# Six-Sigma significantly reduces costs of poor quality of surgical instruments and improve room personnel satisfaction

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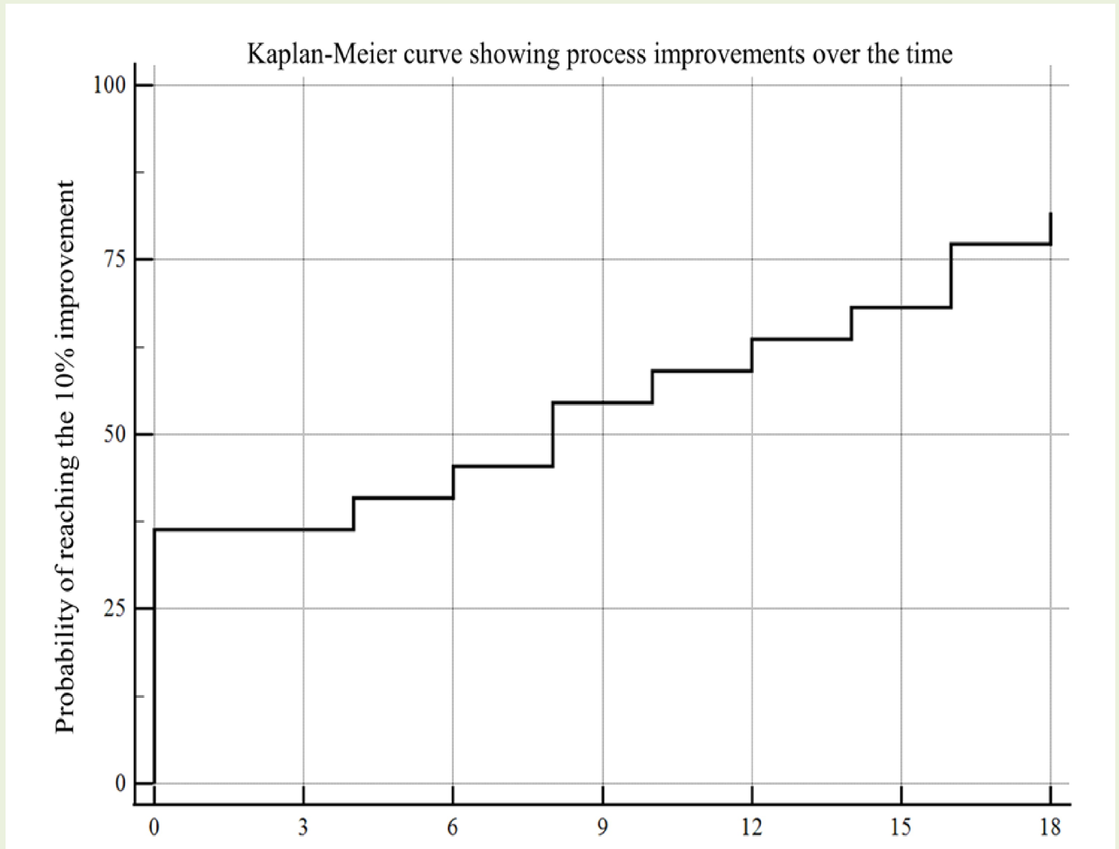
## INTRODUCTION

Six Sigma is a methodology for process improvement which can be applied to operating room (OR). This longitudinal observational study aimed to assess the impact of the Six Sigma methodology on the optimization of the process of surgical instruments sterilization.

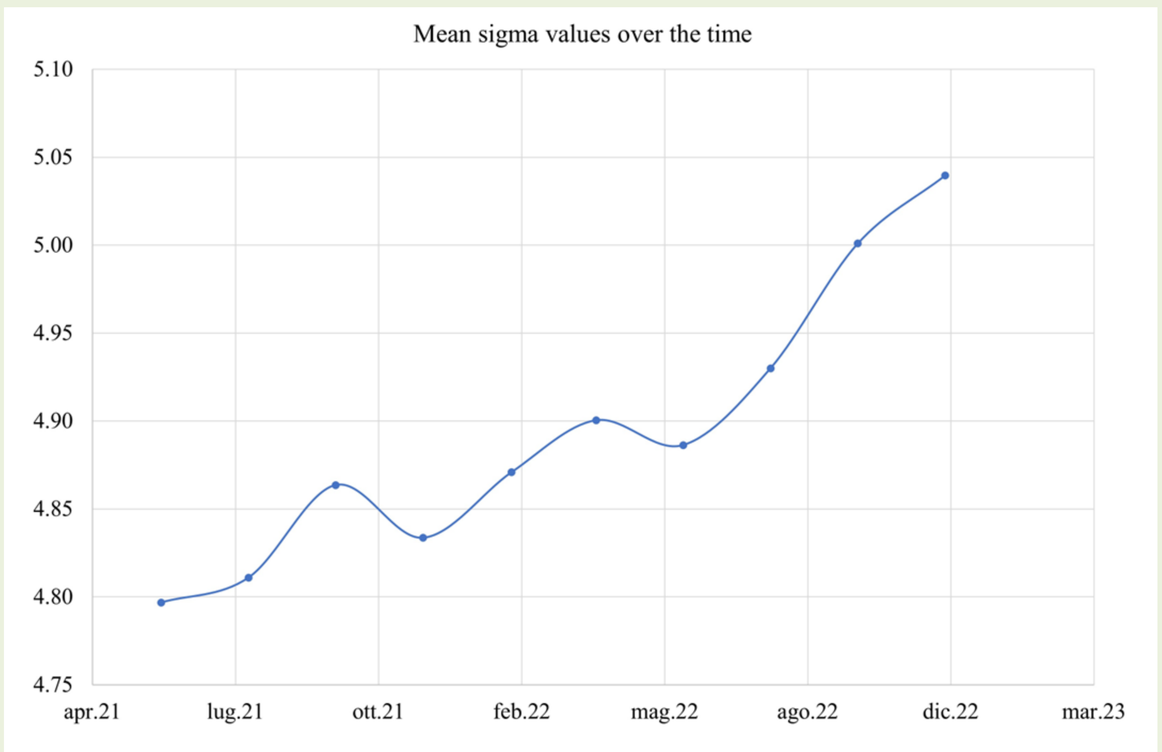



## METHODS

The project has been conducted at the operating theatre of our tertiary regional hospital during the period from July 2021 to December 2022. The project was based on the surgical instrument supply chain analysis. We applied the Six Sigma lean methodology to our operating room processes by conducting workshops and practical exercises and by analyzing and improving the surgical instrument process chain. We also checked stakeholders' satisfaction with a questionnaire at the beginning and the end of the study. The primary outcome was the analysis of Sigma improvement.

## RESULTS

In 2022 a total number of 314,552 instruments passed through this supply chain. During the study period, twenty-two OR processes were assessed every two months. The initial mean value was 4.79±1.02 σ and the final one was 5.04±0.85 σ (SMD 0.60, 95%CI 0.16-1.04, p=0.010). The improvement was estimated to save approximately $19,729. Regarding personnel satisfaction, 150 questionnaires were answered, showing a score improvement from 6.6±2.2 pts to 7.0±1.9 pts (p=0.013).




## CONCLUSION

In our experience the application of the Lean Six Sigma methodology to the process of handling the surgical instruments from/to the OR to their sterilization was cost-effective, significantly decreasing the costs of poor quality and increasing internal stakeholder overall satisfaction.

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