0)	63 (42.0)	13.644	<.001
Punakha	140 (93.3)	10 (6.7)		
<b>Total</b>	<b>227 (75.7)</b>	<b>73(24.3)</b>		

#### 4.10 Secondary data:

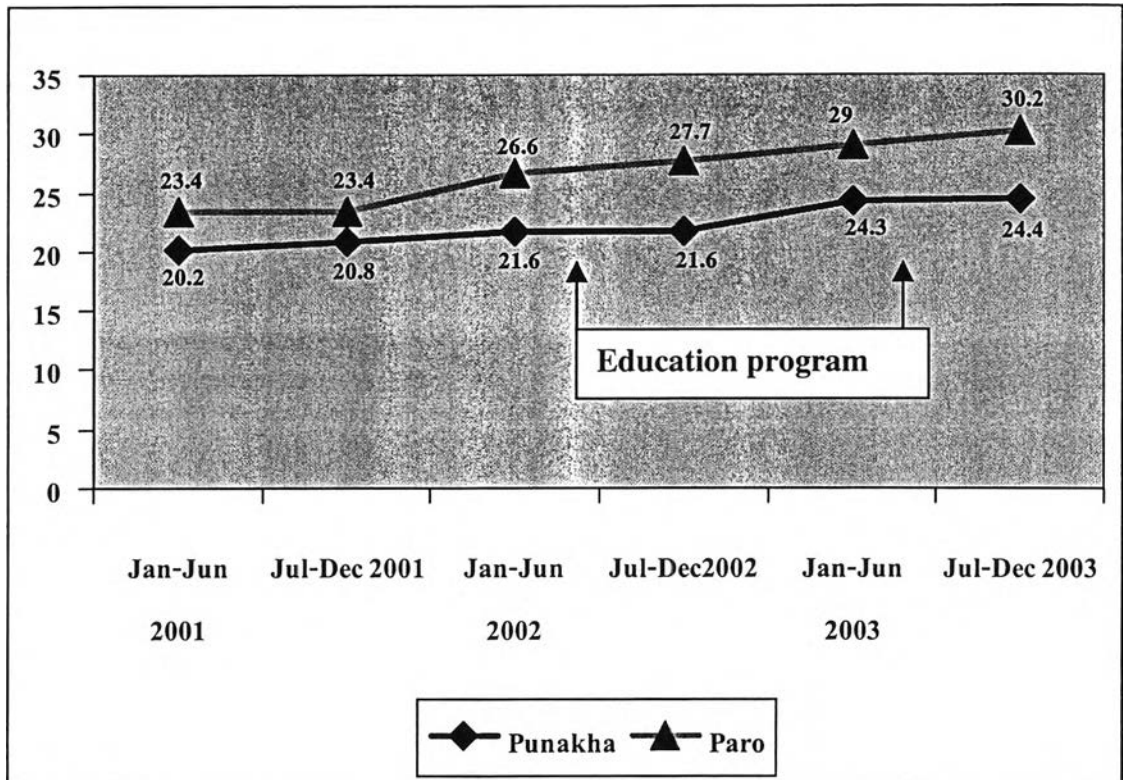
**Half yearly hospital utilization rate for delivery and complications treatment in Paro and Punakha.**

In Paro hospital utilization for delivery was 23.4% from January to June in 2001 but in Punakha it was 20.2%. The difference in hospital utilization for delivery 18 months before the program was 3.2%. There was increase in both the area but the increase was more in Paro then in Punakha. 18 months after the education program (Jul-Dec 2003) the hospital utilization for delivery in Paro 30.2% and in Punakha 24.4% and the difference was 5.8%. Similarly hospital utilization for treatment of complications of pregnancy 18 months before the education was higher in Punakha (8.2%) then Paro (7.1%) but there was gradual increase in Paro but not in Punakha. At 18 months after the education program it was 11.6% in Paro and 8.5%. When hospital utilization for delivery and treatment of complications were combined, the utilization rate 18 months before the program was 30.5% in Paro and 28.4% in Punakha. The difference between the two places was 2.1%. 18 months after the education program the combined hospital utilization in Paro was 41.9% and in Punakha it was 33.0%. The difference between the two places was 8.9%.

