International Journal of Health Sciences
March 2019, Vol. 7, No. 1, pp. 1-6
ISSN: 2372-5060 (Print), 2372-5079 (Online)

Published by American Research Institute for Policy Development
DOI: 10.15640/ijhs.v7n1a1
URL: https://doi.org/10.15640/ijhs.v7n1a1

# Impact of Clinical Epidemiological Surveillance and Assisted Mediation by Medical Students on Maternal Mortality at a Health Center in Hidalgo, Mexico.

**Aguirre Rembao Lorenzo Octavio[1], Ruvalcaba Ledezma Jesús Carlos[2*], Aguirre ÁvilaAna Lilia[3], Reyes Espinoza Ixchel Suyapa[4], Cruz Cortés María Elena[4], Reynoso Vázquez Josefina[5].**

**Abstract**

Maternal mortality represents an indicator of the quality of human health in regard to a mother and a newborn, it is a real public health problem and therefore a proposal to solve or mitigate its negative impact was made. **Objective.** Establishing a proposal based on clinical epidemiology and assisted mediation by medical students in maternal care at La Providencia health center in Mineral de la Reforma, Hidalgo, Mexico**. Material and methods**. The present work is methodologically based on an epidemiological, longitudinal descriptive observational design, through the clinical epidemiological surveillance carried out in the health institution and the mediation assisted by students of the fifth semester of the academic area of medicine of UAEH. Constant assisted mediation to pregnant women via domiciliary where elements of health promotion are offered during the visit-follow-up.**Results**Over 5 years of follow-up under a proposal of a model that will soon become known in the medical-academic field, the impact of clinical epidemiological surveillance as a duo with assisted mediation has been positive, registering only one maternal death in this clinic. **Conclusion**. The proposal of this clinical-pedagogical model intervenes in the reduction of the risk of maternal mortality and therefore represents a real and feasible alternative for maternal mortality as a public health problem.

**Keywords**.clinical epidemiological surveillance, assisted mediation, maternal mortality, education-follow-up

## Introduction

Currently, maternal mortality represents a serious public health problem in developing countries, although its causes are mostly preventable, it is known that in the countries with the lowest economic development there are the highest numbers of maternal deaths; It is poor women who are at a higher risk of dying from pregnancy, childbirth and puerperium.[1] Factors such as ignorance, extreme poverty, lack of education and geographical aspects are the determining factors that generate this serious problem that is currently being experienced.[1] In the world, 800 women die every day from preventable causes related to pregnancy and childbirth, 99% of these cases occur in developing countries.[1] Reducing maternal death rates has become an urgent necessity, because they are women who die giving life in a century with an important scientific and technological development; hence a new public health policy is necessary.[1] The ratio that exists in developed countries in respect to risk of maternal deaths is 1 in 2 800 women, but in developing countries it is 1 in 61 women.

[1]Medical area of Medicine in [ICSA-UAEH]Institute of Health Sciences-Autonomous University of the State of Hidalgo, Mexico.PhD Student in Education at España-México University/ Universidad España-México, México.
[2] Academic Area of Medicine, Master's Degree in Public Health and Doctorate in Food Sciences and Human Health.[ICSa-UAEH].Institute of Health Sciences - Autonomous University of the State of Hidalgo, Mexico.[3] MexicanInstitute of Social Security [IMSS] Hidalgo, Mexico.
[3] MexicanInstitute of Social Security [IMSS] Hidalgo, Mexico.
[4] Students of the Master's degree in Public Health [ICSA-UAEH] Institute of Health Sciences-Autonomous University of the State of Hidalgo, Mexico.
[5] Academic area of Pharmacy, Master's degree in Public Health and [ICSA-UAEH].Institute of Health Sciences - Autonomous University of the State of Hidalgo, Mexico.

In Latin America and the Caribbean 22,000 deaths occur annually, and Mexico ranks eighth among Latin American countries, the number of maternal deaths accounts for 1 757 annually.[2] The main causes of maternal mortality in the developing regions are: hemorrhage and hypertension, which together are responsible for half of all the deaths of pregnant women and first-time mothers. Other direct causes, such as obstructions at delivery, complications due to anesthesia, caesarean section (C-section), and pregnancy, account for 11% of all deaths during this stage.[3-5] Indirect causes such as malaria, HIV / AIDS and heart disease correspond to 18% of maternal deaths. Most of these deaths are avoidable through various interventions administered by a well-trained health professional with adequate equipment and supplies.

