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An economic analysis of SDG 3-health and well-being with special reference to maternal health in Madurai District

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Abstract
Sustainable development goals forwarded by United Nations in 2015 includes a collection of 17 goals. In which SDG 3 focuses on Health and Wellbeing, which includes maternal and child health, solving infectious diseases, ensuring worldwide access to sexual and reproductive health and rights. The present study mainly focusses on maternal health of women in Madurai district. Maternal health includes the health of a woman during pregnancy, at the time of childbirth and post-partum period. The major objectives of the present study are to explore the health status of women by their Socio, Economic and Demographic characteristics, to assess the maternal history and knowledge of women and to find out the awareness on various maternal health issues. Health is a multipart of Social, Economic and Demographic well being. Over a period of time, health of the country has improved; however, the good health of women is still a confront in the country. The poor health infra-structure facilities provided by the public hospitals should be culminated to improve the access of public health services.

Keywords: Women, reproductive age, maternal health, Awareness, maternal death

Introduction

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Sustainable development goals forwarded by United Nations in 2015 includes a collection of 17 goals. In which SDG 3 focuses on Health and Wellbeing, which includes maternal and child health, solving infectious diseases, ensuring worldwide access to sexual and reproductive health and rights.

The present study mainly focusses on maternal health of women in Madurai district. Maternal health includes the health of a woman during pregnancy, at the time of childbirth and post-partum period.

Women have unique health issues. Unique issues include pregnancy, menopause, and the conditions of the female organs. Women can have a healthy pregnancy by getting early and regular prenatal care. They are very much prone to have breast cancer, cervical cancer, low bone density, stress, depression and so on. Women and men may also have the same problems. However, these problems can affect women differently. The effects of sexually transmitted diseases can be more serious in women. Osteoarthritis affects more women than men. Moreover, women are more likely to have urinary tract problems.

Women, particularly in rural areas, do not have access to safe and self-controlled methods of contraception. They may have more of stress and depression, which affects the mental health of every woman during and after maternity. Numerous factors affect the prevalence of mental health disorders among women includes aging, too much of dependence on spouse, caring children, work burden, financial stress and so on.

Despite many public health interventions to ensure safe delivery of pregnant women, maternal mortality is still on the rise in Madurai District. Madurai District is figuring in "High Risk Category" in maternal mortality since the rate is higher than the state average. Even as the public health infrastructure in Madurai district is improved phenomenally, maternal mortality rate still continues to be high.

The Madurai district recorded a high maternal mortality rate than the State average. As per the Health Department statistics, 41 maternal deaths were reported in Madurai district in 2019-2020 while it has been increased to 51 in 2020 – 21. According to Tamil Nadu health systems project, more women and children are dying due to multiple risk factors and delivery complications.

Hence, this study attempts to analyze the maternal history, health status of women during and after pregnancy, awareness towards the maternal health problems.

Objectives of the Study

The major objectives of the present study are

- To explore the health status of women by their Socio, Economic and Demographic characteristics.
- To assess the maternal history and knowledge of women towards their maternal health in Madurai District.
- To find out the awareness on various maternal health issues.

Methodology

Period of study

The study was conducted during the year 2023-2024 in Madurai District. The study includes primary as well as secondary data.

Data

Secondary data includes the number of maternal deaths, number of health professionals and the major issues in maternal deaths and the fees charged by the GRH for various maternal health care services. Primary data includes the socio, economic and demographic status, maternal history, health status of women during and after pregnancy and awareness towards the maternal health problems in Madurai district.

Sample

The study will include only the currently married women having at least two children and also in the reproductive age group of 19 – 44 years.

Sample Size

Madurai district has 17 Maternity Homes / Urban Health Posts (MHs/UHPs), 13 Main Primary Health Centres (PHCs), and one Government Hospital (GH), which provides maternal and child health services. Out of these, 13 main primary health centres were considered for sample selection. The data is collected through convenience sampling method. As it is difficult to get the addresses of the pregnant women having at least two children, the data is collected from the women on the days of visit to the particular hospital for check up or treatment or for receiving cash assistance or for child immunization or for family planning.

