Original Research Article

Prevalence of Hospital Deliveries in Tharparkar and its Determinants

Abstract

Introduction;

SDGs 2015-2030 are intended to stop poverty, hunger and ensure well-being at all ages by the year 2030. Goal 3 of SGDs are better measurable with indicators of maternal and children mortalities. Globally around 140 million birth takes place each year, among these home deliveries are significantly common.

Methods;

Study was conducted on women aged 18 and 45 years of Tharparkar. Women of Child Bearing Age (CBAs) from all union council had been surveyed by multistage cluster sampling with random selection at hose hold level. Analysis was done using EPI Info TM 7. The odds ratio were calculated and reported at CI 95%.

Results:

Of total women 73% (n=406) were uneducated and 19% (n=105) had education till matriculation. Prevalent occupation of husbands were farming 55% (n=310) followed by teachers 18% (n=102). Of total 2023 reported 31% (n=629) deliveries were conducted in the hospital. Socio-economic status (OR 1.8, CI 1.5-2.2), knowledge of nearby MCHC center (OR 1.3, 95% CI 1.03-1.61), Counselling by doctor (OR 3.6, 95% CI 3-4.5), Good attitude of the hospital staff (OR 2.02, 95% CI 1.6-2.2) were factors associated positively with the hospital deliveries. During multiple logistic regression analysis all factors were found significantly associated with hospital deliveries other than having livestock in family, which was not statistically significant (OR 0.9, CI 0.9-1.19).

Conclusion:

We concluded that the hospital deliveries are less common in Tharparkar. We recommended that timing of the MCHC centers should be revised, Interpersonal Communication Training of the hospital staff and advocacy for hospital delivery by medical doctor.

Key word: Hospital Deliveries, children mortalities, maternal death, prevalence

Introduction

Before 2015 global target was set under the slogan of the Millennium Development Goals (MDGs). Millennium Development Goals 2015 (MDGs) strains on the reduction of the child mortality and improve the maternal health as a whole. However, for the subsequent years Sustainable Development Goals (SDGs) were put into action to bridge gaps in order to act with coordination, coherence and collaboration (WHO 2015). Upon evaluation of countries on these goals, apart from developing countries many under developing were not able to achieve these goals significantly ([1]). Therefore, maternal deaths and child mortality are major health related problem in under developing countries.

Globally, around 140 million births take place each year ([2]), among these home deliveries are significantly common in many developing countries. In spite of the medical advancement in maternal & the child health care system, women do not seek hospital as the safe place of delivery.

In South East Asia home deliveries are common. The rates of hospitals deliveries are very low & discouraging in India. It is less than 60% in 167 districts of India on one hand where as it is almost 100% in India's state of Kerala ([3]). Nepal has also very low rates of the institution based deliveries, which literally means that women tend to deliver at homes with 47% women have had their children born at homes ([4]). Bangladesh had also lagging improvement in the maternal and children health in past 2 decades. But from last decade the country is on the track of the improvement. The indicators of the maternal mortality and under five-year mortality are getting better in Bangladesh at the rate that the country will be able to attain its national goals set for the SDGs by 2021 ([5]).

Pakistan is located in EMRO region with a population of 220 Million people. The majority of the population of the country depend on agriculture therefore they opt to live in the rural areas. According to current statistics 70% of population of the country is living in rural areas of the country ([6]), therefore having low literacy rates of 61% ([7]). Despite the development in reproductive health still a mother dies in every 20 minutes in Pakistan due to pregnancy related complication ([8]). The national data from the Pakistan Demographic and Health Survey (PDHS) 2006-07 showed that 52% of total deliveries in the country are held at homes and 48% among these were gone unattended by skilled birth attendants especially in rural areas of the country ([9]).

Sindh is second largest province of the country, with estimated population 47 million according to current census (Pakistan Bureau of Statistics, 2017). The province has 5 divisions and 29 districts with an area of 140,914 square kilometers ([10]). Like as in the country, the population of Sindh Province live in the rural settings and mostly involved in the business of agriculture ([11]).

Tharparkar is among the remote district of the country. The district has high maternal mortality ratios in the country. There are many causes contributing to current status of high maternal mortalities in Tharparkar ranging from hard dynamics, lack of water as well as means of living, low mother education and socio-demographic factors. However there are no appropriate studies done in the past in the district. This is the first study of its kind to know the prevalence of Hospital Deliveries and its determinant factors in Tharparkar.

