

ABORTION A RIGHT; NOT PRIVILEGE: A CRITICAL REVIEW ON MATERNAL MORTALITY

¹M.Preetha, ²Mrs. S.P.Vidyassri

Abstract--*An unsafe abortion is the end of a pregnancy by individuals coming up short on the necessary skills, or in a situation lacking insignificant medicinal principles, or both. An unsafe abortion is a hazardous strategy. It incorporates self-initiated abortions, abortions in unhygienic conditions, and abortions performed by a therapeutic professional who doesn't give fitting post-abortion consideration. The present research speaks about the consequences of unsafe abortions, reasons of maternal mortality and the duty of the state to protect child in the womb when its attain its viability stage. The ratio has declined from approx 169 (2011-2013) to 132 (2014-2016) and to 120 in 2015-2017. Since it is a significant reason for damage and death among women around the world. In this research paper, non-doctrinal research method has been used and its contains 1599 samples. The research proves alternative hypothesis. The paper concludes that state must be responsible in the maternal mortality due to unsafe abortions in specific reasons. The paper deals with analysis of maternal mortality in India due to unsafe abortions and the unknown reasons for unsafe abortions in India.*

Keywords--*unsafe abortions, maternal mortality, necessary, skills, India.*

I INTRODUCTION

Abortions are protected in the event that they are finished with a technique suggested by world health organization that is fitting to the pregnancy duration and if the individual giving or supporting the abortion is well trained. Any woman with adisagreeable pregnancy who can't get to safe abortion is in harm of unsafe abortion. Death from unsafe abortion causing a threat to women in Africa. While the mainland represents 30% of every single unsafe abortion, it sees 63% of unsafe abortion-related deaths are in a large scale. Insecure abortion is one of the widespread reasons for increasing mortality rate. This paper purely contains the risk of maternal mortality, reasons for maternal mortality and the awareness for risk in unsafe abortions, regardless of whether the women who survive unsafe abortion, will endure long term health issues. Unsafe abortion is in this way a problem that to be addressed. The laws and regulations which have been formulated for the abortion to be modified to save many women's from maternal mortality. The disparity in abortion-related maternal mortality could partly be explained by differences in

¹ 131601016, IVth year, Saveetha School of Law,, Saveetha Institute of Medical and Technical Sciences, (SIMATS), Saveetha University, Chennai- 600 077, mpreetha1106@gmail.com Phone Number: 7708145556

² Asst. professor of law Head of the department Saveetha School of Law, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai- 600 077, vidyassrisp.ssl@saveetha.com Phone Number: 9940621389

abortion laws with women in countries with more restrictive laws being unable to access to reproductive health care and safe abortion services. The main aim of the study provides evidence that abortion law reform in countries with restricted abortion laws may reduce maternal mortality and the detailed study on maternal mortality and its risk in women's.

II OBJECTIVES

- To study about the risk and reasons for maternal mortality.
- To spread general awareness for women's about the threat in unsafe abortion and its long term health complications.
- To know about the present laws and regulations relating to abortion and the recommendations to be made in order to save women's from maternal mortality and unsafe abortions.

III REVIEW OF LITERATURE

1. In the book written by Ahman, Elisabeth, et al. *Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2000*. 2004 states that Before 1971, abortion was specified under Section 312 of the IPC, 1860, portraying it as purposefully "causing unnatural birth cycle". Any woman with an disagreeable pregnancy who can't get to safe abortion is in harm of unsafe abortion.
2. In the book written by Bashar, Mohammad Abu, et al. "Unsafe Abortions in India: Removing the Bottlenecks." *International Journal of Medicine and Public Health*, vol.8, states that At the point when continuation of pregnancy is a hazard to the life of a pregnant woman or could make grave damage her physical or psychological wellness; The disparity in abortion-related maternal mortality could partly be explained by differences in abortion laws with women in countries with more restrictive laws being unable to access to reproductive health care and safe abortion services.
3. In the book written by Cohen, Jake. "Unsafe Motherhood: Mayan Maternal Mortality and Subjectivity in Postwar Guatemala By Berry, Nicole S." *Social Anthropology*, states that When there is considerable hazard that the youngster, whenever conceived, would be truly debilitated because of physical or mental anomalies. "Death from unsafe abortion causing a threat to women in Africa. While the mainland represents 30% of every single unsafe abortion, it sees 63% of unsafe abortion-related deaths are in a large scale".
4. In the book written by Dutta, Dilip. "Maternal Mortality Review: Govt. of India Action Plan." *Insight Maternal Mortality – An Indian Facebook*, 2012, states that At the point when pregnancy is caused because of disappointment of contraceptives utilized by a wedded woman or her significant other (ventured to comprise grave damage to the emotional well-being of the woman).
5. In the book "Special Bulletin on Maternal Mortality in India 2007-09." *Insight Maternal Mortality – An Indian Facebook*, 2012, states that In March 2017, a 28-year-elderly person from Mumbai moved toward the Supreme Court to look for consent to end her 27-week pregnancy subsequent to finding that the embryo was experiencing Arnold Chiari Type II disorder – a condition like the one, she saw her sibling grow up with. The Supreme Court

