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An Innovative Initiative for Cost Reduction in the Central Sterile Supply Department of a Tertiary Care Hospital

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Abstract- This manuscript was prepared from the uploaded poster. Some numerical values may need verification against the original study dataset before journal submission.

I. INTRODUCTION

The Central Sterile Supply Department (CSSD) is essential for infection prevention. Steam sterilizers consume large quantities of reverse osmosis (RO) water for vacuum generation. This quality improvement project evaluated reuse of vacuum pump water using a holding tank to reduce water consumption and costs.

II. OBJECTIVES

To evaluate the cost benefits of reusing water for the vacuum-generating pump in a steam sterilizer.

III. METHODS

Retrospective quality-improvement study conducted in the CSSD of M.S. Ramaiah Memorial Hospital, Bengaluru, over six months (May–October 2024). A 120-L stainless-steel holding tank with temperature and level sensors was installed to collect and recirculate water used for vacuum generation. Pre- and post-intervention water consumption and costs were compared.

IV. RESULTS

The CSSD performs approximately 22 sterilization cycles daily using three steam sterilizers. The Pharmalab sterilizer consumes about 360 L RO water per cycle. Following installation of the holding tank, annual water consumption decreased from approximately 3,110,400 L to 28,800 L, with annual water-cost reduction from ₹311,040 to ₹2,880, corresponding to annual water savings of about 3,081,600 L and cost savings of approximately ₹308,160. Equipment wear and maintenance requirements were also reduced.

V. DISCUSSION

Recycling water used for vacuum generation substantially improved resource utilization while maintaining sterilization performance. The intervention supports sustainable hospital operations and can be replicated in similar CSSD settings.

VI. CONCLUSION

A simple holding-tank modification significantly reduced RO water consumption and operating costs while promoting environmental sustainability. The intervention provides a practical, scalable model for CSSDs in tertiary-care hospitals.