The respondents with two children were identified with the help of the village Health nurse in the hospital. A Sample of about 5 respondents was taken from each PHCs i.e., from 13 Primary Health Centres. Therefore, A total of 65 samples was included for the study. The collected data was tabulated for the purpose of analysis.

Review of Related Literature

Review of related literature helps to identify the unexplored facts and figures in the previous research studies which in turn enable the investigator to perceive the gaps and lacunas in the concerned field of literature.

Ramamani S. (1993) [1] analysed the, "Household survey of health care utilisation and expenditure." His aim is to collect detailed data on morbidity, health care utilisation and health expenditure. The study covers both treated and untreated illness episodes. The prevalence rates of illness by different age-groups reveals a very high morbidity rate for the 60+ age-group, for both rural and urban areas. The disease pattern was dominated by acute illnesses. Acute illness comprised 73 per cent of the reported illnesses in the rural areas and 68.5 per cent of the reported illnesses in urban areas. Serious communicable diseases accounted for 14.5 per cent and 13.3 per cent of all reported illnesses respectively in rural and urban areas.

Ram K.(1990) [2] studied the, "Medical management and giving birth: Responses of coastal women in Tamil Nadu." The main aim is to present the experience of maternity among lower-caste Mukkuvar women and their responses to modern medical management of pregnancy and birth. The study argues that class and caste influenced a woman's decision on whether or not to seek medical care during pregnancy and where to give birth. The article highlights various causes for the non-utilisation of modern medicine during delivery: prolonged stay during delivery disrupting their daily activities, caste difference between the provider and the user creates a power hierarchy, treatment by the hospital staff during delivery is harsh, and there are unnecessary medical interventions.

Aggarwal O.P., Kumar R., Gupta A., *et al*. (1997) [3] have designed a study on, "Utilisation of antenatal care services in peri-urban areas of east Delhi". The main aim of the study is to assess the utilisation of antenatal services in peri-urban areas of east Delhi. The study population consisted of mothers of 276 live born children. The data were collected through a semi-structured, open-ended questionnaire. The survey instruments were pre-tested. The findings revealed that 74.3 per cent of mothers had been registered at one of the medical care centres. Of them, 10.8 per cent did not receive tetanus toxoid vaccines, 26.4 per cent did not pay even a single visit during the antenatal period, whereas 23.2 per cent paid five or more visits. Seventy per cent of the deliveries took place at home, of which 81.9 per cent were conducted by untrained village dais.

[1] Ramamani, S. (1995), "Household Survey of Health Care and Utilisation and Expenditure", Working Paper No. 53, National Council for Applied Economic Research, New Delhi.

[2] Ram, K. (1994): "Medical management and giving birth: Responses of Coastal Women in Tamil Nadu", Reproductive Health Matters, Vol. 4, pp. 20-26.

[3] Aggarwal, O.P., Kumar, R., Gupta, A., *et al*. (1997), "Utilization of Antenatal Care Services in Periurban area of East Delhi', Indian Journal of Community Medicine", Vol. 22(1), pp. 29-32.

Results and Discussions

1. Socio, economic and demographic characteristics

Social Factors

The maternal health status of women has a strong bearing on its social background. It mainly depends on the social factors namely educational status, Religion, Community, Place of residence and Employment Status. These factors of the sample respondents were analyzed and given in the table below.

Table 1: Distribution of respondents by their Social Status

S. No	Social Factors	Groups	Number of respondents	Percentage
1.	Educational status	Illiterates	103	27.8
		Higher secondary	190	51.2
		Graduate	61	16.4
		Technical Education	17	4.6
2.	Religion	Hindus	297	80.1
		Christians	59	15.9
		Muslims	15	4.0
3.	Community	BC	184	49.6
		MBC	139	37.4
		SC	48	12.9
4.	Place of residence	Rural	195	52.6
		Urban	176	47.4
5.	Employment Status	Working	127	34.2
		Not working	244	65.8

***Source*:** Primary Data

The educational profile of the respondents show that majority of the respondents (51%) have completed higher secondary and 5% of the respondents have completed technical education which includes tailoring and ITI.

