

Original Research Article

Factors influencing maternal mortality in Cumilla city corporation, Bangladesh

Shapan Chandra Majumder^{1*}, M. Hasanur Rahman¹, Shantanu Debbarman²

¹Department of Economics, Comilla University, Cumilla, Bangladesh

²Department of Economics, Chittagong University, Chittagong, Bangladesh

Received: 07 May 2021

Revised: 07 June 2021

Accepted: 08 June 2021

*Correspondence:

Dr. Shapan Chandra Majumder,

E-mail: scmajumder_71@yahoo.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The main purpose of this study was to analyze the factors influencing maternal mortality in Cumilla city corporation, Bangladesh.

Methods: This study was conducted with a questionnaire and interview survey to investigate the current objective.

Results: The major findings of this study were 11.33% respondents had no educations, 19.3% of respondents had no knowledge about ANC services, 22% of respondents had no knowledge about PNC services. It was about 49.33% of respondents first heard about the birth control method from their friends and relative as service providers and field workers were less active in those places. However, 28% of respondents were between 16 and 25 years which represents teenage or early marriage highly influences maternal mortality in this study area. Lack of postnatal and antenatal care were strong determinants for increasing maternal mortality.

Conclusions: The current findings have a significant impact on society and demographic economics because the study of influencing factors of maternal mortality in this study area was not conducted before. The current study will help to create opportunities for future research.

Keywords: Maternal mortality, Factor, Postnatal, Antenatal, Bangladesh

INTRODUCTION

Bangladesh is one of the fast economically growing countries in South Asia. Bangladesh is situated in the northern part of the Bay of Bengal. The total area of Bangladesh is 1,48,460 square kilometers and the total population is about 16.4 billion. Most of the people in Bangladesh live in rural areas and involve in agricultural activities. The migration from rural to urban is largely increased in this country.¹ The rate of urbanization in Bangladesh in 2018 was 36.63% which is continuously increasing. The two basic needs including education and health care facilities have a low level of efficiency to improve the socio-economic conditions in Bangladesh to

improve the socio-economic conditions.²⁻⁴ It is positive that the major macroeconomic variables are growing rapidly in Bangladesh since the last decade.⁵ The education system has an immense contribution to raise awareness of health care facilities among individuals.⁶ Maternal education enriches our knowledge about maternal and mother care and maternal education depends on the availability and accessibility of healthcare information and facilities which people can easily accept, understand and utilize.

Maternal health is the part of the demographic measure which is discussed as a macroeconomic variable.⁷ Maternal health can be defined by the health conditions

of women during their pregnancy, childbirth and postnatal period. It also depends on the availability and use of contraceptive prevalence and coverage of tetanus injection services. Antenatal and postnatal care increases the safety of mother life. The unwanted pregnancy creates vulnerability of the mother health.⁸⁻¹⁰ Maternal health also depends on the health care service providers like nurses, doctors' positions and others.

The People's Republic of Bangladesh is constitutionally committed to the supply of basic medical requirements to all levels of people in society and to improve the nutrition status and public health status.¹¹ In the aspect of juvenile motherhood (giving birth in a priori stage of life), Bangladesh is one of the highest vulnerable in the world. 25% of the teenage girls in Bangladesh have already become a mother due to socio-economic factors including poverty and inequality and lack of education, knowledge, government restrictions and rules. The factors are liable to increase the number of teenage mothers in Bangladesh. Each and every year mothers are dying in case of pregnancy and childbirth. In 2010 the maternal mortality rate was 574 per 100000 live births; in 2018 maternal mortality rate was 194 deaths per 100000 live births which is continuously decreasing.¹²

Moreover, the general objective of the study was to explore the scenario of maternal health in Cumilla city corporation, focusing on antenatal care (ANC), delivery, and postnatal care (PNC) services. The specific objectives of the study presented were to find out believes and practices concerning maternal health, to explore each ANC, delivery and PNC services seeking pattern, to search the reasons for seeking ANC, delivery and PNC, to estimate the way of communication (who, when, whom and how) to the service providers regarding the birth of newborn and pre and post care of mother and to find out the way of better health service for mothers.

Questionnaire and interview surveys were conducted to analyze the influencing factors of maternal mortality.

METHODS

Study type

Current study conducted a primary data based analysis. Through questionnaires and interviews, we collected information about the danger signs, symptoms during pregnancy, antenatal care, child delivery, TT vaccination to women and postnatal care.