Methodology

The study was conducted in Tharparkar district of Pakistan from 1 September 2019 to 30 April 2020 after getting approval from ERB committee of Bio Science Department of Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology (SZABIST) Karachi.

The study population was women of reproductive age (18 to 49 years of age) living in the district Tharparkar. Those who were permanent residence of Tharparkar, for example who were living in the region earlier than January 2015.

The sample population is calculated using statistical formula of sample size calculation given below

$$(n= z^2 * p*1-p/ e^2).$$

Where Z= confidence level of 95% which is 1.96

P= prevalence of CBA's in the district which is 22% of total population as per District Health Information System (DHIS) data.

E= estimation which 0.05

The prevalence is expected number of women of reproductive age (18-49 years age) within the district which is 22% as per District Health Information System (DHIS) data. At the confidence significance of 95% the sample size for our study was 544 CBAs from district after design effect of 2 for simple random sampling technique and refusal rate of 5%. The district has 44 small unit of union councils so 13 CBAs from each union council had been surveyed for to complete the sample population.

Multistage cluster sampling method used to select the areas from the list of 2380 villages. All areas were put in the excel sheet and a random selection of areas from each Taluka were done. The sample distribution was done on the basis of the proportionate population of the each Union Council. Each UC was given unique code and the randomized number were decoded to get the villages and areas for the sample collection. Simple random sample technique was adopted to arrive the 544 women of reproductive age at the area level.

The data was collected on self-structured closed ended instrument which had included the demographic information of respondent, there knowledge about the importance of place of deliveries, their choice of place of delivery, why not they consider hospital as a safe place of delivery, factors constraining their way towards hospital at the time of delivery. In demographic section of instrument the data had been collected on the name, age, address, education level, family income, occupation of husband or guardian and type of house they live in. The data was collected by the female data collector which were either a trained nurses or LHWs. The data was checked for completeness, consistency and was cleaned manually. It was entered in statistical EPI Info software version 7.0. Findings were presented in the form of tables and graphs. Uni-variable statistical tests were computed to identify all possible predictor variables. Results were reported as Odds Ratio (OR) with 95 % Confidence Intervals (CIs).

RESULTS:

Total 560 women were surveyed who met the inclusion criteria. The average age of the participants were 31 years with standard deviation of +/- 7 years with age range ranges from 18 years to 45 years. The

highest number of women were aged between 25 to less than 32 years 34% (n=191), followed by 18 to less than 25 years 27% (n=150).

Total 2023 deliveries were reported from the sample population. The average parity of the participants were 4 deliveries with standard deviation of +/- 2 deliveries with parity range ranges from 1 delivery to 11 deliveries. The average income of the participants were 23,520 PKR with standard deviation of +/- 36,736 PKR with income range ranges from 5,000 PKR to 40,000 PKR.

Out of total 560 participants, majority of the participants belong to Muslin religion 68% (n=386) and Hindu religion women were 32% (n=174). The highest level of the education in the study subjects were intermediate 0.71% (n=4) and 73% (n=406) were uneducated women. Most of the husbands were farmer 55% (n=310) followed by teachers 18% (n=102).

Total deliveries reported by the study participants were 2023. Out of these 2023 deliveries 31% (n=629) deliveries were conducted in the hospital whereas 69% (n=1394) deliveries were taken place at house. Of these 629 deliveries 18% (n=194) were first delivery which took place at hospital. Among all 2023 deliveries reported by the study subjects a major proportion of deliveries were interacted at the homes 69% (n=1394). The response for no any single delivery at hospital was reproduced by 64% (n=362) study subjects. Of total study subject 53% (n=298) were the study participants who had delivered in the last year to till date the data was collected. Of those who delivered within last year 20% (n=113) were the participants who delivered at hospital and 32% (186) were the subject who delivered a baby at homes. Having livestock in the family was positively associated with the hospital deliveries with women were 1.8 times (OR 1.8, CI 1.5-2.2) likely to deliver at hospital as compared to those who did not have any livestock in the family.