As per 2011 census [4], the proportion of Hindus is higher, than that of Muslims and Christians. It is evident from the above table that the percentage of Hindus is higher compared to Christians and Muslims. 50 percent of the respondents belong to the backward community, 37 percent were most backward class, and 13 percent were Scheduled class.

53 percent of the respondents were from rural area and 47 percent of the respondents were from urban parts of Madurai district. 66 percent of the respondents are not working because of their family and personal reasons. 34 percent of the respondents third of the respondents who have taken up jobs is working at low levels of occupation for low wages. 66 percent of the respondents were not working in the study area because they need to look after the health of the family especially children's health.

Economic Factors

Higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health. [5] Economic factors include the Respondents' income, Household income and the Household Health expenditure and this has been analyzed and given in the table below.

Table 2: Distribution of respondents by their Economic Status

S. No	Economic Factors (per month)	Groups	Number of respondents	Percentage
1.	Respondents income (In Rupees)	No income	244	65.8
		1-5000	98	26.4
		5001-10,000	25	6.7
		10,001-15,000	3	0.8
		15,001-20,000	1	0.3
2.	Household income (In Rupees)	< 10,000	2	0.5
		10,001-20,000	153	41.3
		20,001-30,000	164	44.2
		30,001-40,000	52	14.0
3.	Household health expenditure (In Rupees)	No expenses	221	59.6
		< 500	110	29.6
		501-1000	33	8.9
		1001-1500	6	1.6
		1501-2000	1	0.3

***Source*:** Primary Data

Table no.2 portrays that 66 percent of the respondents do not have any monthly income since they are not working. Only 1 percent of the respondent's income is above Rs.10, 000 and that too are the public sector employees.

41 percent of the household income lies within the range of Rs.10, 000 to Rs.20, 000 and 14 percent of the household income is above Rs.30, 000.

60 percent of the respondents do not have health expenses as they get treatment from public hospital at free of cost and only 2 percent has the maximum of Rs.1,000 as health

[4] Available at www.census.tn.nic.in retrieved on 12.010.2015

[5] Available at http://www.who.int/hia/evidence/doh/en/ retrieved on 14.05.2015

expenditure.

Demographic Factors

Demographic factors include the age and type of family of the respondents. As age increases, the awareness towards maternal health also increases. The type of family includes both joint and nuclear family system. Joint family consists of a number of family members and obviously, it is understood that the respondents have the chance of receiving health advice and support at the times need. Elders are more experienced in terms of maternal health as they have seen the number of deliveries. This experience would help the youngsters in the family to get a proper and practical health guidance, whereas it is absent in the nuclear family system. Thus the demographic status of the respondents could be well understood from table no.4.5.1.

Table 3: Distribution of respondents by their Demographic Status

S. No	Demographic Factors	Groups	Number of respondents	Percentage
1.	Current Age	< 21	8	2.2
		22 – 26	175	47.2
		27 – 31	172	46.4
		31 – 36	16	4.3
2.	Type of Family	Joint family	123	33.2
		Nuclear family	248	66.8

***Source*:** Primary Data

Table no. 3 exhibits that only 2 percent of the respondents were under the age of 21 and 47 percent of the respondents were between the age of 22 – 26 years, which is the ideal age of women having 2 children when she gets married at the age of 21 years. Only 4 percent of the respondents were above the age of 31 years, which is because of the late marriage.

67 percent of the respondents were in the nuclear family system and 33 percent of the respondents were in the joint family system.

2. Maternal History and Knowledge of Women

Age at Marriage

In India, the legal age of marriage for a woman is 21 years [6]. A woman who is married at an early age are exposed to recurrent childbirths, unplanned pregnancies and abortions that in turn are detrimental to their health and nutritional status. As a result, babies born to mothers who have a poor nutritional status are at risk of low birth weight and malnourished [7]. Therefore, the age at marriage of women plays a vital role in deciding the health status, which has been given in the table below.