Study place and period

The population of the current study had consisted of male and female respondents in Comilla city. The study was conducted in Cumilla city and ward numbers 3, 5, 8, 10, 11, 18, 24 and 27 were selected to collect data and information. The sample size of this study was about 150

respondents. The fieldwork was commenced in mid-2019 to late 2019.

Statistical analysis

The data was collected through interviews and questionnaire surveys with a structured and unstructured questionnaire and checklist. That kind of methodology was also used to collect data.^{13,14} The purpose of this study was based on socio-economic, socio-demographic knowledge, practice and attitude with respect to maternal health. The collected data have analyzed by using SPSS software and this study conducted a descriptive analysis to determine the impact of maternal mortality factors.

RESULTS

Socio-economic factors

Information was collected from married women for reproductive age. The distribution of respondents according to age is presented in Table 1. Findings indicate that 28% of respondents are aged between 16-25 years, 39.33% of respondents are aged between 26-35 years, 19.33% of respondents are aged between 36-45 years, 13.33% of respondents are aged between 46-55 years. Findings indicate that about 12% of the respondents are illiterate, 11.33% of respondents have education level between class 1 and class 7, 10% of respondents are between class 8-10, 36.67% of the respondents have completed SSC, 19.33% of the respondents have completed HSC and 10% of the respondents have completed graduation and above which is shown in Figure 1.

Table 2 demonstrates that 33.33% of the respondents are housewife and 6.67% of the respondents are farmers. About 26.67% of respondents are involved in small businesses, 10% of the respondents are involved in big business, 16.67% of the respondents are involved in services and 3.33% of the respondents are engaged as a professional worker. About 3.33% of the respondents are unskilled laborers. This survey also found that the number of children for the female respondent. About 74% of the respondents are using septic tank/modern toilet, 21% are using slab latrine and 5% are using the hanging latrine. The economic statuses of the respondent's households are also presented in Table 2. Respondents were asked whether they thought their household was a surplus or deficit in terms of food consumption. Only 32.67% indicated that they have a surplus of food, while 42.67% of respondents mentioned that they have neither a deficit nor a surplus of food and 14.67% of respondents face a deficit sometimes in a year.

Socio-demographic factors

Knowledge about the birth control method is presented in Table 3. Findings show that most of the respondents are not using the method before birth. Only 30% of the

respondents used the method before birth while 70% of the respondents did not use any method before birth.

Respondents first heard about the method are also presented in Table 3. 49.33% of the respondents mentioned they HAVE heard about this method first from their relatives or friends. Only 13.33% of the respondents have heard about this method from radio or TV.

Only 45 out of 150 respondents used this method before birth. 48.89% of the respondents followed by pill, 17.78% of the respondents followed by IUD and 2.22% of the respondents used another method before birth. Distribution of respondent's on the basis of currently using methods to avoid pregnancy is presented in Table 4. The table shows that currently 69.33% of the respondents are using the method to avoid pregnancy and 30.67% of the respondents are not using a method to avoid pregnancy. The names of currently using methods to avoid pregnancy are also presented in Table 4. About 48.08% of the respondents follow pill to avoid pregnancy, 21.15% of the respondents follow injection, 7.14% follow implant, 12.5% of the respondents used female sterilization and 2.88% of the respondents used male sterilization and 5.79% of the respondents follow condom to avoid pregnancy at currently do not require. The frequency and percentage of abortion or miscarriage is about 69% of the respondents aborted or miscarriage

their child while 31% of the respondents did not abort or miscarriage their child.

Respondents were asked whether they went for ANC in their last pregnancy and it is found that 121 women out of 150 took ANC. Among them, 48.76% visited two or three times and 25.62 % visited more than three times. 46.28% of the respondents visited ANC before their six months of pregnancy. Among them, 70.25% had gone to a qualified doctor and 8.26% had gone to homeopathic and untrained TBA (dai). Due to the religious binding, lack of knowledge about this, a portion of respondents did not take ANC. Besides, most of them did not perceive it, as necessary. These are presented in Table 5.