Of total study participants 27% (n=151) had not had knowledge of nearby MCHC Center. And 73% (n=409) did not know about the nearby health centers. A major proportion of the study population knew the nearby hospital but they were not aware about the maternal services offered at these medical health facilities. Among 629 deliveries executed at hospital, 77% (n=489) knew the nearby MCHC Center whereas 23% (n=140) did not have knowledge of the nearby MCHC center. Similarly in 1394 deliveries which occurred at homes 73% (n=1017) women knew the nearby MCHC centers whereas 27% (n=377) did not knew about the nearby MCHC Center. However the knowledge of nearby MCHC center was a significant factor for the hospital deliveries. Those who had knowledge of nearby MCHC center were 1.3 (95% CI 1.03-1.61) times more likely to deliver at hospital compared to those who did not know about nearest MCHC Center.

Total 23% (n=481) times during pregnancy women were counseled for hospital delivery by doctors. Among deliveries which took place in hospital highest number of counseling was done by doctors 41% (n=256). Friends counselling was done in 16% (n=98) of pregnancies in which delivery took place in hospital, where as family counselling resulted in 6% (n=37) of deliveries in hospital. LHVs 4% (n=26) and Midwife 1% (n=10) were the lowest councilor for the hospital deliveries. A major proportion of deliveries 32% (n=202) took place in hospital without having been counselled for the hospital delivery. Counselling by a doctor was associated with the high number of deliveries in hospital with prevalence odds ratio of 3.6 (CI 3-4.5).

Among total 629 deliveries which occurred at hospital 59% (n=367) reported good attitude of the hospital staff during their past visits and 41% (n=262) reported ill attitude of the hospital staff during their visits. Among those who delivered at homes 40% (n=570) good attitude of hospital staff and 60% (n=823) reported ill attitude of hospital staff during their previous visit during the past pregnancies. Overall women who had experiences of good attitude of the hospital staff were 2 (Odds ratio 2.02 CI 1.6-2.2) times more likely to deliver at hospital as compared to ill attitude of the hospital staff.

Among total 629 hospital deliveries which held at hospital 40% (n=252) reported positive role and 60% (n=377) reported negative role played by the medical practitioner for hospital deliveries. Where as in 1394 home base deliveries 53% (n=1076) responded that the positive role of health care worker on hospital deliveries and 47% reported negative role of medical personnel for hospital deliveries. Over all positive role of the health care worker has impact on the hospital deliveries causing 1.8 (CI 1.4-2.2) times more deliveries to occur at hospital as compared to home deliveries.

Our statistics shows among 629 hospital deliveries 63% (n=401) were decided by the doctor to execute delivery at hospital, in 12% (n=80) place of delivery were decided by Mother in Law, and in 10% (n=62) place of delivery was decided by husbands. However doctor found to be an important factor to promote the hospital deliveries. Women who were intimated by doctors to conduct delivery at hospital were 5 times more likely to deliver at hospital (Odd ratio 5.1, CI 4.2-6.4).

Multiple Logistic Regression methods was used to address the confounding and the effect modifying effects of the multiple risk factors incorporated in the outcome. The dependent variable was hospital delivery and independent variable were kept as Decision for Hospital Delivery, Role of Medical Practitioner in promoting hospital delivery, Counselling by a Medical Doctor, Attitude of the MCHC Staff, Access to MCHC Centers and Livestock in family. After taking multiple logistic regression analysis it was evident that decision of hospital delivery by a doctor (OR 7.3, CI 5.7-9.2), role of medical practitioners (OR 2.9, CI 2.2-3.7), counselling by doctor for hospital delivery (OR 2.7, CI 2.1-3.5), attitude of MCHC center staff (OR 2.5, CI 2.0-3.2) and access to MCHC (OR 1.8, CI 1.4-2.3), was significant factors determine the hospital deliveries. Whereas having livestock in family was also associated with hospital deliveries but these results were not statistically significant (OR 0.9, CI 0.9-1.19). All these finding were reported at confidence interval of 95% and the p value less than 0.005.

On univariate analysis apart from the Decision for place of delivery by doctors, all other factors were having near equal values. Therefore multiple logistic regression was performed to better quantify the risk factors associated with hospital delivery. On MLR it was found that Doctor should decide for hospital delivery (OR 7.3, CI 5.78-9.29, p value 0.01), Counselling for Hospital delivery by doctor (OR 2.7, CI 2.19-3.54, p value 0.01), Positive role of Medical Practitioner for Hospital delivery (OR 2.9, CI 2.2-3.75, p value 0.01), Positive attitude of MCHC center staff (OR 2.5, CI 2.01-3.23) and access to MCHC (OR 1.8, CI 1.4-2.3, p value 0.01) were significant factors determine the hospital deliveries.