In our country, thanks to the RAMOS information system, each case of maternal death is reviewed; Thanks to it, with the Maternal Deaths Registry (MMR) system, the deaths caused at present have been concentrated in six states in Mexico, which are the State of Mexico, Veracruz, Mexico City, Chiapas, Oaxaca and Guerrero. [5] Public health surveillance of maternal mortality is an important basis for decision making regarding public policies or the design of interventions that allow work to eliminate barriers to health services. This, in turn, is a fundamental tool for monitoring the problem. The objective of epidemiological surveillance of maternal mortality is the identification of determinants in deaths that serve as a guide in decision-making.[3] Epidemiological surveillance is understood as the systematic and continuous observation of the frequency, distribution and determinants of health events and their trends in the population, where three characteristics stand out: continuous and systematic process, trend and scrutiny process and a process of comparison and interpretation of the data in order to spot changes in the health in the population. [4]

In turn, this process consists of the following stages: [4]

- Case identification: report of deaths in women of reproductive age, notification of confirmed maternal deaths, notification of maternal deaths from other sources.
- Data collection: family interview, verbal autopsy and clinical care of the deceased woman.
- Analysis of information: case summary and technical report of maternal death.
- Recommendations and actions: action plan.
- Evaluation and improvement actions: reports and outputs, indicators of monitoring and evaluation of the system.

COFEPRIS, within its powers, has implemented strategies to strengthen the health conditions of public and private facilities that provide obstetric and toco-surgical care services.
Among the main strategies it has establishedare:[2]
Strengthening the sanitary control instruments to objectively evaluate the structure and processes of the areas of outpatient and hospitalization, emergencies, tocology, tocosurgery, intensive care, blood banks, transfusion services and ambulances; as well as auxiliary diagnosis services.

– Applying "el Acta de Verificación Sanitaria única" Sanitary verification checklist", aimed at maternal death risks, with precise description of the points to be verified and analysis of the clinical file of the case.
- Carrying out the sanitary verification and opinion of the sanitary condition of the establishments that have previously attended the case of maternal death.
- Analyzing clinical records of cases of maternal death in establishments where maternal death has occurred, as well as those in which prior attention has been provided.
- Improving the registry of health verification activities aimed at maternal death that allows monitoring of sanitary risk identification at health centers.[2]

According to reports from the Observatory of Maternal Mortality in Mexico, data corresponding to national figures, in 2015, the Maternal Mortality Ratio was 36.4%. Of the deceased women, 10.9% were women under 19, 11.4% did not have social security or health coverage 53.7% had popular insurance, and 24.4% had health insurance from IMSS, ISSSTE, PEMEX, SEDENA or SEMAR. 19.2% of the deceased women did not carry any type of prenatal care.

Meanwhile, in that same year in the state of Hidalgo, the ratio of Maternal Mortality was 36.2%. Where 11.1% were under the age of 19, 77.8% had popular insurance and 11.1% did not have prenatal care during pregnancy, while 50% of the deceased women had more than five prenatal visits.[5] Maternal deaths must be notified as part of the public health surveillance system. As we know, pregnancy, childbirth and puerperium can turn into a fatal event, if the conditions of subsistence related to motherhood are not adequate.[6,7]

A maternal death has direct implications for the family and society. It is the result of the association of socio-economic factors, education, reproductive behaviors, access and health services quality.[7-9]

"Maternal death is defined as any death of a woman occurred during pregnancy, delivery or 42 days after the termination of pregnancy, for causes related or aggravated by it, but not by accidental or incidental causes." [10, 11]It is important to highlight what Irma Romero refers to in 2010 in the literature review on sociocultural factors, "Maternal death is much more than a public health problem and a demographic variable. It is perhaps the most sensitive reflection of the global circumstances of women's lives, and the role they play in society, the role it plays in them, the search for motherhood, as well as the social contradictions related to the exercise of their reproductive capacities "[12].

