Objective

Aortic stenosis (AS) is a common valvular heart disease in elderly people. The causes of AS can be degenerative calcification secondary to atherosclerosis, rheumatic heart disease, congenital bicuspid aortic valve and etc. Severe AS can lead to congestive heart failure and 2-year mortality rate of 50% (Carabello & Paulus, 2009). Patients with AS can be treated with Transcatheter Aortic Valve Implantation (TAVI) and Surgical Aortic Valve Replacement (SAVR). However, there is no consistent conclusion regarding which one is a better option. Therefore, this study is to compare the differences in cost, effectiveness and cost-effectiveness between TAVI and SAVR using meta-analysis.

Material and methods

This study was conducted using systematic review and meta-analysis. Different combinations of key words were used in searching five databases, including ProQuest Health Research premium Collection, PubMed, OVID LWW online journal, Cochrane Library evidence-based medicine and Elsevier, and Elsevier. After being through PRISMA four stages and flow diagram, 11 articles were selected and further analyzed using CMA III meta-analysis software. Meta-analysis tools used included $I^2$, Q-value, p value, funnel plot, fail-safe number, summary effect size and forest plot.

Results

The differences of cost and effectiveness between TAVI and SAVR were analyzed using meta-analysis whereas incremental cost-effectiveness ratio (ICER) was presented using descriptive statistics. The result showed that the cost of TAVI is higher than that of SAVR. In terms of effectiveness, more patients in TAVI group needed pacemaker implantation and had vascular damage in comparison to SAVR group. There was no difference in other complications, including myocardial infarction, stroke and 30-day mortality. Additionally, patients in TAVI group had a shorter stay in intensive care unit. Furthermore, ICER of TAVI compared with SAVR was considered cost-effective or very cost-effective.

Conclusions

Both TAVI and SAVR were deemed cost-effective. TAVI was more expensive than SAVR; however, the hospital stay after TAVI was shorter than that of SAVR. Nevertheless, none of those studies were carried out in Taiwan hence equivalent studies on Taiwanese population is expected in order to provide our people better options.
Transcatheter Aortic Valve Implantation versus Surgical Aortic Valve Replacement: Systematic Review and Meta-Analysis

**Keywords:**
Aortic stenosis, Surgical Aortic Valve Replacement and Transcatheter Aortic Valve Implantation

**References:**


**Abstract Summary:**
This study used systemic review and meta-analysis approach to compare outcomes and cost-effectiveness of Transcatheter Aortic Valve Implantation (TAVI) and Surgical Aortic Valve Replacement (SAVR).

**Content Outline:**

**Introduction**
This study is to compare the differences in cost, effectiveness and cost-effectiveness between Transcatheter Aortic Valve Implantation (TAVI) and Surgical Aortic Valve Replacement (SAVR) using systemic review and meta-analysis approach.

**Results**
The result showed that the cost of TAVI is higher than that of SAVR. In terms of effectiveness, more patients in TAVI group needed pacemaker implantation and had vascular damage in comparison to SAVR group. There was no difference in other complications, including myocardial infarction, stroke and 30-day mortality. Additionally, patients in TAVI group had a shorter stay in intensive care unit. Furthermore, incremental cost-effectiveness ratio (ICER) of TAVI compared with SAVR was considered cost-effective or very cost-effective.

**Conclusions**
Both TAVI and SAVR were deemed cost-effective. TAVI was more expensive than SAVR; however, the hospital stay after TAVI was shorter than that of SAVR.
First Primary Presenting Author

**Primary Presenting Author**

Chia-Feng Hung, MSN  
Chi-Mei Medical Center  
Department of Emergency Medicine  
Senior registered nurse  
Yung-kung District  
Tainan  
Taiwan

**Professional Experience:** 2003-2011 -- Department of Surgical Ward, Chi-Mei Medical Center, Tainan, Taiwan  
2011-2016 -- Department of Surgical ICU, Chi-Mei Hospital, Tainan, Taiwan  
2016-2017 -- Department of Emergency medicine, Chi-Mei Medical Center, Tainan, Taiwan

**Author Summary:** Chia-Feng has been working in clinical nursing since 2003. This project was carried out during her master study (2015-2017). It is her honor to share the study experience with you in the conference. Thank you.

Second Author

Yong-Yuan Chang, MPH, ScD  
Kaohsiung Medical University  
Department of Healthcare Administration and Medical Informatics  
Associate Professor  
Kaohsiung  
Taiwan

**Professional Experience:** Chair of Dept. of Psychology Kaohsiung Medical University (1990.9~1997.8)  
Director of Institute of Behavioral Sciences Kaohsiung Medical University (1992.9~1997.8) Chair of Dept. of Public Health Kaohsiung Medical University (1997.8~2000.7) Director of Institute of Public Health Kaohsiung Medical University (1997.8~2000.7) The University of Adelaide, School of Psychology, Australia - Adjunct Senior lecturer (1996.4~present)

**Author Summary:** Dr Chang is currently a part-time Associate Professor in Department of Healthcare Administration and Medical Informatics, Kaohsiung Medical University. His research interest is in (1) Cost-effectiveness analysis in the comparisons of different types of surgery or treatment among cancer patients; (2) Meta-analysis employed to the cost-effectiveness analysis among cancer patients; (3) Development and validation of burn out scale for the assessment of the level of job stress among medical professionals.