denied her authorization for an abortion, deciding that there are chances the child might be brought into the world alive.

6. In the book “Strategies to Reduce Maternal Mortality and Morbidity in Rural India.” *Insight Maternal Mortality – An Indian Facebook*, 2012, states that In October 2017, a 16-year old's dad had moved toward the Punjab and Haryana High Court to look for authorization for the end of her 26-week pregnancy that came about because of assault.

HYPOTHESIS

Null hypothesis: It is not the duty of the state to safeguard the life of the child in the womb.

Alternative hypothesis: It is the duty of the state to safeguard the life of the child in the womb after it has attained the stage of viability.

IV RESEARCH METHODOLOGY AND METHOD

The present paper was analysed through the non-doctrinal research methodology and empirical and descriptive method of research was used. The present analysis was made through random sampling method where the survey was taken from common public, professionals, etc. The sample size in the present analysis is 270 samples, the independent variable in the analysis is education and the dependent variables is reliable on the statement that whether the unsafe abortions leads to maternal mortality. The research tools used in the present paper such as cross tabulation, chi-square and case summary and graphical representation was also used to analyse the study.

PRESENT LAWS IN INDIA

1) Before 1971 (Indian Penal Code, 1860)

Before 1971, abortion was specified under Section 312 of the IPC, 1860, portraying it as purposefully "causing unnatural birth cycle". (Dutta et al.) Aside from in situations where abortion was done to spare the life of the woman, it was a culpable offense and condemned women, with whoever willfully made a woman with youngster lose confronting three years in jail or potentially a fine, and the woman benefiting of the administration confronting seven years in jail and additionally a fine. (Dutta, “Special Bulletin on Maternal Mortality in India 2007-09”)

2) The Medical Termination of Pregnancy Act, 1971.

The Medical Termination of Pregnancy (MTP) Act, 1971 provides the legal framework for making services available in India. End of pregnancy is allowed for a wide scope of conditions as long as 20 weeks of incubation as itemized underneath: (Dutta, “Special Bulletin on Maternal Mortality in India 2007-09”; Oyebo et al.)

- At the point when continuation of pregnancy is a hazard to the life of a pregnant woman or could make grave damage her physical or psychological wellness;
- When there is considerable hazard that the youngster, whenever conceived, would be truly debilitated because of physical or mental anomalies; (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at

UN”)

- At the point when pregnancy is caused because of assault (attempted to make grave damage the psychological wellness of the woman); (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN”; Oecd and OECD)
- At the point when pregnancy is caused because of disappointment of contraceptives utilized by a wedded woman or her significant other (ventured to comprise grave damage to the emotional well-being of the woman). (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN”; Oecd and OECD; Dutta, “Maternal Mortality Review: Govt. of India Action Plan”)