Table 6 depicts the services received by the respondents during ANC. Findings suggest that 28.01% of respondents measured weight, 20.67% measured height. During ANC, blood pressure check, urine test was done by 9.09 % and 8.26% of respondents, respectively. An ultrasonogram was conducted (19.83%) of the conducted respondent. An important factor for determining mother health is testing blood, which is 5.78% only. Table 6 also shows that almost 70% of the respondents received TT injection and 16.67% do not receive any TT injection. 90.67% of the respondents mentioned that they have taken iron tablets or iron syrup during ANC and 9.33% do not take any iron tablet or iron syrup.

Table 1: Distribution of respondents' by age.

Socio-demographic characteristics	Frequency	Percentage
Age of respondents (in years)		
16-25	42	28
26-35	59	39.33
36-45	29	19.33
46-55	20	13.33
Total	150	100

Table 2: Distribution of respondents' by occupation and income status.

Distribution of respondents	Frequency	Percentage
Occupation		
Farmer	10	6.67
Housewife	50	33.33
Small business	40	26.67
Big business	15	10
Service	25	16.67
Professional worker	5	3.33
Immigrant	-	-
Unskilled laborer	5	3.33
Total	150	100
Household food consumption		
The deficit in the whole year	15	10
Sometimes deficit	22	14.67
Neither deficit nor surplus	64	42.67
Surplus	49	32.67
Total	150	100

Table 3: Using birth control method before born of first child.

Using Birth Control Method before Born of First Child		
Used any method	Frequency	Percentage
Yes	45	30
No	105	70
Total	150	100
Distribution of respondents' from where they are hearing about that method		
Whom/were first heard about these methods	Number	Percentage
Satellites clinic	12	8
Field workers	10	6.67
Relatives/friends	74	49.33
Reading materials	34	22.67
Radio/TV	20	13.33
Total	150	100

Table 4: About the birth control method they have used.

Birth control	Frequency	Percentage
Name of the method		
Female sterilization	7	15.56
Male sterilization	5	11.11
Pill	22	48.89
IUD	8	17.78
Implants	2	4.44
Another method	1	2.22
Total	45	100
Currently, use a method to avoid pregnancy		
Yes	104	69.33
No	46	30.67
Total	150	100
The method used to avoid pregnancy		
Pill	50	48.08
Injection	22	21.15
Norplant/implant	10	7.14
Female sterilization	13	12.5
Male sterilization	3	2.88
Condom	6	5.79
Total	104	100

Table 5: Distribution of respondent's by knowledge of ANC, delivery and PNC.

Distribution of respondents'	Frequency	Percentage
Take ANC during last pregnancy		
Yes	121	80
No	29	19.33
Total	150	100
Whom to visit for ANC		
Qualified doctor	85	70.25
Homeopathic/ paramedic/nurse	26	21.49
Untrained TBA (dai)	10	8.26
Total	121	100
Pregnancy time and first ANC visit		
Less than six months	56	46.28
Six to seven months	23	19.28
More than seven months	27	22.31

Continued.

Distribution of respondents'	Frequency	Percentage
Don't know	15	12.39
Total	121	100
Times of receive medical check-up during pregnancy		
No antenatal care	21	17.36
One time	10	8.26
Two to three times	59	48.76
More than three times	31	25.62
Total	121	100

Table 6: Knowledge of respondent about ANC services.

Knowledge of respondent	Frequency	Percentage
Services provided during ANC		
Weight measured	34	28.01
Height measured	25	20.67
Check blood pressure	11	9.09
Test urine	10	8.26
Test blood	7	5.78
Exam eye for anemia	10	8.26
Ultrasonography	24	19.83
Total	121	100
TT injection was given during ANC visit		
Yes	105	70
No	25	16.67
Don't know	20	13.33
Total	150	100
Take iron tablet or iron syrup		
Yes	136	90.67
No	14	9.33
Don't know	-	-
Total	150	100

Table 7: Respondent opinion during delivery care.

Respondent's opinion	Frequency	Percent
Anybody assisted during delivery		
Yes	150	100
No	-	-
Total	150	100
Delivery assisted by		
Qualified doctor	49	32.67
Family welfare visitor	16	10.67
Untrained TBA (dai)	85	56.67
Total	150	100

Table 8: Distribution of respondent about knowledge of PNC services.

Distribution of respondents'	Frequency	Percentage
After delivery medical check-up on the baby's health		
Yes	117	78
No	33	22
Total	150	100
Take a vitamin A capsule		
Yes	133	88.67
No	17	11.33

Continued.