Table 4: Distribution of respondents by their Age at marriage

Age at marriage	Number of respondents	Percentage
15 – 20 (Early marriage)	184	49.6
21 – 25 (Ideal marriage)	176	47.4
25 – 30 (Late marriage)	11	2.9
Total	**371**	**100**

***Source*:** Primary Data

It is evident from table no.4 that nearly 50 percent of the respondents had early marriage. Early marriage leads to a large number of miscarriages and infant and maternal mortality. While 47.4 percent of the respondents got married at the ideal age, 3 percent of the respondents got married between the age of 25-30 years, which is considered to be late marriage for women in the Indian culture.

The mean age at Marriage in the study group is 21 years, which is the ideal / legal age of a woman to get married. But nearly 50 percent of the respondents got married before the legal age.

Age at Pregnancy

In 2014, World Health Statistics indicate that the average global birth rate among 15 to 19 years is 49 per 1000 girls. Complications during pregnancy and childbirth are the second cause of death for 15-19 year-old girls globally. Adolescent pregnancy remains a major contributor to maternal and child mortality, and to the cycle of ill-health and poverty [8]. Therefore, recognizing the importance of the age at pregnancy is considered for analysis.

Table 6: Distribution of respondents by their age at pregnancy and order of child

Age at pregnancy	Order of child		
	I child	II child	III child
15 – 20 years	100 (26.9)	24 (6.5)	-
21 – 25 years	250 (67.4)	255 (68.7)	15 (27.2)
25 – 30 years	21 (5.7)	86 (23.2)	37 (67.3)
31 – 35 years	-	6 (1.6)	3 (5.5)
Total	371 (100)	371 (100)	55 (100)

Note: Figures in parentheses represent percentages

***Source*:** Primary Data

Table no.6 reveals that 68 percent of the respondents had their first and second child at the age group of 21 – 25 years. This is the ideal age of woman to get pregnant, because the reproductive organs have a complete growth only at this age. Only 2 percent of the respondents had their second child between the age group of 31-35 years. This is because they had a long birth gap between the first and second child.

The mean age at pregnancy is 22 years for the first child and 24 years for the second child in the study group which is the appropriate age of a woman to get Pregnant if she gets married at the age of 21years.

Birth Gap

World Health Organization (WHO) and other international organizations recommend waiting at least 2–3 years between pregnancies to reduce infant and child mortality, and to

[6] Available at www.tnhealth.org. retrieved on 19.04.2015

[7] Available at http://www.srhmatters.org/behaviours/early-marriage-and-its-effects-on-health/ retrieved on 07.05.2015

[8] Available at http://www.who.int/mediacentre/factsheets/fs364/en/ retrieved on 09.07.2015

benefit maternal health. [9]

In this connection, the birth gap between the children was identified and analyzed with the help of the table.

Table 7: Distribution of respondents by their birth gap of children

Birth gap (in years)	Number of respondents	
	I & II child	II & III child
1	51(13.7)	1(1.8)
2	145(39.1)	13(23.6)
3	120(32.3)	34(61.8)
4	41(11.1)	6(10.9)
5	12(3.2)	1(1.8)
6	2(0.5)	-
Total	**371(100)**	**55(100)**

Note: Figures in parentheses represent percentages
***Source*:** Primary Data

It is evident from the above table no.7 that majority (71.4 percent) of the respondents had 2-3 years of birth gap between their first and second child as recommended by world health organization, which shows that they have a good maternal health and child health as far as birth gap is concerned. It is also clear from the table that nearly two thirds of the respondents had 3 years of birth gap between the second and third child which satisfies the recommendation of the WHO. Less than 4 percent of the respondents had 6 years of birth gap as they deliberately postponed the pregnancy after the first child.

It is evident from the table no.7 that majority of the respondents had 2-3 years of birth gap between their first, second and third child which satisfies the recommendation of the World Health Organization.