CASE LAWS

1. For the situation *Nikhil Datar v. Association of India* from the Bombay High Court, saying Mehta would not like to conceive an offspring (24th week) to a seriously impaired newborn child and witness its torment. (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN”; Oecd and OECD; Dutta, “Maternal Mortality Review: Govt. of India Action Plan”; Bashar et al.) The court cannot, saying the issue was of future wellbeing dangers to the unborn youngster, and not to the mother.
2. In the case of *Mr. Vijay Sharma and Mrs. Kirti Sharma vs. Union of India* AIR 2008 Bom. 29, it become held that foeticide of female toddler is a sin; such tendency offends the respect of girls. It undermines their importance. It violates women's right to life. It violates Article 39 (e) of the Constitution which states that the principle of state policy that the fitness and power of girls isn't always be abused. In today's day and age, ladies should no longer be on the mercy of a gadget that offers this critical provider as a privilege. The answers to each of those abortion-related challenges have already been suggested in the proposed amendments to the MTP Act. women who want or want an abortion will discover one manner or the opposite to get it done. The question is whether or not we are there to guide them with the rights they rightfully deserve.
3. In October 2017, a 16-year old assault survivor's dad moved toward the Bombay High Court, looking for consent for the end of his girl's pregnancy in 27th seven day stretch of growth. The High Court denied the solicitation. (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN”; Oecd and OECD; Dutta, “Maternal Mortality Review: Govt. of India Action Plan”; Bashar et al.; Robitaille and Chatterjee) The choice was made after a report displayed by a board of specialists who analyzed her, which recommended that an abortion at this stage would present potential dangers to her wellbeing. (“Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN”; Oecd and OECD; Dutta, “Maternal Mortality Review: Govt. of India Action Plan”; Bashar et al.; Robitaille and Chatterjee; Yokoe et al.)
4. In October 2017, a 16-year old's dad had moved toward the Punjab and Haryana High Court to look for authorization for the end of her 26-week pregnancy that came about because of assault. The court, following the report of the restorative board that expressed the abortion can be attempted with the understanding that it includes dangers permitted the abortion and guided the board to do the fundamental systems. (Sjöström et al.)
5. In March 2017, a 28-year-elderly person from Mumbai moved toward the Supreme Court to look for consent to end her 27-week pregnancy subsequent to finding that the embryo was experiencing Arnold Chiari Type II disorder

– a condition like the one, she saw her sibling grow up with. The Supreme Court denied her authorization for an abortion, deciding that there are chances the child might be brought into the world alive.

6. 1973 milestone judgment of the United States Supreme Court in Roe versus Wade case, in which the court held that the legislature couldn't disallow abortions in the principal trimester in light of the fact that an insignificant hazard is engaged with the end of pregnancy in this period. (Mathai)

V ANALYSIS

FREQUENCY TEST

Description: From the frequency for education is 1599, Percentage for education is 100.0 %, and finally the valid percentage is 100.0%

Description: From the above table is about the duty of the state to safeguard the life of the child in the womb. The results are Frequency is about 1599, Percentage is about 100 % and finally Valid percentage is 100%.

Description: From the above table is about the unsafe abortions lead to maternal mortality. The results are Frequency is about 1599, Percentage is about 100 % and finally Valid percentage is 100%.

CHI-SQUARE TEST

1) ***Do you think the state has the duty to safeguard the life of the child in the womb after it has attained the stage of viability***

Crosstab Count

		Do you think the state has the duty to safeguard the life of the child in the womb after it has attained the stage of viability		Total
		yes	No	
4. Educational Qualification	Illiterate	21	40	61
	Upto 12th Standard	212	103	315
	Undergraduate	444	436	880
	Post Graduate	214	129	343
Total		891	708	1599

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	64.767 ^a	3	.000

Likelihood Ratio	65.879	3	.000
N of Valid Cases	1599		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 30.44.

Findings : It is observed from the above table that the Pearson Chi Square value is 35.185 which is significant at five percent level showing that there is no significant association between age and Do you think the state has the duty to safeguard the life of the child in the womb after it has attained the stage of viability, P value is 0.000 which is less than 0.05. Thus alternative hypothesis is accepted . Thus, It is the duty of the state to safeguard the life of the child in the womb after it has attained the stage of viability.

2) ***Do you agree that unsafe abortion leads to maternal mortality?***

CrosstabCount

	Do you agree that unsafe abortion leads to maternal mortality?					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Illiterate	5	0	33	16	7	61
4. Educational Qualification Upto 12th	5	61	139	100	10	315
Standard	88	163	222	304	103	880
Undergraduate						
Post Graduate	62	56	119	99	7	343
Total	160	280	513	519	127	1599

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	138.024 ^a	12	.000
Likelihood Ratio	161.622	12	.000
N of Valid Cases	1599		

a. 1 cells (5.0%) have expected count less than 5. The minimum expected count is 4.84.