Distribution of respondents'	Frequency	Percentage
Total	150	100
Who checked on baby's health at that time		
Qualified doctor	108	72
Untrained TBA (dai)	-	-
Nurse/midwife/paramedic/homeopathic	42	28
Total	150	100

Table 9: Distribution of respondents' by giving colostrums.

Distribution of respondents'	Frequency	Percentage
Ever breastfeed		
Yes	150	100
No	-	-
Total	150	100
Giving colostrums		
Yes	150	100
No	-	-
Total	150	100
Months of breastfeeding		
1-10	39	26
11-20	91	60.67
21-30	20	13.33
Total	150	100

Table 10: Opinion about medical care services by the respondent.

Opinion about medical care services	Frequency	Percentage
Women should have a medical check-up during their pregnancy		
Yes	130	86.67
No	20	13.33
Total	150	100
During pregnancy, services are required for a women		
ANC	50	33.33
Delivery	68	45.33
PNC	32	21.33
Total	150	100
Arrangements' are required to safe delivery		
Visit a trained provider	41	27.33
Arrange money	76	50.67
Arrange vehicle for emergency	33	22
Total	150	100
When women face a problem ANC delivery, PNC where she can go treatment		
Qualified doctor	133	88.67
Nurse/midwife/paramedic/homeopathic	17	11.33
Untrained TBA (dai)	-	-
Total	150	100

Table 7 presents who assisted during delivery. 32.67 % of respondents chose qualified doctors to deliver babies, however, the major portion of delivery (56.67%) was conducted by TBA. 10.67% of respondents took assistance of FWA. TBA is frequently used not only in

this study area but also in the entire county. Table 6 demonstrate knowledge about PNC services. Findings show that 78% of the respondents received medical checkups on the baby's health after delivery while 22% of the respondents do not receive any medical checkups on the baby's health after delivery. In the first two

months after delivery 88.67%, women took vitamin A capsule and 11.33% did not take vitamin A capsule.

Table 8 shows that 26% of the respondents breastfed their children between 1-10 months, 60.67% of the respondents breastfed their children between 11-20 months; 13.33% of the respondents breastfeed their children between 21-30 months.

Breastfeed methods for child care are an important issue where nutrient food helps to accumulate mother health in antenatal and postnatal situations. The breastfeed durations for the child are presented in Figure 2.

Table 10 shows the opinion of the respondents about ANC, delivery and PNC. Most of the respondents (86.67%) think that women should have a medical checkup during their pregnancy. They think at the time of delivery they need some arrangements. Among them, 50.67% of the respondents believe it is required to arrange money and 27.33% think it is necessary to visit a trained provider and 22% of the respondents think it is required in order to organize the vehicle for an emergency. Most of the respondents think when women face a problem ANC delivery, PNC, at that time, she goes to a qualified doctor.

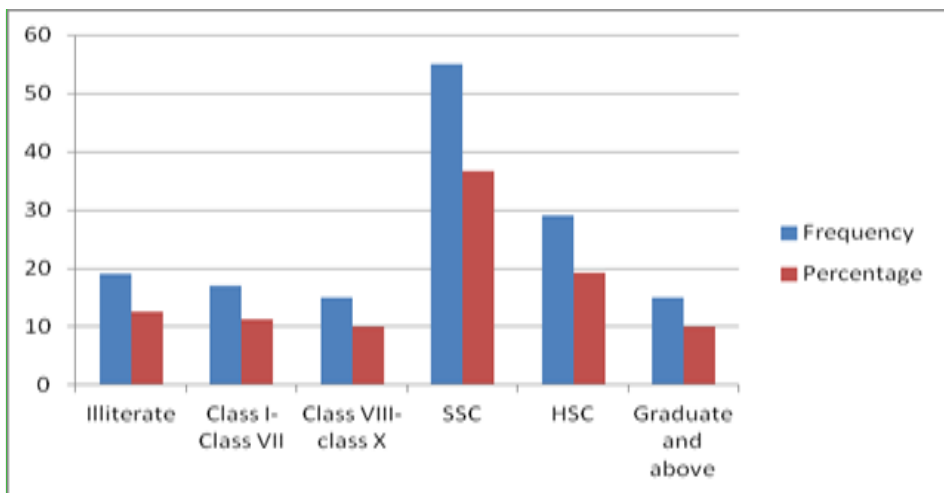


Figure 1: Education status of women respondent.

