COMPARATIVE ANALYSIS OF MATERNAL HEALTH SITUATION IN RAJASTHAN AND MADHYA PRADESH USING STATE FACT SHEET OF NATIONAL FAMILY HEALTH SURVEY(NFHS) 3 & 4.

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfillment for the award of

the degree ofMaster of Business

Administration (MBA)

in

Hospital and Health Management

by

Mudit Sharma

Under the Supervision and Guidance of

Dr. Deepti Sharma

Associate Professor

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ACKNOWLEDGMENT

To begin with, I am most grateful to my Institute, Indian Institute of Health Management Research for providing me with this opportunity to conduct a research study in these difficult times of global pandemic.

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This Dissertation has been an important part of my career development and I would like to express my sincere and wholehearted thanks to all the individuals who contribute to this study and taking me ahead in this journey. I shall endeavour all the skills and learning I procured while doing this study to the best of my abilities and will strive for improvement every step in my career.

Introduction:

Maternal health revolves around the health and wellbeing of mother and child. Safe childbirth and motherhood are the right of every pregnant woman, and it depends on the care that a pregnant woman receives during pregnancy. Maternal Health refers to females' health from the time of pregnancy, childbirth, and postnatal time. Every stage of the pregnancy should be a positive experience for the mother which helps to ensure that the mother and her child would reach full potential for and their wellbeing. Maternal health care has been a global concern for decades as the lives of millions of females in the reproductive age range can be saved by providing maternal health care services. The Maternity cycle has the following important stages, treatment, pre-birth period, intra-natal period, post-natal period, and between conceptional period.

Corresponding to WHO, ninety nine percent of maternal fatality occurs in the developing countries around the world. The risk of maternal mortality in developing countries could be 200 times more than in developed countries, which is due to some common problems in these developing countries like lack of comprehensive national health care services, which leads to pregnant women not being able to access prenatal care which prove to be fatal. Africa is the worst continent in terms of maternal health and south Asia not so far behind as well. In 2017 daily around 810 women perished due to gestation and delivery-related causes, but the majority of these fatalities could have avoided. Between the years 2000 and 2017, the MMR dropped by 38% worldwide. The deaths occurred due to complications that developed during pregnancy. The major complications are excessive bleeding (blood loss after childbirth) infections (after giving birth), high body fluid pressure throughout pregnancy (pre-eclampsia and eclampsia), impediments due to delivery, and unsafe abortion. The Maternal Mortality Ratio of India for the year 2016-2018 is 113/100,000 live births, permitting to Sample Registration System (SRS) data. The MMR for the year 2014-2016 was 130/100,000 live births which were 17 points higher as compared to 2016-2018 data. According to the SRS report, 2016-2018 the MMR of Rajasthan was 164/100,000 live births, as compared to 173/100,000 live births in Madhya Pradesh. While that of Uttar Pradesh is 197/100,000 live birth and that of Bihar is 149/100,000 live births. Due to the poor health status of these states were called BIMARU states in 1980. The MMR of India

according to the same data was 113/100,000 live birth. The interstate data for MMR shows the values ranging from 215/100,00 live birth for Assam to 43/100,000 live birth for Kerala. India has focused on a sustainable development goal:3 which is to lessen the maternal mortality ratio to 70 per 100,000 live births by 2030. Due to the poor socio-economic status and poor health care system, with this foundation, an evaluation was done based on data from state fact sheets of NFHS-3 and NFHS-4 for the state of Rajasthan and Madhya Pradesh.

Research Question: - What is the maternal health situation of Rajasthan and Madhya Pradesh according to NFHS-3 and NFHS-4?

Objective: -

- To assess the situation of maternal health in Madhya Pradesh and Rajasthan by using the NFHS-3 and NFHS-4 data

Methodology: -

- **Study design-** Descriptive
- **Study Establishment-** Rajasthan and Madhya Pradesh
- **Sample Size-** Data of NFHS-3 & 4 for Rajasthan and Madhya Pradesh will be analyzed.
- **Data collection Method -** Secondary data
- **Data collection Tool –** Data will be extracted from NFHS fact sheets of Rajasthan and Madhya Pradesh

The data was compared from NHFS data for both states. The comparison was based on different maternal wellbeing indicators. The indicators which were used are as follows:

- Ante-Natal Care (ANC) administration
- Execution of Mother and youngster assurance card
- Post Natal care
- JSY and out of the pocket expenditure
- Institutional deliveries
- Tetanus & IFA administration

Literature Review:

S.NO.	Author	Title	Methodology	Objective	Key learning
1.	• "Bharat Ranadive • Vishal Diwan • Ayesha De Costa"	"India's Conditional Cash Transfer Programme (the JSY) to Promote Institutional Birth: Is There an Association between Institutional Birth Proportion and Maternal Mortality?"	Sample Registration Survey of India's data was analyzed	"Examine the association between (a) service uptake, i.e., institutional birth proportions and (b) health outcome, i.e., MMR."	• "Proportion of institutional births increased from a pre-program average of 20% to 49% in 5 years" • "analysis confirmed that JSY succeeded in raising institutional births significantly." • "This indicates that high institutional birth proportions that JSY has

					achieved are of themselves inadequate to reduce MMR"
2.	• "Sutapa Agrawal" • "Jasmine Fledderjohann" • "Sukumar Vellakkal" • "David Stuckler"	"Adequately Diversified Dietary Intake and Iron and Folic Acid Supplementation during Pregnancy Is Associated with Reduced Occurrence	"Cross-sectional data from India's third National Family Health Survey (NFHS-3, 2005-06) was used for this study."	"The relationship among effectively expanded nutritional intake, iron, and folic acid subjunction throughout pregnancy and signs reminiscent of Pre-eclampsia	• "Having an adequately diversified dietary intake and iron and folic acid supplementation in pregnancy was associated with a

		of Symptoms Suggestive of Pre-Eclampsia or Eclampsia in Indian Women"		or Eclampsia in Indian women."	reduced occurrence of symptoms suggestive of PE or E in Indian women."
3.	• "Gunjan Kumar" • "Tarun Shankar Choudhary" • "Akanksha Srivastava" • "Ravi Prakash Upadhyay" • "Sunita Taneja," • "Rajiv Bahl" • "Jose Martines" • "Maharaj Kishan Bhan" • "Nita Bhandari"	"Utilisation, equity and determinants of full antenatal care in India: analysis from the National Family Health Survey 4"	"Analyzed a sample of 190,898 women from India's National Family Health Survey 4"	"Analyzed the consumption, equity, and factors of full antenatal care (ANC), well-defined as 4 or more antenatal visits, at least single tetanus toxoid (TT) injection,	• "Full ANC utilization in India was inadequate and inequitable". • "The positive association of full ANC with ICDS utilization and neonate's

	• "Sarmila Mazumder"			consumption of iron-folic acid (IFA) for at least of 100 days, in India."	father involvement may be leveraged for increasing the uptake of full ANC."
4,	• "Dipti Govil" • "Neetu Purohit" • "Shiv Dutt Gupta" • "Sanjay Kumar Mohanty"	"Out-of-pocket expenditure on prenatal and natal care post-Janani Suraksha Yojana: a case from Rajasthan, India"		• "To examine the variation in out-of-pocket expenditure in accessing maternal health services". • "To examine the extent to which JSY	• "The OOPE (antenatal and natal) per delivery was US$32 if delivery was conducted at home, US$78 at a public facility, and US$154 at the private facility". • "The OOPE in

				incentives covered the burden of the cost incurred.”	community health centre was US$44 and US$145 for regular and complicated delivery, respectively.” • “JSY has increased the coverage of institutional delivery and reduced financial stress to households and families but not sufficient for complica

					ted delivery. ”
5.	• “Hannah Blencowe” • “Joy Lawn” • “Jos Vandelaer” • “Martha Roper” • “Simon Cousens”	• “Tetanus toxoid immunization to reduce mortality from neonatal tetanus ”	• “Systematic review, Standardized abstraction methods were utilized. Individual survey quality and the whole value of evidence were assessed using an adaptation of the	• “To review the evidence for and estimate the effect on neonatal tetanus mortality of immunization with tetanus toxoid of pregnant women, or women of childbearing age”	• “Immunization of pregnant women or women of childbearing age with at least two doses of tetanus toxoid is estimated to reduce mortality from neonatal tetanus by 94% [95% confidence interval (CI) 80–98%]”

			GRADE approach. Meta-analyses were performed".		
6.	• "Marianne Vidler" • "Umesh Ramadurg" • "Umesh Charantimath" • "Geetanjali Katagiri" • "ChandrashekharKaradiguddi" • "Diane Sawchuck" • "Rahat Qureshi" • "Shafik Dharamsi" • "Anjali Joshi" • "Peter von Dadelszen" • "Richard Derman" • "Mrutyunjaya Bellad," • "Shivaprasad Goudar" • "Ashalata Mallapur"	"Utilization of maternal health care services and their determinants in Karnataka State, India".	• "Purposive sampling was done."	• "To explore the patterns of maternal health care utilization in rural Karnataka". • "To recognize the obstacles that should be addressed to improv	• "Rural south Indian communities reported regular use of health care services during pregnancy and for delivery." • "Community-based initiatives should be enhanced to