Nature of delivery

Nature of delivery is of two types, namely normal and caesarean. There are many reasons for getting caesarean for a woman. When a woman is healthier, she will be less likely to acquire caesarean. Apart from this, Woman should bear the pain she undergoes and should mentally prepare to tolerate the sufferings during normal delivery. Normal delivery also includes the usage of forceps during delivery. In this regard, the nature of delivery of women has been analyzed and tabulated below.

Table 8: Distribution of respondents by their nature of delivery

Nature of Delivery	I child	II child	III child
Normal	303(81.7)	290(77.2)	55 (100)
Caesarean	68(18.3)	81(21.8)	-
Total	**371 (100)**	**371 (100)**	**55 (100)**

Note: Figures in parentheses represent percentages
***Source*:** Primary Data

Table no.8 explains that 82 percent of the respondents had normal delivery for the first child, which is due to the regular health checkup and diet during pregnancy. Whereas the percentage of women had normal delivery has been reduced to 77 percent for the second child and this has been due to the reduced antenatal care during delivery. They were not able to concentrate their health after the arrival of the first child.

18 percent of the respondents had caesarean for their first child, which is due to the high blood pressure, anemia, inadequate fluid, and overweight of the child. The percentage of cesarean increased to 22 percent for the second child for the reason that they had caesarean for their first delivery, improper head position of the child in the uterus and absence of labour pain during delivery.

3. Awareness on various maternal health issues

Breast and Uterine Cancer

Breast cancer starts when cells in the breast begin to grow out of control. These cells usually form a tumor that can often be seen on an x-ray or felt as a lump. The tumor is malignant (cancerous) if the cells can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body. Breast cancer is now the most common cancer in most cities in India, and 2nd most common in the rural areas. [10] It is being listed as the top 10 threatening diseases of women in India. [11]

Uterine cancer or the endometrial cancer is the abnormal growth of any cells that comprise uterine tissue. It becomes an alarming problem, which affects even at the age of 30 and also increases the death rate of women. Therefore, the awareness of the breast and uterine cancer among the respondents were analyzed.

Table 9: Distribution of respondents by the awareness of breast and uterine cancer

Type	Know	Do not know	Total
Breast cancer	359(96.8)	12(3.2)	371(100)
Uterine cancer	352(94.9)	19(5.1)	371(100)

Note: Figures in parentheses represent percentages
***Source*:** Primary Data

It is evident from the table no.9 that 97 and 95 percent of the respondents know about breast and uterine cancer, respectively, which shows that awareness campaign, and strategies taken were effective. A very small percentage of the respondents cached knowledge about it and they expressed that they do not have friends or neighbors to educate them about these types of diseases.

Mammogram

Cancer has become an important public health problem faced by women. Mammogram is a special screening test which uses a milder level of X – ray that is used to identify the breast cancer at an early stage and it is the most powerful breast cancer detection examination. Knowing about the mammogram is essential for a woman to avoid the risk of getting breast cancer. This has been given in the form of a table.

Table 10: Distribution of respondents by the awareness of mammogram

Mammogram	Number of Respondents	Percentage
Know	36	9.7
Do not know	335	90.3
Total	**371**	**100**

***Source*:** Primary Data

[9] Available at http://www.who.int/maternal_child_adolescent/documents/birth_spacing.pdf retrieved on 10.3.2015

[10] Available at http://www.breastcancerindia.net/statistics/tends.html retrieved on 17.07.15

It is clear from the table no. 10 that 10 percent of the respondents know about mammogram and no one has taken the mammogram examination. 90 percent of the respondents do not have the knowledge about mammogram test and they were not advised by the doctors to take the examination. They thought they did not have any reason to take up the test.
This shows a very pathetic situation of women and the ignorance about the testing procedure and also it shows that immediate attention should be given to the women about the testing procedure and its importance.