DISCUSSION AND CONCLUSION

The study is first of its kind in the region. The study was aimed to provide base line data for the future research in the region. We found in our study that prevalence of hospital delivery at Tharparkar is 31% which is far less than the national data (58%). In a study done in country in 2017 home deliveries were common than hospital deliveries during years 1990 to 1991, but for the subsequent years the home and hospital deliveries almost equals ([12]). However we found in our study that home deliveries are still common in Tharparkar and the situation has not changed significantly yet. Moreover when compare the study finding with the international studies, our finding are contradicting in terms of frequencies of hospital delivery. We compare our finding with a study done in Kwale State Kenya in year 2018 ([13]), which shows that delivery preference has changed over the years in Kenya. However in our study it is not much changed. We compared our study findings with the Bangladesh in terms of the prevalence of the hospital deliveries at health facility. In Bangladesh in a survey it was found that the deliveries held at the health facilities were 52% ([14]).

Over study correlates with a study done in the rural district of Sindh province by Zamir Phull and colleagues in year 2016. The study signifies that the home deliveries are choice of women in rural areas due to many factors ([15]). The factors are almost same and the geography of the study area is also matching with the geography of the Tharparkar. However in this study the sample size was not enough and the study was done on volunteer subjects. Therefore authors declares to put extreme care to make the study finding applicable on other regions. Contrary to finding of that study our study findings can be generalized to other regions of the country as we used a statistically calculated sample size and random sampling methods.

The finding of doctors as major counsellor for the hospital deliveries is another perspective finding of our study. This can be taken as main element to make policy so that shift of paradigm can happen from home to hospital deliveries. China has recommended that promotion of hospital delivery cannot be possible without taking MCH worker in the loop (16). In a study done in Poland ([16]) showed that doctor decision for place of delivery has more impact on selection of hospital as best place of delivery along with the suggestions from other mothers irrespective of locality ([17]). Our findings are also consistent with these studies.

The strength of the study are random sample collection, community sampling and data collection by female data collector. However we cannot totally rule out the chances of the recall biases in the study. The delivery at hospital has many factors associated, moreover to study all in a single point of time was beyond the scope and resources of the current study. Therefore risk factor selection was made keeping in the view budget, time, expertise and literature search pertaining to Tharparkar. Because data were not available on Tharparkar itself therefore we compared the finding with the rural Sindh and Pakistan. The prevalence was assessed in the deliveries in which respondent were delivered at least once in past three years in order to have less recall biases and to check whether trends have changed in near past or not.

The major limitation of our study are recall biases, study participants in the randomly selected areas which were close to Indian border and participants subjective responses. These were expected at the time of the planning of the study, therefore we planned random sampling, logistic regression and alternate areas for the border villages. The phone numbers of the respondents were also not their own numbers instead most of the respondent given the cell numbers of their husbands and fathers. Therefore we had also faced problem to inquire the remaining data or any unfilled data collection.

We concluded that hospital deliveries are less common in Tharparkar. We recommended that timing of the MCHC centers, Interpersonal Communication Training of the hospital staff and advocacy of the hospital delivery with any CBAs attending hospital by medical doctor should be ensured at all levels within Tharparkar. The MCHC staff should be taught to interact the community politely and keeping the norms of the community. The frequencies of hospital deliveries must be added in the annual performances reports of the MCHC staff and further promotion as well as incentive may be given to MCHC staff on these performance indicators.

Ethical Approval And Consent

Ethical clearance was obtained from Institute Review Board (IRB) of SZABIST Karachi. Permission was taken from District Health Office Tharparkar. Written consent was taken from all women who were participating in the study. Confidentiality and anonymity of the study participants were truly maintained. The respondent were taken in confidence that any of their response will not be affecting the services they are obtaining from the health facilities or anywhere else in the country. The respondent were briefed before start of collection of data about the purpose of the data collection. Only those respondent were surveyed who were willing to participate in the study.

1 REFERENCES:

[1] World Health Organization. (2015). *Health in 2015: from MDGs, millennium development goals to SDGs, sustainable development goals*. World Health Organization.