VI FINDINGS

It is observed from the above table that the Pearson Chi Square value is 35.185 which is significant at five percent level showing that there is no significant association between age and Do you agree that unsafe abortion leads to maternal mortality, P value is 0.000 which is less than 0.05. Thus alternative hypothesis is accepted. Thus, It is the duty of the state to safeguard the life of the child in the womb after it has attained the stage of viability.

VII DISCUSSION

Generally maternal mortality in developing countries are occur due to hemorrhage, sepsis, unsafe abortion, eclampsia, and obstructed labour, but the researcher specifically deals with unsafe abortions in India can prompt an various complexities, including sepsis, drain, genital and stomach injury, tetanus, punctured uterus, and poisoning from abortifacient medications(Mathai;Cohen) . These inconveniences have been assessed to result in any event 70,000 maternal mortality for each year, representing at any rate 13 percent of all maternal mortality . Also, the treatment of abortion inconveniences devours a disproportional portion of constrained socialinsurance assets in creating nations .(Mathai; Cohen; Fawcus) For instance, in Bolivia in the late 1980s, treatment of abortion intricacies was accounted for to expend 60 percent of national spending for obstetric and gynecological consideration .The World Health Organization esteems unsafe abortion one of the most effortless preventable reasons for maternal mortality.(Mathai;Cohen; Fawcus; Rogo)

Three women have as of late documented a PIL in the Supreme Court of India, requesting that any contraceptive decisions made by a woman in the main trimester (as long as 12 weeks of pregnancy) must get total security of the law.(Mathai; Cohen; Fawcus; Rogo; Stevens)They have submitted under the steady gaze of the Hon'ble court to pronounce certain arrangements of the Medical Termination of Pregnancy Act, 1971, (MTP Act), as unlawful as they limit a woman from applying her major right to regenerative decision. As indicated by the candidates, Sections 3(2)(a), 3(2)(b), Explanation 3 to 3(2); Sections 3(4)(a), 3(4) and 5, are oppressive and violative of individual freedom and real self-rule of women. Area 3 of the MTP Act permits the end of pregnancyaslongas12weeksofdevelopmentby anenlisted therapeutic specialist, in the eventthat he/she accepts that the continuation of the pregnancy would include a hazard to the life of the pregnant woman or of grave damage to her physical or emotional well-being. 500,000 women kick the bucket every year in pregnancy and labor, of which 100,000-200,000 are assessed to be the aftereffect of an inadequately performed abortion. Lacking abortion strategies likewise add to future conceptive issues.(Mathai; Cohen; Fawcus; Rogo; Stevens; Jarlenski et al.)40-60 million lawful and unlawful abortions are assessed to be performed yearly. Latin American appraisals of maternal passings from illicit abortion add up to half. Ongoing proof from urban territories in Africa shows a present issue with unlawful abortion where none existed 10 years back. Counteractive action of undesirable pregnancies is critical to lessening legitimate and unlawful abortions and maternal mortality. (Mathai; Cohen; Fawcus; Rogo; Stevens; Jarlenski et al.; Ahman et al.)The issue of abortion mortality in creating nations would be best tended to at

the degrees of essential counteractive action, optional anticipation, and tertiary aversion. (Mathai; Cohen; Fawcus; Rogo; Stevens; Jarlenski et al.; Ahman et al.; Johnston) Essential pre-vention incorporates the counteractive action of undesirable pregnancies that lead to actuated and unsafe abortion, auxiliary preven-tion includes the utilization of sheltered and compelling techniques for the end of undesirable pregnancy, and tertiary preven-tion envelops the brief and successful administration of difficulties that lead to mortality (Mathai; Cohen; Fawcus; Rogo; Stevens; Jarlenski et al.; Ahman et al.; Johnston; Sharma and Pradhan). Every one of the three sorts of avoidance must be made to work in show before any important outcomes can be acquired in diminishing maternal mortality related with prompted abortion in creating nations. (Mathai; Cohen; Fawcus; Rogo; Stevens; Jarlenski et al.; Ahman et al.; Johnston; Sharma and Pradhan; Lancet and The Lancet)