Biomedicine and social sciences in health intervene in the approach to maternal mortality, when a woman dies during childbirth or puerperium, social, cultural, symbolic and emotional processes are evident within the family and the community. In this context, a maternal death becomes a complex process that is measured through the maternal death ratio calculation, which translates into a public policy that accounts for the problems of access to health services, quality and how opportune the attention it provides is, the capacity of its technical and administrative staff, as well as the infrastructure it has, as well as a set of actions to which the health sector is obliged in the framework of public policy and its programs of attention.

As a result maternal mortality, from the point of view of public health is a complex object of study, from the historical aspects that take part in societies and social groups that are determined by lifestyles.[13] Combined with the risk factors from which the biological, hereditary, psychological and emotional aspects are related, and those social determinants that influence the economic and cultural situation, unfavorable environmental and behavioral conditions. [11] In addition, other factors have an influence on the "trajectory of care", if women have access barriers of an economic, geographical or cultural nature to medical services, and in addition to the problems of the health system, in terms of coverage and real access to health services for a large number of women residing in dispersed communities in the country.[14]Pisanty states that when all these factors and adverse living conditions are intertwined, an inequality of power is identified, which is defined in an expression of historical and socially determined inequality. In this sense, in his article Pisanty refers that Freyermuth describes three types of inequalities that are related to determine maternal mortality:

It is said that maternal mortality and morbidity are recognized as a human rights issue, when a death or disability occurs in a woman, it is identified as the result of the extreme disadvantage faced by many indigenous, poor, vulnerable , marginalized or mistreated women. In this sense Gladis Acosta, considers maternal deaths as a violation of human rights and not only as a health problem, with this statement Rebeca Cook proposes a classification for each maternal death according to violated human rights:

1. The violation of the right to life and personal security
2. The disintegration of a family life
3. Violation of the right to health care

Systematic violation of the rights to equality and non-discrimination

**Objective**

Establishing a proposal based on clinical epidemiology and assisted mediation by medical students on maternal mortality at La Providencia health center in Mineral de la Reforma,

**Material and methods.**

The present work is methodologically based on an epidemiological, longitudinal descriptive observational design, through the clinical epidemiological surveillance carried out in the health institution and the mediation assisted by students of the fifth semester of the academic area of medicine of the UAEH, for which follow-up of those pregnant women with whom mediation was carried out was implemented and constant follow-up via domicilary where elements of health promotion were provided during the follow-up visit.

The information collected contributed elements to calculate causal association measures and also make annotations in terms of assisted mediation. The EPI-INFO-WINDOWS software was used for calculations of causal association measures.

**Results and Discussion**

The case-fatality rate among pregnant women living in "La Providencia" neighborhood located in "Mineral de la Reforma", Hidalgo, during the 2013-2016 period was 0, that is, of every 100 pregnant women assigned to the health center of La Providencia, none was at imminent risk of dying. When comparing the mortality rate for women from a city called Pachuquilla, it was detected that the case-fatality rate for pregnant women living in "Pachuquilla" a city in Mineral de la Reforma Hidalgo, was 3% in the 2013-2016 period, meaning that in the analysis period, 3 pregnant women were in imminent risk of dying. The rate ratio was equal to 11.73, that is, that there is a case fatality rate 12 times lower in pregnant women assigned to La Providencia health center La Providencia than in pregnant women assigned to the Pachuquilla health center. The risk of dying in pregnant women assigned to the La Providencia health center is 12 times lower than in women assigned to the the Pachuquilla health center.

Rate ratio 3 / 0.25575 = 11.73

Derived from the fact that the prevalence ratio(PR) was equal to 14.5, this means that there are 15 times less probability of occurrence of maternal death in pregnant women assigned tocenter La Providencia healthcenter than in pregnant women assigned to the Pachuquilla health center. The odds ratio was 12, that is, the probability of dying in pregnant women affiliated to the La Providencia health center for complications is 12 times lower than the probability of dying, in contrast to women affiliated to the Pachuquilla health center.