**Table 25: Half yearly rate of hospital utilization for Delivery and treatment of Complications of Pregnancy for Paro and Punakha. (January 2001 to December 2003)**

	Jan-June 2001		July-Dec 2001		Jan-June 2002		Jul-Dec 2002		Jan-Jun 2003		July-Dec 2003	
	Paro	Pun.	Paro	Pun.	Paro	Pun	Paro	Pun	Paro	Pun	Paro	Pun
Total pregnancy	239	193	256	206	296	217	263	203	317	255	291	221
(A) Hospital Delivery (%)*	53 (23.4)	39 (20.2)	61 (23.8)	43 (20.8)	78 (26.6)	46 (21.6)	69 (27.7)	43 (21.6)	86 (29.0)	61 (24.3)	82 (30.2)	53 (24.4)
(B) Complications treated (%)*	17 (7.1)	16 (8.2)	18 (7.5)	20 (9.2)	30 (9.7)	22 (9.6)	31 (10.2)	17 (7.8)	36 (11.3)	19 (7.4)	34 (11.6)	17 (8.5)
Total (A+B)	70 (30.5)	55 (28.4)	79 (31.3)	63 (30.0)	108 (36.4)	68 (31.3)	100 (38.0)	60 (29.5)	122 (40.3)	80 (31.7)	116 (41.9)	70 (33.0)

\* Percentage of delivery and complications treated of the total pregnancies.



**Figure 4: Line graph showing hospital utilization for delivery in Paro and Punakha from Jan-2001 to Dec-2003. (All values are in Percentage of total Pregnancies) From Table 25 above.**

#### **4.10.1 Chi square test for association in hospital utilization for delivery in Paro and Punakha.**

Chi-square test is done to see the association of hospital utilization for delivery between the first three periods (18 months before the start of the program) and second three periods (18 months after the start of the program) in Paro and Punakha. The difference was not statistically significant in Paro (p-value 0.1718) as well as in Punkaha. (p-value 0.3095)

**Table 26: Chi square test for association in hospital utilization for delivery in Paro and Punakha.**

	<b>Before (First 3 periods)</b>	<b>After (Second 3 periods)</b>	<b>Total</b>	<b>Chi-square</b>	<b>p-value</b>
<b>Paro</b>					
Hospitalized N	192	237	429		
(%)	(24.2)	(27.2)	(26.0)		
Not hospitalized	599	634	1233	1.8673	0.1718
N (%)	(75.8)	(72.8)	(74.0)		
Total pregnancies	791	871	1662		
N (%)	(100.0)	(100.0)	(100.0)		
<b>Punakha</b>					
Hospitalized	128	157	285		
(%)	(20.7)	(23.1)	(22.0)		
Not hospitalized	488	522	1010	1.0330	0.3095
(%)	(79.3)	(76.9)	(78.0)		
Total pregnancies	616	679	1295		
((%)	(100.0)	(100.0)	(100.0)		

DF-1.  $X^2 = \sum [(O-E)^2 / E]$  Where 'E' is the expected cell count and 'O' is the observed cell count.

#### **Calculation of the net intervention effect on Hospital utilization for delivery.**

The net intervention effect is calculated as follows. (CDC, 2001): [Intervention (post)- Intervention (Pre)/ Intervention (Pre)] – [Control (Post) - Control (pre)/control (pre)]

Intervention is the value for Paro and control is the value for Punakha.