VIII RECOMMENDATIONS

1. Each delivery, including those that occur in the home, ought to be helped by a gifted birth orderly (doctor, or medical attendant) who has been prepared to capability in fundamental methods for a perfect and safe delivery, and acknowledgment and the board of delayed work, disease, and drain. Where vital, the birth orderly ought to likewise be set up to settle and quickly elude the mother to an office giving basic obstetric consideration.
2. Postpartum consideration is basic during the initial hardly any hours after birth and significant all through the main month. For the mother, such care ought to accentuate the counteractive action, opportune acknowledgment, and treatment of contamination; postpartum discharge; and intricacies of hypertensive sickness of pregnancy.
3. All women ought to be screened for emotional well-being issues previously, during, and after pregnancy. Screening all women brings about more women getting referrals to get to the administrations important to address their emotional well-being needs.
4. Forestalling unintended pregnancy, giving better access to medicinal services, and changing abortion laws to enable administrations to be transparently given can diminish the pace of abortion-related bleakness and mortality.
5. Restrictive laws: The laws should restrict abortions in certain cases especially when abortions made for unreasonable cases. Any woman with an unwanted pregnancy who cannot access safe abortion is at risk of unsafe abortion.
6. The state to provide availability of medicines at low cost for the women who are under below poverty line. Women living in low-income countries and poor women are more likely to have an unsafe abortion.

IX CONCLUSIONS

Thus, in order to prevent such maternal mortality and unsafe abortions, abortions from unintended pregnancies it is the duty of the state to safeguard the life of the child in the womb after it has attained the stage of viability. Around the world, 5 million women are hospitalized every year for treatment of abortion-related confusions, and abortion-related passings leave 220,000 youngsters motherless. The wide hole between MMRs in created nations and creating nations, where most by far of maternal passings happen, proposes that much should be possible to

improve maternal endurance. The two focal, associated components of any procedure to improve maternal wellbeing are the arrangement of talented help for each delivery and access to basic obstetric consideration for confounded cases. Endeavors to improve maternal results could be enormously fortified through projects of antenatal and postpartum consideration concentrated on the avoidance and acknowledgment of entanglements of pregnancy and labor. Considerable decrease of maternal mortality and horribleness will require long haul interest in network instruction and family arranging and, at last, the strengthening of women.

REFERENCES

1. Ahman, Elisabeth, et al. *Unsafe Abortion: Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2000*. 2004.
2. Bashar, Mohammad Abu, et al. "Unsafe Abortions in India: Removing the Bottlenecks." *International Journal of Medicine and Public Health*, vol. 8, no. 1, 2018, pp. 42–44, doi:10.5530/ijmedph.2018.1.9.
3. Cohen, Jake. "Unsafe Motherhood: Mayan Maternal Mortality and Subjectivity in Postwar Guatemala." *Berry, Nicole S. Social Anthropology*, vol. 21, no. 1, 2013, pp. 94–95, doi:10.1111/1469-8676.12004_1.
4. Dutta, Dilip. "Maternal Mortality Review: Govt. of India Action Plan." *Insight Maternal Mortality – An Indian Facebook*, 2012, pp. 24–24, doi:10.5005/jp/books/11596_4.
5. ---. "Special Bulletin on Maternal Mortality in India 2007-09." *Insight Maternal Mortality – An Indian Facebook*, 2012, pp. 20–20, doi:10.5005/jp/books/11596_3.
6. ---. "Strategies to Reduce Maternal Mortality and Morbidity in Rural India." *Insight Maternal Mortality – An Indian Facebook*, 2012, pp. 189–189, doi:10.5005/jp/books/11596_20.
7. "Ensure Safe Abortions to Fight Maternal Mortality, Say Humanists at UN." *Human Rights Documents Online*, doi:10.1163/2210-7975_hrd-9816-20180009.
8. Fawcus, Susan R. "Maternal Mortality and Unsafe Abortion." *Best Practice & Research Clinical Obstetrics & Gynaecology*, vol. 22, no. 3, 2008, pp. 533–48, doi:10.1016/j.bpobgyn.2007.10.006.
9. Jarlenski, Marian, et al. "State Medicaid Coverage of Medically Necessary Abortions and Severe Maternal Morbidity and Maternal Mortality." *Obstetrics & Gynecology*, vol. 129, no. 5, 2017, pp. 786–94, doi:10.1097/aog.0000000000001982.
10. Johnston, Heidi Bart. *Abortion Practice in India: A Review of Literature*. 2004.
11. Lancet, The, and The Lancet. "Unsafe Abortions: Eight Maternal Deaths Every Hour." *The Lancet*, vol. 374, no. 9698, 2009, p. 1301, doi:10.1016/s0140-6736(09)61799-2.
12. Mathai, Matthews. "Preventing Unsafe Abortion in India." *The Indian Journal of Medical Research*, vol. 122, no. 2, Aug. 2005, pp. 98–99.
13. Oecd, and OECD. *Child Premature Mortality due to Unsafe Water Supply and Sanitation: Baseline , 2010-2050*. 2012, doi:10.1787/env_outlook-2012-graph95-en.
14. Oyeboode, T., et al. "P617 Pattern and Contribution of Unsafe Abortions to Gynaecological Emergencies and Maternal Mortality - Five Year Experience of a Nigerian Teaching Hospital." *International Journal of*

