

COST-EFFECTIVENESS OF MAMMOGRAPHY AS A SCREENING TEST FOR EARLY DETECTION OF BREAST CANCER

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INTRODUCTION

Adverse Events (AEs) are unintentional damages caused to a patient in the course of medical care. Up to 70% of patients with AEs suffer mild or transitory disabilities as a result, but in 3% of cases the disabilities were permanent and in 14% of patients they contribute to death. Although there is no data at this level of detail in Plastic Surgeries (Esthetic or Reconstructive), there is no reason to think that they are different, taking into account that the incidence of AEs in these surgeries is of the order of 0.3% to 0.8%. Although the definition of AEs implies the presence of "unintentional" damage, i.e. "accidental", it has been considered that, in retrospect, between 37% and 51% of AE's are potentially preventable. The study of the frequency and causes of AEs contributes to improve their prevention.

OBJECTIVES

To estimate the cost-effectiveness of mammography as a screening method for the early detection of breast cancer in women affiliated with a Health Promotion Entity (EPS) in Antioquia (Colombia)

METHODS

A Markov state transition model was developed to simulate, given the outcome of mammographic screening, the diagnosis of breast cancer, five-year survival and the cost of treatment in women who received this test for early detection of breast cancer. The benefit of mammography was modeled by assuming a stage change, in which cancers in screened women were more likely to be diagnosed at an earlier stage of the disease. We estimated the costs of this screening strategy and the potential impact on mortality, given the results of the model.

RESULTS

The evaluation resulted in a total of 742 Life Years Saved (LYS) at a cost per LYS of COP \$20,233,400.43 (USD \$6,996.55), which represents 1.1 times the Per Capita Gross Domestic Product (GDP-PC) of Colombia in the same year, so for this study screening mammography is considered a "Cost-Effective" strategy.

Age group	Cost per LYS
07. 25-29 años	-
08. 30-34 años	-
09. 35-39 años	-
10. 40-44 años	-
11. 45-49 años	-
12. 50-54 años	175.655,92
13. 55-59 años	229.817,05
14. 60-64 años	366.207,76
15. 65-69 años	50.879,45
16. 70-74 años	-
17. 75-79 años	-
18. 80 y más años	-

Ítem	Value
Life Years Saved	742,00
Cost per LYS (USD)	6.996,55
Ratio Cost per LYS / GDP-PC	1,10

CONCLUSIONS

The results obtained suggest that mammography for Colombian women between the ages of 50 and 69 is currently a cost-effective strategy for the Health System, in the early detection of breast cancer, based on the threshold established by the WHO..

REFERENCES

- Tupper R, Holm K. Screening mammography and breast cancer reduction: Examining the evidence. J Nurse Pract [Internet]. 2014;10(9):721–8. Disponible en: <http://dx.doi.org/10.1016/j.nurpra.2014.07.018>
- Sanabria A, Romero J. La mamografía como método de tamizaje para el cáncer de seno en Colombia. Cirugía (Bogotá) [Internet]. 2005;20(3):158–65. Available at: <http://www.encolombia.com/medicina/cirugia/Ciru20305-mamografia.htm>
- Greif JM. Mammographic screening for breast cancer: An invited review of the benefits and costs. Breast [Internet]. 2010;19(4):268–72. Disponible en: <http://dx.doi.org/10.1016/j.breast.2010.03.017>
- Olsen O, Gotzsche P. Screening for breast cancer with mammography (Review). Cochrane Database Syst Rev. 2003;(6).
- Biller-Andorno N, Jüni P. Abolishing Mammography Screening Programs? A View from the Swiss Medical Board. N Engl J Med. 2014;370(21):1061–3.
- Smith RA, Cokkinides V, Eyre HJ. American Cancer Society guidelines for the early detection of cancer, 2006. CA Cancer J Clin [Internet]. 2008;56(1):11-25; quiz 49-50. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/16449183>
- Nguyen CP, Adang EMM. Cost-effectiveness of breast cancer screening using mammography in Vietnamese women. PLoS One. 2018;13(3):1–17.
- Alcántara F, Contla D, González C, Ordaz LL, Arredondo A, González1 C, et al. Análisis de costo-efectividad para la detección oportuna de cáncer de mama. 2015;14(1):33–7. Disponible en: <http://www.redalyc.org/pdf/4578/457844964006.pdf>
- Valencia-Mendoza A, Sánchez-González G, Bautista-Arredondo S, Torres-Mejía G, Bertozzi SM. Costo-efectividad de políticas para el tamizaje de cáncer de mama en México. Salud Publica Mex. 2009;51(SUPPL.2):296–304.
- Barfar E, Rashidian A, Hosseini H, Nosratnejad S, Barooti E, Zندهdel K. Cost-effectiveness of mammography screening for breast cancer in a low socioeconomic group of Iranian women. Arch Iran Med. 2014;17(4):241–5.
- Fryback DG, Stout NK, Rosenberg MA, Trentham-Dietz A, Kuruchittham V, Remington PL. The Wisconsin Breast Cancer Epidemiology Simulation Model. J Natl Cancer Inst Monogr. 2006;53726(36):37–47.
- U.S. Preventive Services Task Force. Screening for Breast Cancer: U.S. Preventive Services Task Force Recommendation Statement. Ann Intern Med [Internet]. 2009;151(10):716–26. Disponible en: <https://annals.org/aim/fullarticle/745237/screening-breast-cancer-u-s-preventive-services-task-force-recommendation>
- Aibar L, Santalla A, López-Criado MS, González-Pérez I, Calderón MA, Gallo JL, et al. Clasificación radiológica y manejo de las lesiones mamarias. Clin Invest Ginecol Obstet. 2011;38(4):141–9.