				e levels of that utilizati on along with the ultimat e goal of improvi ng matern al and perinat al outcom e".	encourag e early disclosur e of pregnanc ies and to provide the communi ty informati on regarding the importan ce of facility-based care".
7.	• "Balhasan Ali" • "Shekhar Chauhan"	"Inequaliti es in the utilization of maternal health care in Rural India: Evidence from National Family Health Survey III & IV".	• "The Nation al Family Health Survey (2005 and 2015), data was used."	• "To calculat e the prevaili ng inequal ities in the utilizati on of matern al health care in	• "Health scheme related to maternal and child health care under NRHM be continue d and focused for lower socioeco

				rural India.”	nomic groups and marginalized mothers to decrease maternal health facilities inequality, particularly in the component of full ANC”.
	•		•	•	•

Result:

Janani Suraksha Yojna (JSY) is an intervention that was launched to encourage deliveries at an health facility and lower maternal and neonatal mortality. Table 1 shows the number of women who got monetary aid through JSY and incurring the out-of-pocket expenditure. The records show that Madhya Pradesh has performed better than Rajasthan in terms of accessing the JSY scheme according to NFHS-4 data, also the average out-of-pocket expenditure sustained by the family per delivery in a public health facility in Rajasthan was more than double than that of Madhya Pradesh. Out of pocket expenditure being 3052 for Rajasthan and 1481 for Madhya Pradesh, respectively

Table 1- Percentage distribution of women getting monetary aid thorough JSY and incurring the out-of-pocket expenditure.	
State	**NFHS-4**
Percentage of Mother's who got monetary aid through JSY for births delivered in an institute	
Madhya Pradesh	61.1
Rajasthan	56.1
Median out of pocket expenditure for every delivery in a public health service (Rs)	
Madhya Pradesh	1481
Rajasthan	3052

MCP card is being introduced for better monitoring of maternal health. NFHS-4 data shows that both the states performed equally as Madhya Pradesh having a value of 92.2 as compared to Rajasthan having a value of 92.3. Both the states having approximately equal coverage of the MCP cards.

Table 2- women who receive MCP for registered pregnancy	
State	**NFHS-4**
Madhya Pradesh	92.2
Rajasthan	92.3

Antenatal Check-up is one of the most important events in the whole process of pregnancy and it ensures better maternal health care. To ensure optimum care there is 4 mandatory ANC visits are required. Also, it has been shown that receiving ANC during

the first trimester shown to have a definite impact on maternal fitness. According to the data in Table 3 both the states, Madhya Pradesh and Rajasthan have shown an upsurge in the fraction of the females who got an antenatal checkup in the first trimester, Madhya Pradesh from 39.3 to 53 and Rajasthan from 34 to 63. Both the states have a considerable amount of improvement, but Rajasthan has an increase of about 85% from NFHS 3 to NFHS 4 as compared to Madhya Pradesh with about 34% increase. In terms of women who received at least 4 ANC visits increased, there is an increase of more than 10 percent for both the states as shown in the table. The full ANC package consists of at least 4 ANC visits, provision of IFA tablets for at least 100 days, and at least one Tetanus toxoid injection. Madhya Pradesh has shown an increase from 4.7 to 11.4 percent which is better than Rajasthan which managed to increase it from 6.3 to 9.7 percent.

Table 3- Percentage of women receiving ANC		
State	**NFHS-3**	**NFHS-4**
Women who received ANC in the first trimester		
Madhya Pradesh	39.3	53
Rajasthan	34	63
Women who got at least four ANC visits		
Madhya Pradesh	22.3	35.7
Rajasthan	23.4	38.5
Women who received full ANC package		
Madhya Pradesh	4.7	11.4
Rajasthan	6.3	9.7

Table 4 shows the percentage of women who were protected against neonatal tetanus and anemia. Rajasthan fair better in the increase in the percentage of women whose last birth was protected for neonatal tetanus, there was an increase of about 36% in

Rajasthan from NFHS 3 to NFHS 4, as compared to an increase of 26% in Madhya Pradesh from NFHS 3 to NFHS 4. There was a more than 3 times increase in the percentage increase in consumption of iron-folic acid from 7.1 to 23.5 for Madhya Pradesh where for Rajasthan it there was an approximate 2 times increase in consumption of iron-folic acid from 8.7 to 17.3.