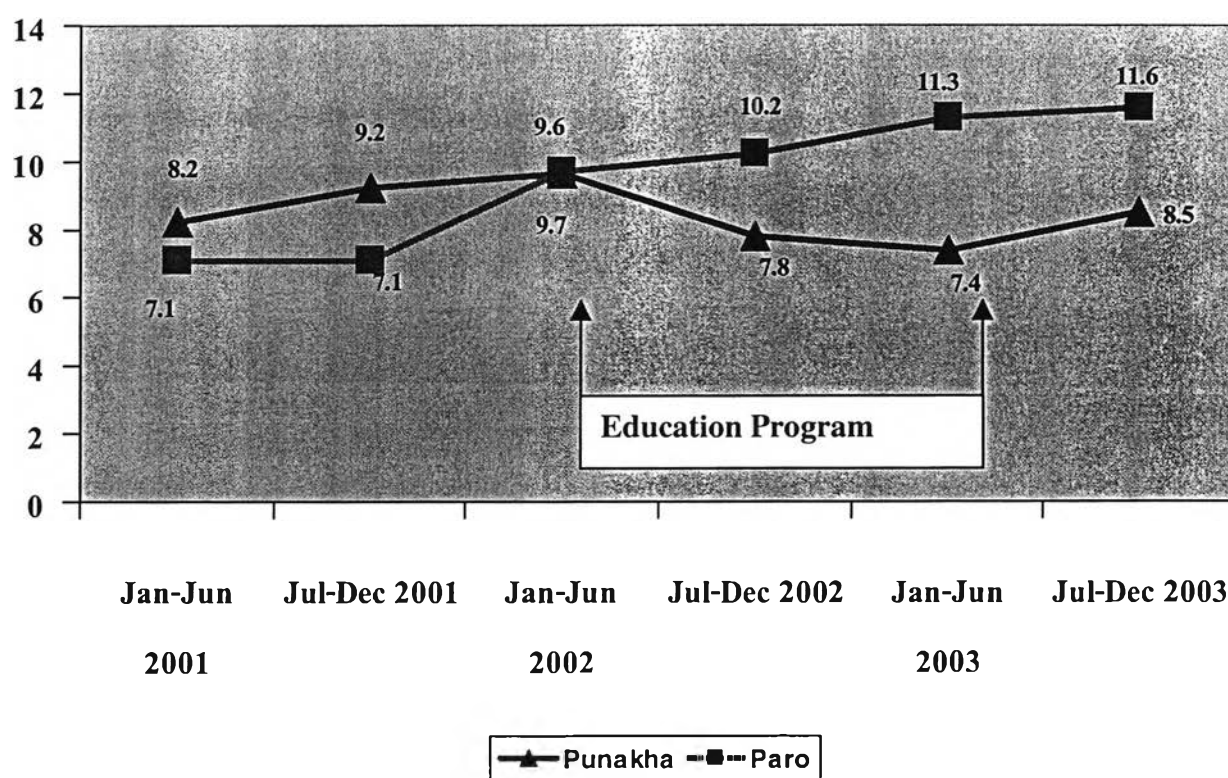
The post value for both Paro and Punakha is the percentage of deliveries in the hospital out of the total pregnancies for the second three periods after start of the education



program. Similarly the pre-value is the percentage of deliveries in the hospital out of total pregnancies for the first three periods before the start of the education Program. (From Table 26 above).

$$\{27.2-24.2/24.2\} - \{23.1-20.7/20.7\} = .01\% = 1\%$$

The net intervention effect on hospital utilization for delivery is 1%.