- Gynecology & Obstetrics*, vol.107, 2009, pp. S587–88, doi:10.1016/s0020-7292(09)62107-x.
15. Robitaille, Marie-Claire, and Ishita Chatterjee. “Sex-Selective Abortions and Infant Mortality in India: The Role of Parents’ Stated Son Preference.” *SSRN Electronic Journal*, doi:10.2139/ssrn.2557224.
 16. Rogo, K. O. “Editorial: Unsafe Abortion and Maternal Mortality: Is Africa Prepared to Face the Reality?” *East African Medical Journal*, vol. 81, no. 2, 2004, doi:10.4314/eamj.v81i2.9126.
 17. Sharma, Palak, and Manas Ranjan Pradhan. “Abortion Care Seeking in India: Patterns and Predictors.” *Journal of Biosocial Science*, Sept. 2019, pp. 1–13.
 18. Sjöström, Susanne, et al. “Medical Students Are Afraid to Include Abortion in Their Future Practices: In-Depth Interviews in Maharashtra, India.” *BMC Medical Education*, vol. 16, Jan. 2016, p. 8.
 19. Stevens, Marion. “Maternal Mortality–HIV and Unsafe Abortion—a Silent Epidemic.” *Agenda*, vol. 26, no. 2, 2012, pp. 44–50, doi:10.1080/10130950.2012.700219.
 20. Yokoe, Ryo, et al. “Unsafe Abortion and Abortion-Related Death among 1.8 Million Women in India.” *BMJ Global Health*, vol. 4, no. 3, May 2019, p. e001491.
 21. Petrov, P.I., Averyanov, S.V., Lazarev, S.A., Iskhakov, I.R., Galiullina, M.V. Relationship of handwriting to work-related diseases and work posture in dentists (2018) *International Journal of Pharmaceutical Research*, 10 (4), pp. 725-729.
 22. Yamuna, B., & Girija, T. (2015). Enhanced Fully Distributed Load Rebalancing in Cloud Computing. *International Journal of Advances in Engineering and Emerging Technology*, 7(10), 615-626.
 23. Priya, P., & Mercy Gnana Rani, A. (2015). An ANT Based Intelligent Routing Algorithm for MANET. *International Journal of Advances in Engineering and Emerging Technology*, 7(10), 627-639.
 24. Tabin, J., Sini, X., Chitra, S., Cherian, V.I., Sreedharan, S. PSO Based Optimal Placement and Setting of FACTS Devices for Improving the Performance of Power Distribution System (2011) *Bonfring International Journal of Power Systems and Integrated Circuits*, 1, pp. 60-64.
 25. Silvia Priscila, S., Hemalatha, M. Heart Disease Prediction Using Integer-Coded Genetic Algorithm (ICGA) Based Particle Clonal Neural Network (ICGA-PCNN) (2018) *Bonfring International Journal of Industrial Engineering and Management Science*, 8 (2), pp. 15-19.