The Deployment of Balanced Scorecard in Health Care Organizations: Is it Benificial? A Systematic Review

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1. Background

1.1 Introduction

Since its development by Norton and Kaplan in 1992 [1], the Balanced Scorecard (BSC) has been utilized by many health care managers for the performance evaluation (P.E.) of Health Care Organizations (HCO) worldwide. The first generation of the BSC was used to evaluate four organizational perspectives: the financial perspective, the customers' perspective, the internal processes' perspective, and finally, the learning and growth perspective, all of which were steered by the organizational vision and strategy.

1.2 Originality

Until now, no comprehensive or rigorous methodological approach to assess the impact of BSC implementation in HCO has been recorded.

1.3 Aim

The present systematic review aimed to gather all studies which have measured the impact of implementing BSC on HCW satisfaction, patient satisfaction, and financial performance at HCO and to compare results among the included studies.

2. Methods

2.1 Data sources and search strategy

- In adherence with the 27-point of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist [2]. See (Figure1).
- Based on PICO (Population, Intervention, Comparison, and Outcome) tool [3].
- Both MeSH (Medical Subject Headings) terms and keywords.
- PubMed, Embase, and Cochrane.
- Grey literature, pre-prints, and unpublished studies were searched on Google Scholar and Google's search engine websites (to avoid publication bias).
- From inception until October 2020.
- Reference lists of any potentially eligible studies.
- Duplicates removal using the EndNote X9.2 program.

2.2 Study selection

- Titles and abstracts screening.
- Full texts careful examination.
- Selection of eligible studies: first and second authors independently, and third author arbitration in disagreements.

2.3 Data extraction and analysis

- First and second authors independently.
- January and March 2021

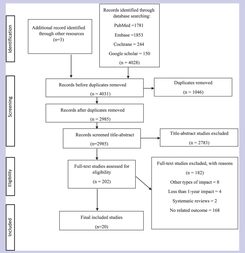
- Final eligible studies data extraction 1) author/s, year of publication, 2) country, 3) type of study, 4) duration of data collection 5) setting, and 6) outcome (impact on patient satisfaction, HCW satisfaction, and financial performance).
- Impact of BSC in eligible studies: either explicitly mentioned or determined by calculating the difference between before and after implementation values.
- Unification of the units
- Charts plotting for each outcome: bar charts were chosen instead of meta-analysis due to the variations in measured variables, duration of implementing BSC, differences in data collection instruments and data sources.

2.4 Quality assessment

Risk of Bias (RoB) assessment based on Cochrane collaboration's guidelines:

- Cochrane (RoB 2) tool for the assessment of randomized controlled trials (RCTs) [4]: type of bias was assessed as low, high, or unclear.
- Risk of Bias in non-Randomized Intervention Studies (ROBINS-I) tool for the observational and quasi-experimental studies [5]: type of bias was evaluated as low, moderate, serious, critical, or no information.
- Avoided summarizing the overall RoB, the RoB was analyzed at the study level and across studies [6, 7].
- The ROBVIS (Risk Of Bias VISualization) tool [8]to prepare RoB figures.
- As per recommendation [9], include all studies in this systematic review regardless of their quality assessment.

Figure 1. Prisma Flow Diagram



3. Results

3.1 Study selection

- Running the search strategy resulted in a total of 4031 studies.
- After removing the duplicates, a total of 2985 studies remained.
- After screening titles and abstracts 202 studies remained.
- Full texts examination resulted in 20 studies were finally included.

3.2 Location/ country

- 9 studies were implemented in North America, 2 in Europe, 1 in Africa, seven in Asia, and 1 did not specify the location.
- 14 studies were performed in high-income countries, 2 in upper-middle-income countries, 1 in a lower-middle country, and only 2 in low-income countries.

3.3 Setting

16 were performed in hospitals or hospital departments, and 4 in health care facilities or clinics.

3.4 The impact of BSC implementation

- The included studies assessed different outcomes for implementing BSC. Out of the final 20 eligible studies, 17 studies measured the impact of BSC on patient satisfaction, 7 measured HCW satisfaction, and 12 studies measured financial performance.
- The outcomes of BSC implementation in each of the 20 included studies are shown in (Figures 2, 3, 4, 5), which illustrate the impact on patient satisfaction, HCW satisfaction, and financial performance (in percentage and currency).

Figure 2. Patient Satisfaction Impact. Increase or decrease in patient satisfaction rate after BSC implementation (%)

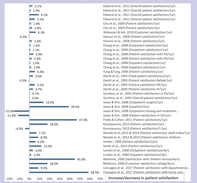


Figure 4. Financial Impact (%). Increase or decrease in financial performance after BSC implementation (%)

Figure 3 HCW Satisfaction Impact. Increase or decrease in HCW satisfaction rate after BSC implementation (%)

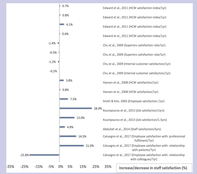
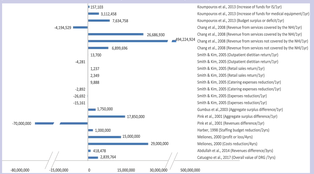
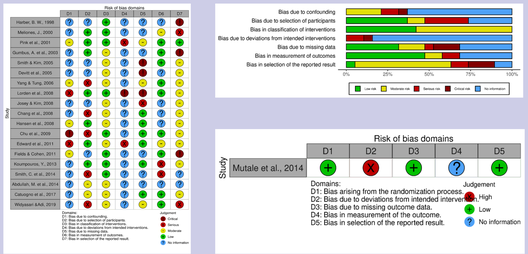


Figure 5. Financial Impact (USD). Increase or decrease in financial performance after BSC implementation (USD)



3.5 Quality assessment

Figure 6. Risk of Bias using ROBINS-I for Non-Randomized Studies of Interventions (NRSI) studies (Quasi-experimental and obdervational) and ROB 2 for Randomized Controlled Trials (RCT) studies.



4. Conclusion

- This is the first research that offers evidence to HCO and policymakers on the benefits of implementing BSC in HCO:

1. Results support a positive impact for applying BSC in HCO, especially on patient satisfaction and financial performance.
2. A greater emphasis on the role of HCW is required when implementing BSC since HCW satisfaction showed slightly positive, almost zero, or somewhat negative scores in most studies included.
3. The quality assessment revealed that many studies had a high RoB,

- Recommendations for future research:

1. Researchers are encouraged to focus on lowering the risk of bias in BSC implementation in the future.
2. HCO managers are advised to consider HCW satisfaction and engaging them at BSC implementations.
3. An assessment of the BSC impact in HCO during the COVID-19 pandemic is required, as we could not find any.

5. Acknowledgment

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