Table 4 - women that are guarded versus neonatal tetanus and anemia		
State	**NFHS-3**	**NFHS-4**
Percentage of women whose last birth was safeguarded versus neonatal tetanus		
Madhya Pradesh	70.7	89.8
Rajasthan	65.2	89.7
Women who took iron-folic acid for 100 days or more while being pregnant (%)		
Madhya Pradesh	7.1	23.5
Rajasthan	8.7	17.3

Getting post-natal treatment in the two days of delivery has proven to be successful in decreasing maternal death and disease. Both the states have shown more than double the number of women who received postnatal care from a health professional within two days of delivery. But out of the two states, Rajasthan has performed better, but there are still many women who are deprived of post-natal care in both the states.

Table 5- Percentage of women who got postnatal care from health workers in two days of delivery		
State	**NFHS-3**	**NFHS-4**
Madhya Pradesh	24.9	54.9
Rajasthan	26.9	63.7

Table 6 shows children who got care at the health center and by skilled health care personnel (in percent). In both the states, it is being observed that the children who were born at house and were transported to a health facility for check-ups in 24 hours of birth were very minimal and the increase from the NFHS 3 to NFHS 4 is still very low. However, the percentage of children who had a health check-up after birth by a health expert with 2 days of birth was better for Rajasthan than that of Madhya Pradesh according to NFHS 4 data.

Table 6		
State	**NFHS-3**	**NFHS-4**
Infants born at house who were taken to a health facility for safety check-up within twenty four hour of birth (%)		
Madhya Pradesh	0.2	2.5
Rajasthan	0.1	1.2
Children who got a health check following birth from health workers within two days of birth (%)		
Madhya Pradesh	**N/A**	17.5
Rajasthan	**N/A**	22.6

Table 7 shows the percentage of Delivery care, both Madhya Pradesh and Rajasthan have shown more than twice the increase in the percentage of institutional delivery, Rajasthan has approx. 3 percent more institutional deliveries than that of Madhya Pradesh. The reason behind the surge in the number of institutional deliveries could be JSY. The Public sector plays a vital role as it contributes heavily to institutional deliveries and it is being shown in the states of Madhya Pradesh and Rajasthan as both states have more than three times increase in the percentage of institutional births in the public sector. The proportion of home deliveries has been reduced in both states from NFHS 3 to NFHS 4 which means more people are going for institutional deliveries rather than home deliveries. Also, the percentage of births assisted by health personnel

has been increased, more than double in both states from NFHS 3 to NFHS 4. Out of the two states, Rajasthan has fared better than Madhya Pradesh by 8.6 percent. There is an increase in the percentage of births through the cesarean section in both the states, however, a considerable upsurge in the deliveries through the cesarean section in private health amenities in contrast to community health amenities as clearly represented in the table given below.

Table 7- Number of Delivery Care		
State	**NFHS-3**	**NFHS-4**
Percentage of institutional delivery		
Madhya Pradesh	26.2	80.8
Rajasthan	29.6	84.0
Percentage of institutional births in public facilities		
Madhya Pradesh	18.4	69.4
Rajasthan	19.0	63.5
Percentage of Home delivery conducted by skilled health personnel		
Madhya Pradesh	6.6	2.3
Rajasthan	11.5	3.2
Percentage of births assisted by health personnel		
Madhya Pradesh	32.7	78.0
Rajasthan	41.0	86.6
Births delivered by caesarean section		
Madhya Pradesh	3.5	8.6
Rajasthan	3.8	8.6
Number of births private health through caesarean section		
Madhya Pradesh	28.8	40.8
Rajasthan	14.9	23.2
Number of births in public health through caesarean section		
Madhya Pradesh	6.8	5.8
Rajasthan	11.7	6.1

Discussion:

Rajasthan and Madhya Pradesh have shown improvement in the maternal wellbeing values from NFHS 3 to NFHS 4, but the results are not as expected. Both the states have done a lot of work to improve the maternal health situation but there is still a lot that must be done. Improvement in the indicators that are being mentioned is very important to improve maternal health in many states including Rajasthan and MP.

ANC is a very crucial part of maternal health which helps in maintaining safe motherhood. ANC has multiple routine checkups that help in investigating and examining the wellbeing of the mother and baby, it is like monitoring process around that any early complications can be detected and can be resolved and making sure the safety of the child and the mother. It is mandatory to have at least 4 antenatal checkups during different stages of labor. Also, during the period of pregnancy interventions are done for anemia. The TT injections and Iron folic acid tablets are being provided during this period for better maternal health during pregnancy. NFHS 4 data presents a gloomy picture of the maternal health indicators for both states of Rajasthan and MP. Rajasthan performed better than MP in percent of women who received ANC during the first trimester and those receiving at least 4 ANC checkups but the percentage drops even below that of MP in terms of women who got full ANC package. The low number of women receiving ANC is due to socio-economic factors. Religion, education, economy, age of marriage, etc. These factors are the main reasons for the low number of antenatal checkups in both states.