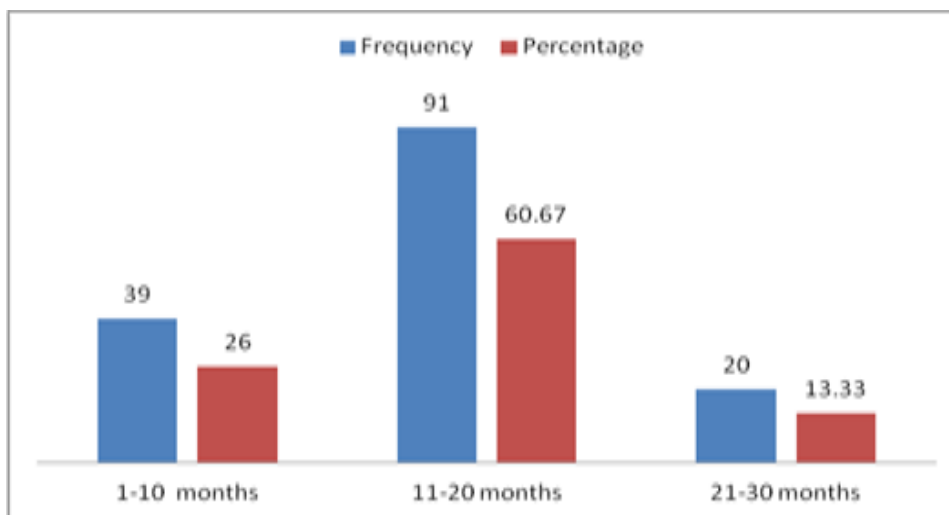


Figure 2: Breastfeed duration for child by mother.

DISCUSSION

On the basis of our findings the study presents the following discussion with recommendations. It is about 13.33% of respondents have no medical check-up during their pregnancy time. So, it should be necessary to

increase skilled manpower in field visits and need to increase the efficiency of the community clinic. The government needs to take initiatives to improve the socio-economic conditions in this study area. The current study found that about 11.33% of respondents have no maternal education, 26% of respondents lack toilet facilities and 10% of respondents face income deficit in the entire year

where necessary information's about maternal education needed.^{17,18} Ensure the probable check-up by doctors however the 28% of respondents still check-up by unskilled nurse and midwife. About 17.36% respondent doesn't take any ANC and only 25.62% respondent takes ANC more than three times in this study region. Whatever the ANC services should be increases during pregnancy time. Increase the facilities of community clinic services because of 22% respondent still doesn't include PNC Services in the study area. A productive home visit by government or non-government medical services providers can guide mothers about delivery care and complexity. Moreover, the delivery assisted by qualified doctors only 32.67%, family relatives assist 10.67% and 56.67% assist by untrained TBA (in the local language it's called dai) in the current study area. The government campaign for health improvement must maintain a sequential time frame. Safe motherhood, family planning, uses of contraceptive (condom) should be increased and use of pill should be reduced. Whatever 48.08% of respondents used pill and uses condom only 5.79% to avoid pregnancy. The use of pill creates complexity in mother health and consequences are deeply hampered reproduction ability of mothers.^{15,16} Ensure the inter-link among the mid-wives (FWVs/nurses), TBAs and FWAs must be improved to ensure the quality of services and effective referral systems.

Limitations

To complete this study we faced some limitation. Due to time constraints, the fieldwork was limited to only eight wards out of 27 wards, some of the respondents were illiterate. For illiterate respondents, the interview survey was conducted instead of questionnaire. Sometimes few respondents were not interested to respond to our questions due to shyness. Therefore, the sample size was not large.

CONCLUSION

The purpose of this study was on socio-economic, socio-demographic knowledge, practice and attitude to determine maternal health. The current study was focused on socio-economic factors and found that 33.33% of the respondents are involved in household activities and 10% of respondents face poverty in the whole year, 14.67% of respondents face temporary poverty due to seasonal unemployment. Moreover, 11.33% of respondents have no educations. The analysis of socio-demographic factors illustrated that 22% of the respondent had been completed the motherhood up to 16 years or not more 25 years which is create more vulnerability in mother health and increase the maternal mortality rate. Almost 70% of mother did not adopt any birth control method during the gap between the first and second baby which is the vital reason of unwanted pregnancy and abortion Whatever the 69% of the mother was willing to do abortion for an unwanted pregnancy. In this study area, 9.33% of respondents had no ANC knowledge and 22% had no