ODDS RATIO: **3 / 0.2557544757033248 = 11.73**

The rate ratio was 11.73, which means that there is a case-fatality rate 12 times lower in pregnant women assigned to La Providencia health center than in pregnant women assigned to the Pachuquilla health center. Maternal deaths that occur in the Pachuquilla health center could be reduced by 91% if the measures contained in NOM 007 were applied to 100% of pregnant women and likewise it could be said that the follow-up "Assisted Mediation" may be part ofthis result. The norm, by itself, would not cause this effect, it would be necessary to assume the commitment to apply the norm and the effort of assisted mediation.

According to the specific rate per year, it was detected that the case-fatality rate in pregnant women living in La Providencia was 1% in 2013, that is, out of every 100 pregnant women assigned to La Providencia health center, 1 was at risk of dying at the time the intervention was initiated, for 2014, 2015 and 2016, years in which the targeted intervention was developed, the case-fatality rate was reduced to 0, that is, of every 100 pregnant women assigned to La Providencia health center, none had the risk of dying. These results in terms of maternal mortality allow us to make a series of observations, among which stands out prenatal control, it continues to be one of the causes that can have a negative impact, especially if this is not carried out by the pregnant woman , but in addition to this let us note that we onlymake reference to the action of epidemiological surveillanceand the clinical part.In no waydid we consider the intervention of health promotion, the educational part regarding the importance of attending prenatal care seems absent, in the state of Hidalgo 77% of the women who have died as indicated in the section of the introduction of this document had popular insurance.

Although they had popular insurance, the percentage is very high and can be an indicator that the mortality rate is due to not only lackinghealth care but also other factors. It is also urgent to work on health education, even onincreasing the level of schooling in those social groups where socio-economic vulnerability, inaccessibility of health services, causing them problems by not having been formally educated in a pedagogical method that haves them think and ponder about an action like attending prenatal care. Therefore, we decided to design follow-up strategies for pregnant women, with the idea that by monitoring the state of their pregnancy, of present or absent risk factors, of living conditions, and above all under the construction of a constructivist pedagogical model that has been called as Assisted Mediation, this leads to the point that until now in the health center where the impact of clinical epidemiological surveillance and where women attend prenatal care,no maternal death has been recorded.

Mediating means reflecting upon and acting for women to make the decision to attend prenatal care, it involves making them reflect upon the importance of the care they have to project their safety, their well-being and their newborns'. This allows, therefore, to venture to think and to point out that the role of a mediator of medical students guided by their professor during their preparationas a student is significant, and critical didactics states "If I do it, I learn", they learn about this stage a woman goes through and learn to be professionals in medicine with a more human, more social approach and to promote improvement in the health status of mothers and increase the likelihood of success at the end of pregnancy, delivery and puerperium.

When referring to assisted mediation, emphasis is placed on the construction of a concept that in public health and even among the paradigms of education had apparently not been built, this research provides such conceptual construction and for the generation of a clinical pedagogical proposal envisioning the reduction of maternal mortality, this model would be useful not only for the state of Hidalgo, but, also for other contexts at the local, regional, national and international levels. It should be noted that mediating means guiding, guiding towards self-reflection-learning, that is, a self-constructivism that brings elements that make one think about the solution, the care needed to achieve good resultsregarding their pregnancy, delivery and puerperium. [Construction, Ruvalcaba Ledezma Jesús Carlos, 2018]. This construction arises from the search of wanting to link the clinical part with the educational one, but with the intent of rescuing the mother and her new born from the statistics indicated as maternal mortality. It emerges as a need and / or alternative to what has already been done from public health, although the future is uncertain for those families who every day swell the rows of poverty, marginalization and hunger where surely assisted mediation will continue to improve social conditions in our country, not from the political discourse, but in reality, where effectively the purchasing power providesthe mother and the newborn with nutrients, words do not fill a stomach, they taste bitter when further from the truth, then it is essential to work with co-responsibility, 8,9 that is, in pursuit of the common good between government and society, by then surely assisted mediation in conjunction with clinical epidemiological surveillance willbear fruit at local, national and international levels.