In the past years, we have seen that people in the Rural area are afraid of going to the doctor and receiving help, either due to lack of information or knowledge or due to the economic impact that it might have. In terms of maternal health there to be a high number of home deliveries and institutional deliveries only used to happen in urban areas. Institutional deliveries are better than home deliveries and there are no, or minimal complications as compared to home deliveries. NFHS 4 data clearly shows that the number of institutional deliveries is not acceptable, and the number of home deliveries done by the skilled birth attendant is extremely bad. Even with all the training and interventions done with health care professionals in Integrated Management of Neonatal and Childhood Illnesses (IMNCI) and SBA, the field reality remains that the implementation of all these interventions is extremely poor which affects the health of

pregnant women. The number of home deliveries still being significantly high is due to the socioeconomic factors, education, myths associated with institutional delivery, etc. A study done in EAG states based on DLHS data indicates that having a health facility in an area or village is necessary, but it is not enough as the quality of care provided in that facility greatly impacts its usage by the people. Accessibility is important but it is not the only driver the quality of care provided is a very important factor as well. The demographic and socioeconomic factors also are important. It is not only the accessibility but the combination of other factors that make people trust and utilize the health care services provided.

The first 28 days of birth are extremely crucial for the neonate, neonatal care is important for the maternal health and survival of the baby. It is important to provide immediate care to the newborn for the survival of the child. NHFS 4 data shows that children who received a checkup from a health professional within two days were quite low in both states, it is very crucial to provide proper care to the newborn during the first month.

Caesarean Section deliveries increased from NFHS 3 to NFHS 4 for both the states in private health facility whereas there is a decline in the number of cesarean section deliveries in the public health facilities. There are a greater number of caesarian section deliveries in the private sector, which is a big concern as it is even more than what is recommended by the WHO. Minting money through more caesarian section deliveries could be one of the reasons for more caesarian section surgeries in the private sector. The lower number of CS in the public sector could be due to a lack of facilities available and due to a lack of trained health professionals.

Conclusion:

Materna health care in India, especially in BIMARU states needs improvement, a lot of effort is being made and steps are being taken to achieve the set goals, but there is a lot that must be done still. Improvement must be done in all aspects of maternal health, all the indicators that we have talked about in the study need to be worked upon. There is a dire need to strengthen the health system of India. The median age of marriage in both Rajasthan and Madhya Pradesh is lower than the median age of marriage in India which means an early marriage and early pregnancy which leads to more complications. To improve the maternal health situation in India the government and people must work

together, public consciousness has a great responsibility to play in enhancing maternal wellbeing level in both the states of Rajasthan and Madhya Pradesh.

References:

1. Randive B, Diwan V, De Costa A. India's conditional cash transfer program (the JSY) to promote institutional birth: is there an association between institutional birth proportion and maternal mortality?. PloS one. 2013 Jun 27;8(6):e67452.
2. Agrawal S, Fledderjohann J, Vellakkal S, Stuckler D. Adequately diversified dietary intake and iron and folic acid supplementation during pregnancy are associated with reduced occurrence of symptoms suggestive of pre-eclampsia or eclampsia in Indian women. PloS one. 2015 Mar 18;10(3):e0119120.
3. Kumar G, Choudhary TS, Srivastava A, Upadhyay RP, Taneja S, Bahl R, Martines J, Bhan MK, Bhandari N, Mazumder S. Utilisation, equity and determinants of full antenatal care in India: analysis from the National Family Health Survey 4. BMC pregnancy and childbirth. 2019 Dec;19(1):1-9.
4. Vidler M, Ramadurg U, Charantimath U, Katagiri G, Karadiguddi C, Sawchuck D, Qureshi R, Dharamsi S, Joshi A, Von Dadelszen P, Derman R. Utilization of maternal health care services and their determinants in Karnataka State, India. Reproductive health. 2016 Jun;13(1):55-65.
5. Ali B, Chauhan S. Inequalities in the utilization of maternal health care in rural India: Evidence from National Family Health Survey III & IV. BMC Public Health. 2020 Dec;20(1):1-3.
6. **http://rchiips.org/nfhs/pdf/NFHS4/RJ_FactSheet.pdf**
7. **http://rchiips.org/nfhs/pdf/NFHS4/MP_FactSheet.pdf**
8. **http://rchiips.org/nfhs/pdf/Madhya%20Pradesh.pdf**
9. **http://rchiips.org/nfhs/pdf/Rajasthan.pdf**