Pap smear

Pap smear test is a test taken to diagnose the early stage of cervical cancer inside the uterus. Screening for uterine cancer should start after the age of 21 and it should be repeated every 1 to 3 years till the age of 65 years in order to avoid the risk of getting uterine cancer. Therefore, the knowledge about the Pap smear test in the study area has been taken into consideration.

Table 11: Distribution of respondents by the knowledge of Pap smear test

Pap Smear	Number of Respondents	Percentage
Know	8	2.2
Do not know	363	97.8
Total	**371**	**100**

***Source*:** Primary Data

Table no. 11 explains that only less than 2 percent of the respondents know about Pap smear test and that too they were advised to take up the test before 6 months. 95 percent of the respondents know about uterine cancer, whereas 98 percent of the respondents do not have any idea about the testing procedure ie., Pap smear test. They said that the disease is known through the media and neighbors and they have not informed the testing procedure. This shows that a severe kind of awareness campaign should be framed and implemented for young and delivered mother. It reveals that 98 percent of the respondents do not know about the testing procedure of uterine cancer.

Knowledge about RTI/gynecological

Gynecology is the medical practice of examining the female, Reproductive Tract Infections (RTI). Reproductive health plays an important role in human being, especially in women's health during the reproductive period. Awareness towards personal hygiene and illness reduces the risk of getting RTI or gynecological problems. Therefore, the study considers the level of awareness among women.

Table 12: Distribution of respondents by their knowledge about RTI

Knowledge about RTI	Number of Respondents	Percentage
Know	287	77.4
Do not know	84	22.6
Total	**371**	**100**

***Source*:** Primary Data

Table no. 12 reveals that more than 77 percent of the respondents have the knowledge about RTI and gynecological disorders. This shows that the level of awareness among the women is high and they can treat the diseases at the early stage. They know about urinary tract infections and White discharge. Less than one third of the respondents does not have the knowledge about RTI and gynecological problems. This is due to the reason that they do not have friends to share about this. It is revealed that 78 percent of the respondents know about reproductive tract infections and 23 percent do not know about RTI.

Problem of Reproductive Tract Infections

Reproductive Tract Infections (RTI) is very common among married women and in particular, pregnant and delivered mothers. If it is untreated, leads to severe illness and even death occur. Therefore the number of respondents had RTI has been analyzed and given in the form of a table.

Table 13: Distribution of respondents by Reproductive tract infection

RTI	Number of Respondents	Percentage
Infected	91	24.5
Not infected	280	75.5
Total	**371**	**100**

***Source*:** Primary Data

Table no. 13 shows that almost one fourth of the respondents were affected by RTI and mainly by White discharge and itching. This is because of the unhygienic practice during menstruation and delivery. Three fourth of the respondents do not have any RTI which shows that they are much aware about RTI and cared themselves during and after delivery.

Conclusion

Health is a multipart of Social, Economic and Demographic well-being. Over a period of time, health of the country has improved; however, the good health of women is still a confront in the country. The poor health infra-structure facilities provided by the public hospitals should be culminated to improve the access of public health services.
Women should be conscious in retaining the well-being in terms of physical and mental health individually. Many of the modest gains in women's health realized in recent decades are now threatened. Basic health care, family planning and obstetric services are essential for women. Yet they remain unavailable to millions. In particular, women should have an easy access to the maternal health services at free of cost. Accessibility and affordability should be the prime focus of the centre and the state which reduces the maternal mortality ratio.
Health care expenditure and programmes should be enhanced in order to provide effective health care treatment. Gender-equitable approaches to health and significant participation of the health professionals are needed to enable women health care services. Women Health is of vital importance in creating a healthy family and the society. Hence, the interventions that will stop corruption, improve the behavior of the health professionals towards pregnant and delivered women, improve individual and joint decision making between husband-wife and empower women are important efforts that deserve sustained support. These programmes should be targeted especially at poor, unemployed women residing in rural areas. The need for programs that promote educating these women is the need of the hour. As expected by the government in one of the SDG goal 3, Health and wellbeing can be attained by women in the near future.

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