**Figure 5: Line graph showing the hospital utilization for complications treatment in Paro and Punakha. (All values are in Percentage of total Pregnancies. From Table 25 above)**

#### 4.10.2 Chi square test for association of hospital utilization for treatment of complications of Pregnancy in Paro.

Chi-square test was done to see the association in hospital utilization for treatment of complications in Paro and Punakha, between the first three periods (18 months before the start of the program) and the second three periods (18 months after the start of the program). In Paro the difference in hospital utilization for treatment of complications of pregnancy between the first three periods and second three periods was statistically significant in Paro. (p-value< 0.0218) But the difference was not statistically significant in Punakha.(p-value 0.3013)

**Table 27: Chi square test for association of hospital utilization for treatment of complications of Pregnancy in Paro and Punakha.**

	Before (First 3 periods)	After (Second 3 periods)	Total	Chi-square	p-value
<b>Paro</b>					
Hospitalized	65	101	166	5.2628	0.0218
(%)	(8.2)	(11.6)	(9.9)		
Not hospitalized	726	770	1496		
(%)	(91.8)	(88.4)	(90.1)		
Total pregnancies	791	871	1662		
(%)	(100.0)	(100.0)	(100.0)		
<b>Punakha</b>					
Hospitalized	58	53	111	1.0683	0.3013
(%)	(9.4)	(7.8)	(8.6)		
Not hospitalized	558	626	1184		
(%)	(90.6)	(92.2)	(91.4)		
Total pregnancies	616	679	1295		
(%)	(100.0)	(100.0)	(100.0)		

DF-1

**Calculation of the net intervention effect on Hospital utilization for treatment of complications of pregnancy.**

The net intervention effect: (CDC, Oct.1, 2001)

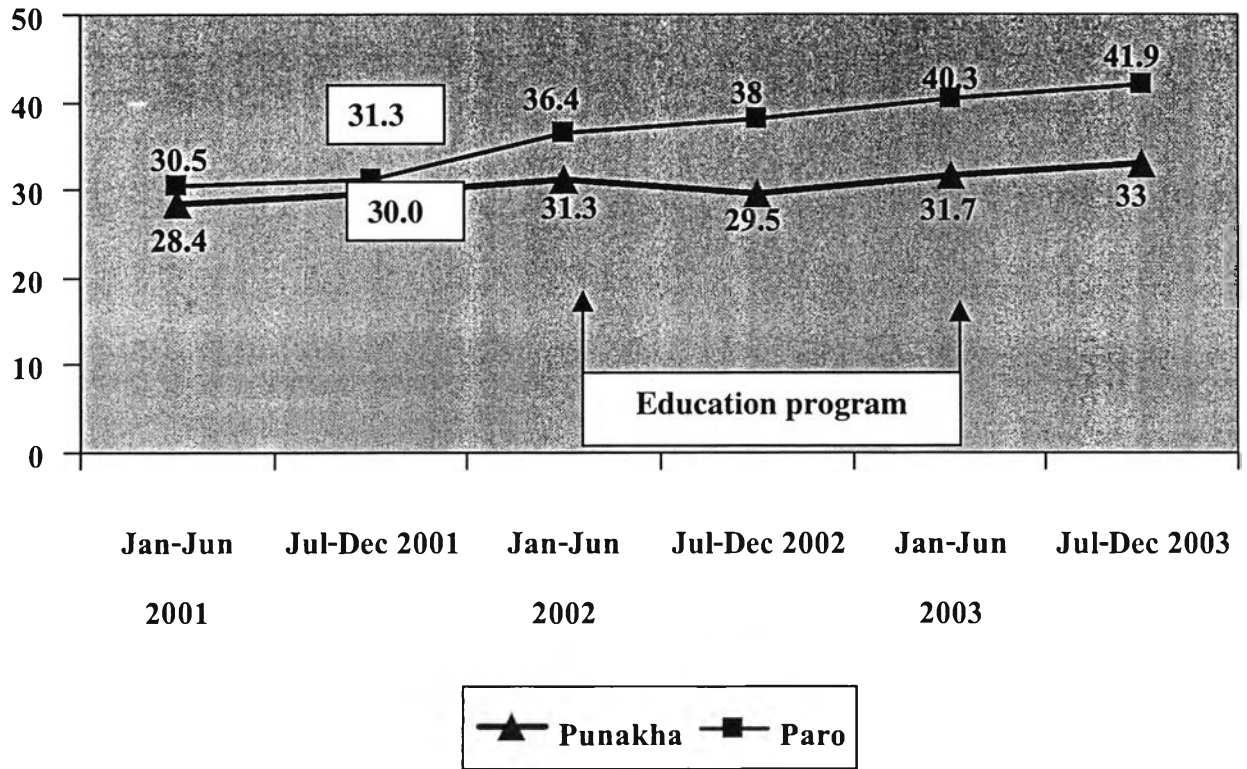
$$\frac{[\text{Intervention (post)} - \text{Intervention (Pre)}] / \text{Intervention (Pre)}}{[\text{Control (Post)} - \text{Control (pre)}] / \text{control (pre)}}$$