[2] Meurs, M., Seidelmann, L., & Koutsoumpa, M. (2019). How healthy is a 'healthy economy'? Incompatibility between current pathways towards SDG3 and SDG8. *Globalization and Health*, *15*(1), 1-13

[3] Srivastava, J., & Joseph, A. (2019). Why Institutional Deliveries are Low in Balrampur District Uttar Pradesh: A Cross-Sectional Quantitative and Qualitative Exploration. *The Journal of Obstetrics and Gynecology of India*, *69*(3), 225-231.

[4] Devkota, B., Maskey, J., Pandey, A. R., Karki, D., Godwin, P., Gartoulla, P. & Aryal, K. K. (2020). Determinants of home delivery in Nepal–A disaggregated analysis of marginalised and non-marginalised women from the 2016 Nepal Demographic and Health Survey. *Plos one*, *15*(1), e0228440.

[5] Rajia, S., Sabiruzzaman, M., Islam, M. K., Hossain, M. G., & Lestrel, P. E. (2019). Trends and future of maternal and child health in Bangladesh. *PloS one*, *14*(3), e0211875-e0211875

[6] Jafri, I. H., Soomro, M. S., & Khan, R. A. (2011). ICT in distance education: improving literacy in the province of Sindh Pakistan. *The Sindh University Journal of Education-SUJE*, *40*.

[7] Memon, G. R. (2007). Education in Pakistan: The key issues, problems and the new challenges. *Journal of Management and Social Sciences*, *3*(1), 47-55.

[8] Arifeen, S. R. (2011). The Socio-demographic Progression Of The Pakistani Woman Manager 1988 To 2004 An Empirical Evidence From The Private Sector. *Inside*, *6*(2), 34.

[9] Taken from website of Pakistan Bureau of Statistics updated on 2017 http://www.pbs.gov.pk/sites/default/files/PAKISTAN%20TEHSIL%20WISE%20FOR%20WEB%20CENSUS_2017.pd accessed on 31st March 2020.

[10] Taken from website of Un represented Nation and Peoples Organization updated on2017 https://unpo.org/members/7906 accessed on March 31, 2020.

[11] Ali, M., Rafiq, N., & Chandio, A. R. (2018). A descriptive analysis of social factors towards child health-related problems: a case study of Tharparkar district, Sindh, Pakistan. *International Journal of Scientific & Engineering Research*, *9*(12), 709.

[12] Parveen, Z., Sadiq, M., Abbas, F., & Amir-ud-Din, R. (2017). Correlates of home and hospital delivery in Pakistan. *J Pak Med Assoc*, *67*, 1166-72.

[13] Mochache, V., Lakhani, A., El-Busaidy, H., Temmerman, M., & Gichangi, P. (2018). Correlates of facility-based delivery among women of reproductive age from the Digo community residing in Kwale, Kenya. *BMC research notes*, *11*(1), 715.

[14] Huda, N., Richards, J., Rahman, L., & Syed, S. (2019). Why has the caesarean rate increased dramatically in Bangladesh?. *International nursing review*.

[15] Phul, Z., Khalil, R., & Talpur, M. A. (2016). WHY HOMEBIRTH? RURAL SOCIETY'S PARADIGM OF THE DELIVERY. *International Journal of Current Research and Review*, *8*(10), 23.

[16] Bączek, G., Wierzba, W., Baranowska, B., Tataj-Puzyna, U., Kapla, J., Kiersnowska, I., ... & Walecka, I. Choosing a Particular Hospital for Giving Birth by Women from Urban and Rural Area.

[17] Bączek, G., Wierzba, W., Baranowska, B., Tataj-Puzyna, U., Kapla, J., Kiersnowska, I., ... & Walecka, I. Choosing a Particular Hospital for Giving Birth by Women from Urban and Rural Area.

Tables and Figure;

Table 1 Frequency of Monthly income of Participants

Monthly Income of Family	Count	Percent
5000 - <10000	30	5%
10000 - <15000	237	42%
15000 - <20000	28	5%
20000 - <25000	128	23%
25000 - <30000	18	3%
30000 - <35000	54	10%
35000 - <40000	12	3%
40000 and above	53	9%
TOTAL	**560**	**100%**