PNC knowledge. The current study gives the importance of reductions of early marriage, unwanted pregnancy, improve the skills of unorganized service providers, home visits, family planning and the effective gap between first and next pregnancy. To reduce the mortality, family care and self-care must need which is created by educations and training. Educated women feel safe during pregnancy and delivery time, they have effective child care knowledge than uneducated. The contributions of the current study will add a great value in existing literature and practices in health and social well-being in the study area as well as in Bangladesh. Stakeholders of this study would be beneficiaries with knowledge and importance of maternal care, PNC and ANC to reduce maternal mortality.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Lagakos D, Mobarak AM, Waugh ME. The welfare effects of encouraging rural-urban migration. *Nation Bureau Economic Res.* 2018.
2. Ahmed SM, Evans TG, Standing H, Mahmud S. Harnessing pluralism for better health in Bangladesh. *Lancet.* 2013;382(9906):1746-55.
3. Ahmed S, Khan MM. Is demand-side financing equity enhancing? Lessons from a maternal health voucher scheme in Bangladesh. *Soc Sci Med.* 2011;72(10):1704-10.
4. Winter R, Yourkavitch J, Wang W, Mallick L. Assessment of health facility capacity to provide newborn care in Bangladesh, Haiti, Malawi, Senegal, and Tanzania. *J Glob Health.* 2017;7(2):020509.
5. Pan X, Uddin MK, Han C, Pan X. Dynamics of financial development, trade openness, technological innovation, and energy intensity: evidence from Bangladesh. *Energy.* 2019;171:456-64.
6. Rahman MH, Majumder SC. Feasibility of NGO initiatives in SME, rural benefits and challenges: a case study in Cumilla, Bangladesh. *J Economic Info.* 2020;7(1):26-39.
7. Rahman MH, Majumder SC, Rana M. The reasons behind the shift of patients from public to private hospitals: evidence from public hospitals in Cumilla city corporation. *Int J Pub Policy Admin Res.* 2020;7(2):69-78.
8. Arnott B, Meins E. Links among antenatal attachment representations, postnatal mind-mindedness, and infant attachment security: a preliminary study of mothers and fathers. *Bull Menninger Clin.* 2007;71(2):132-49.
9. Chalmers B, Mangiaterra V, Porter R. WHO principles of perinatal care: the essential antenatal,

- perinatal and postpartum care course. *Birth.* 2001;28(3):202-7.
10. Cooper PJ, Murray L. Postnatal depression. *BMJ.* 1998;316(7148):1884-6.
 11. Islam A, Biswas T. Health system in Bangladesh: Challenges and opportunities. *Am J Health Res.* 2014;2(6):366-74.
 12. Abdullah K, Malek MA, Faruque AS, Salam MA, Ahmed T. Health and nutritional status of children of adolescent mothers: experience from a diarrhoeal disease hospital in Bangladesh. *Acta Paediatr.* 2007;96(3):396-400.
 13. Khan MMR, Hotchkiss D, Dmytraczenko T, Ahsan ZK. Use of a balanced scorecard in strengthening health systems in developing countries: an analysis based on nationally representative Bangladesh health facility survey. *Int J Health Plann Manage.* 2013;28(2):202-15.
 14. Adhikary G, Shawon MSR, Ali MW, Shamsuzzaman M, Ahmed S, Shackelford KA, et al. Factors influencing patients' satisfaction at different levels of health facilities in Bangladesh: results from patient exit interviews. *PLoS One.* 2018;13(5):0196643.
 15. Collins MK. Conscience clauses and oral contraceptives: conscientious objection or calculated obstruction. *Annals Health L.* 2006;15:37.
 16. Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. *Lancet.* 2012;380(9837):111-25.
 17. Desai S, Alva S. Maternal education and child health: Is there a strong causal relationship? *Demography.* 1998;35(1):71-81.
 18. Rahmana MH, Majumder SC, Hossain MN, Nahrin R. Factors influencing infant and child mortality. *Int J Soc Sci World.* 2020;2(2):40-55.

Cite this article as: Majumder SC, Rahman MH, Debbarman S. Factors influencing maternal mortality in Cumilla city corporation, Bangladesh. *Int J Sci Rep* 2021;7(7):346-54.