## Conclusions

The proposal of this clinical-pedagogical model within the framework of the concept of strategic alliances [Health-Education] has a positive impact on reducing the risk of maternal mortality and hence represents a real and feasible alternative to reduce maternal mortality as a real public health problem. The results obtained allow us to establish a clinical-pedagogical proposal as a model that will allow us to reduce the problem of maternal mortality.

## Acknowledgements

I would like to thank each and every pregnant woman for their collaboration in monitoring their pregnancy, the medical students for their hard work of monitoring during this research project and similarly the health authorities for their collaboration in the problem of maternal mortality in Mexico and the world.

## Conflict of interests

The authors declare that there is no conflict of interest for the publication of this article.

## Referencias

Sistema de Vigilancia Epidemiológica de Mortalidad Materna (SVEMM) [Internet]. Portal. 2018 [citado 19 August 2018]. Recuperado de http://data.salud.cdmx.gob.mx/portal/index.php/programas-y-acciones/10-ssp/42-sistema-de-vigilancia-epidemiologica-de-mortalidad-materna-svemm

Dirección General de Epidemiologia. Informe Semanal de Vigilancia Epidemiológica. México; 2014.

Briones Garduño J. Mortalidad Materna. 1era. Edición. México: Alfil; 2013.

Yáñez Velazco, LB, Bernal Alcántara, DA, Alcázar Álvarez, LS, Ramírez Cázares, DP, Tena Tamayo, C. Características epidemiológicas de la mortalidad materna obstétrica directa en derechohabientes del ISSSTE en México. Revista de Especialidades Médico-Quirúrgicas [Internet]. 2011;16(2):89-96. Recuperado de: http://www.redalyc.org/articulo.oa?id=47319326007

México O de MM en. Numeralia 2015 Mortalidad Materna en México. 2015. Recuperado de: http://omm.org.mx/images/stories/Documentos%20grandes/Numeralia_2015_5mar.pdf

Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM, Lopez AD, Lozano R, Murray CJ. Maternal mortality for 181 countries, 1980-2008: systematic analysis of progress towards. Millenium Development Goal 5. Lancet. 2010;375(976):1609-23

Rojas A, Cogollo M, Miranda J, Ramos E, Fernández J, Bello A. Morbilidad materna extrema en cuidados intensivos obstetricos Cartagena (Colombia) 2006-2008. Rev Colomb Obstet Ginecol, 2011; 62:131-140

Cortés-Ascencio SY; Ruvalcaba Ledezma JC. La corresponsabilidad en salud pública. *Viva Salud-INSP*.. 2011; 1 41-43.

José A. Rojas, M.D.*, Marysabel Cogollo, M.D.**, Jezid E. Miranda MD*., Enrique C. Ramos, M.D.**, Juan C. Fernández, M.D.***,Ana M. Bello MD*. MORBILIDAD MATERNA EXTREMA EN CUIDADOS INTENSIVOS OBSTÉTRICOS. CARTAGENA (COLOMBIA) 2006 - 2008. ; Recuperado de: http://www.scielo.org.co/pdf/rcog/v62n2/v62n2a03.pdf

Selene HMM, Carolina HS, Laura LGA, Norma BL, Iracema IV, Díaz MLC, et al. Values-attributes needed to make Decisions in Health, from the Essential Functions of Public Health. Am J Public Heal Res Vol 5, 2017, Pages 154-158 [Internet]. 2017 Oct 19 ;5(5):154–8.Recuperado de: http://pubs.sciepub.com/ajphr/5/5/3/

Arámburu, M. E. Metodología para calcular la razón de mortalidad materna: un mejor registro y un indicador deficient. *Revista Internacional de Estadística y Geografía*, 2012; 24-69.

Irma Romero-Pérez, G. S.-M.-L.-C. Muerte materna: una revisión de la literatura sobre factores socioculturales . *Perinatologia y Reproducción Humana*, 2010; 42-50.

Pisanty-Alatorre, J. Inequidades en la mortalidad materna en México: un análisis de la desigualdad a escala subestatal.*Salud Publica México*, 2017; 639-649.

Cantón, S. B. Algunas consideraciones en torno a la mortalidad materna, el indigenismo, la marginación y los derechos humanos. *Boletin del Centro Colaborador de Calidad y Seguridad en el paciente*. 2017.