Intervention is the value for Paro and control is the value for Punakha.

The post value for both Paro and Punakha is the percentage of complications treated in the hospital out of the total pregnancies for the second three periods after start of the education program. Similarly the pre-value is the percentage of complications treated in the hospital out of total pregnancies for the first three periods before the start of the education Program. (From Table 27 above).

$$[11.6 - 8.2 / 8.2] - [7.8 - 9.4 / 9.4] = 0.24 = 24\%$$

The net intervention effect on hospital utilization for treatment of complications of pregnancy is 24%



**Figure 6: Line graph showing hospital utilization for delivery and complication treatment in Paro and Punakha combined. (All values are percentage of total pregnancies. From Table 25 above)**

#### **4.10.3 Chi square test for association on hospital utilization for delivery and treatment of complications in Paro and Punakha.**

Chi-square test was done to see the association in hospital utilization for delivery and treatment of complications combined between the first three period (18 months before) and the second three period (18 months after) in Paro and Punakha. The difference in hospital utilization for delivery and complications treatment was statistically significant in Paro. ( $p = 0.0073$ ) But it was not statistically significant in Punakha ( $p$ -value 0.7749).

**Table 28: Chi-square test for association in hospital utilization for delivery and treatment of complications of pregnancy in Paro and Punakha.**

	Before (First 3 periods)	After (Second 3 periods)	Total	Chi-square	p-value
<b>Paro</b>					
Hospitalized	257	338	595	7.17	.0073
(%)	(32.5)	(38.8)	(35.8)		
Not hospitalized	534	533	1067		
(%)	(77.5)	(61.2)	(64.2)		
Total pregnancies	791	871	1662		
(%)	(100.0)	(100.0)	(100.0)		
<b>Punakha</b>					
Hospitalized	186	210	396	0.0818	0.7749
(%)	(30.2)	(30.9)	(30.6)		
Not hospitalized	430	469	899		
(%)	(69.8)	(69.1)	(69.4)		
Total pregnancies	616	679	1295		
(%)	(100.0)	(100.0)	(100.0)		

Df-1

**Calculation of the net intervention effect on Hospital utilization for Delivery and treatment of complications of pregnancy.**

The net intervention effect is calculated as follows. (CDC, Oct.1, 2001)

$$\frac{[\text{Intervention (post)} - \text{Intervention (Pre)}] / \text{Intervention (Pre)}}{[\text{Control (Post)} - \text{Control (pre)}] / \text{control (pre)}}$$

Intervention is the value for Paro and control is the value for Punakha.

The post value for both Paro and Punakha is the combined percentage of delivery and complications of pregnancy treated in the hospital out of the total pregnancies for the second three periods after start of the education program. Similarly the pre-value is the percentage of combined delivery and complications treated in the hospital out of total pregnancies for the first three periods before the start of the education Program. ( From Table 28 above).

$$\{(38.8\% - 32.5\%)/32.5\} - \{(30.9\% - 30.2\%)/30.2\} = 0.16 = 16\%$$

The net intervention effect on hospital utilization for delivery and treatment of complications of pregnancy is 16%.