Figure 1 Education level of the study participants

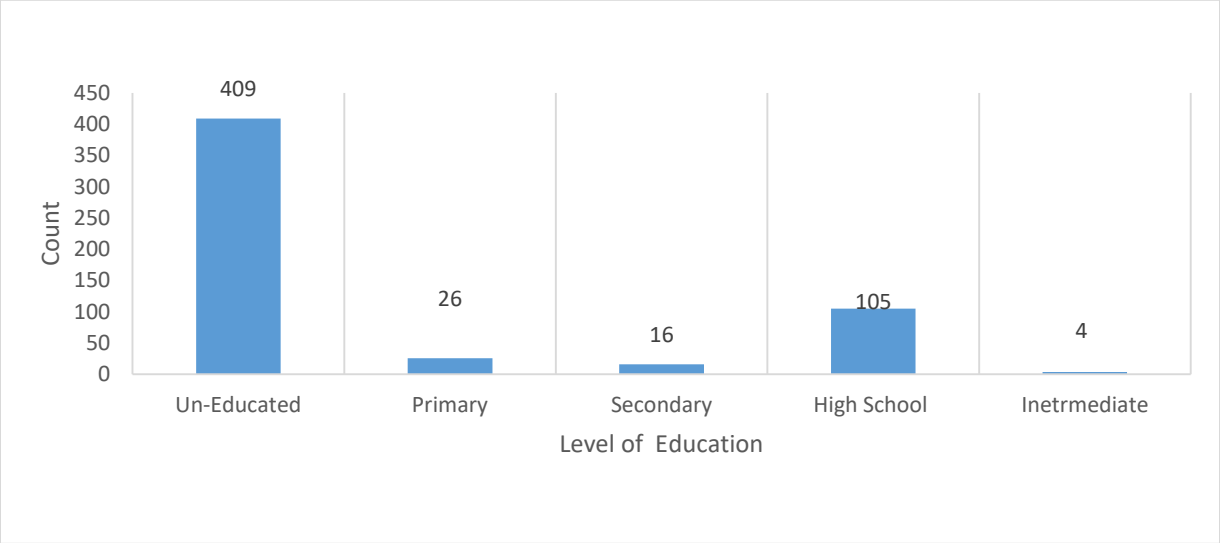

Table 2 Occupation of the Husbands of the Study Participants

Occupation	Frequency	Percent
Farmer	310	55%
Teacher	102	18%
Labour	42	8%
Clerk	30	5%
Store Keepr	20	4%
Private Employee	18	3%
NGO Job	12	2%
Shop Keeper	8	1%
Sweeper	8	1%
Bank Job	6	1%
Doctor	4	1%
Total	**560**	**100%**

Table 3 Prevalence of Last Delivery During last Year

Total	Hospital	Home
299	113 (37%)	186 (63%)

Table 4 Prevalence of Place of Deliveries

Indicator	Count	%
Deliveries at Hospital	629	31%
Deliveries at Home	1394	69%
Total Parity	2023	-

Table 5 Place of Reported Deliveries Status of the Study Participants

Deliveries conducted in Hospital	**Frequency**	**Percent**
0	1394	69%
1	49	2%
2	104	5%
3	69	3%
4	88	4%
5	150	7%
6	66	3%
7	63	3%
8	24	1%
9	18	1%
TOTAL	**2023**	**100%**

Table 6 Uni-variate Analysis of Risk Factors for Hospital Deliveries

Factors	Deliveries took place in Hospital (n=629)		OR	95% CI
Knowledge of nearby MCHC Center	489 (77%)	140 (23%)	1.3	1.03-1.6
Counselled for Hospital Delivery by Doctor	256 (41%)	202 (32%)	1.2	1.6-2.2
Positive Role of Medical Practitioner	252 (40%)	377 (60%)	1.8	1.4-2.2
Good Attitude of MCHC Staff	367 (59%)	262(41%)	2.1	1.6-2.2
Decision for Hospital Delivery by Doctors	401 (63%)	228 (37%)	5	4.2-6.4

Table 7 Multi Variate Analysis for the Risk Factors

Risk Factor	Odds Ratio	95% CI		P-Value
Doctor should decide the place of Delivery	7.3	5.78	9.29	0.01
Positive Role of Medical Practitioner for promotion of hospital Delivery	2.9	2.2	3.75	0.01
Counselling for Hospital Delivery done by Doctor	2.7	2.19	3.54	0.01
Positive attitude of MCHC Staff during visit	2.5	2.01	3.23	0.01
Access of transport to reach MCHC for Delivery	1.8	1.44	2.31	0.01