

Changes In health Insurance coverage and the utilization of Cone Beam CT ; Health Insurance claims data from 2013 to 2022

JH.KIM¹, EB.CHOI², SD.KIM², SJ.KIM², SK.PARK², SK.CHOI²

1, 2 Health Insurance Review and Assessment Service(HIRA), Wonju, Korea, Republic of



ISQUA2024
-ABS-2716

INTRODUCTION

- **The Cone Beam CT (CBCT)** is useful for diagnosing bone changes in the teeth and maxillofacial regions.
- Since its **coverage began in 2008**, it has expanded to cover **the sinuses, upper, and lower extremities**.
- CBCT has been **under intensive review since 2014**, with efforts to maintain its utilization at a reasonable level.
- Despite these measures, the use of CBCT has **continued to rise**, particularly with the expansion of **coverage for implants**.

AIM

- To analyze the expansion of health insurance coverage and **the trends in CBCT and utilization over the past 10 years (2013-2022)**

METHOD

1. Database

- The National Health Insurance (NHI) claims data of HIRA

2. Data population

- Span : from 2013 to 2022
- A total of 4,782,594 patients have been selected from a pool of 5,993,172 cases associated with the CBCT billing codes

3. Outcome

- The number of scans and fees were analyzed by year, age group, type of medical institutions, medical specialty, and equipment manufacturing year.

4. Data analysis

- Analysis was performed using SAS Enterprise Guide 7.1(SAS Institute Inc., Cary, NC, USA)
- P-value < 0.05 : considered statistically significant

RESULTS

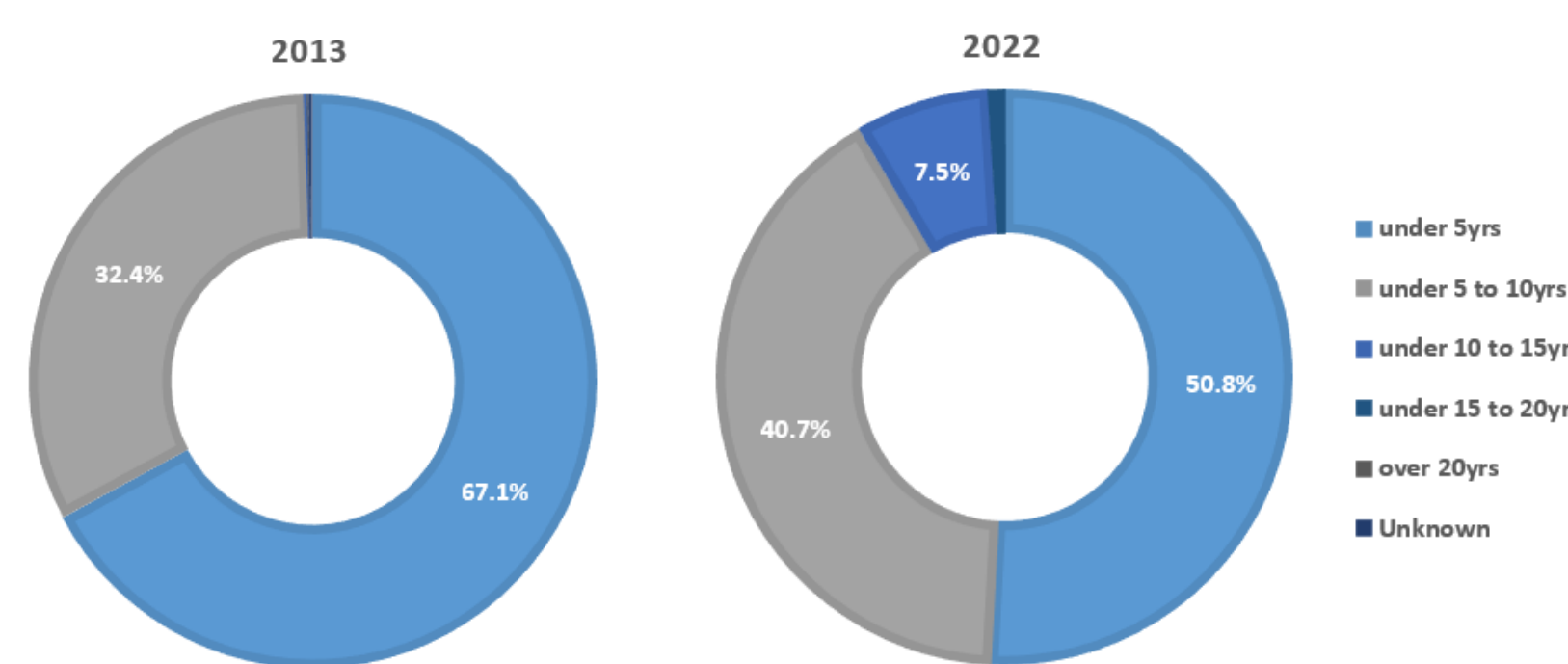
➤ **The number of CBCT scanners**

- **The number of CBCT scanners** increased from 4,146 in 2013 to 16,603 in 2022, representing a yearly average increase of 16.7%.

	(Unit : N)			
	2013	2016	2019	2022
CBCT scanners	4,146	8,275	12,872	16,603
(per 1 million people)	81.1	160.1	248.3	322.8
Frequency per unit	57	49	60	67

➤ **The age of CBCT scanners**

- In 2022, the majority of scanners had been **operational for less than 5 years**, accounting for 50.8% (8,442 units). However, the number of scanners aged from 10 to 15 years increased by 75.2% compared to 2013, suggesting **a rise in the presence of older equipment**.

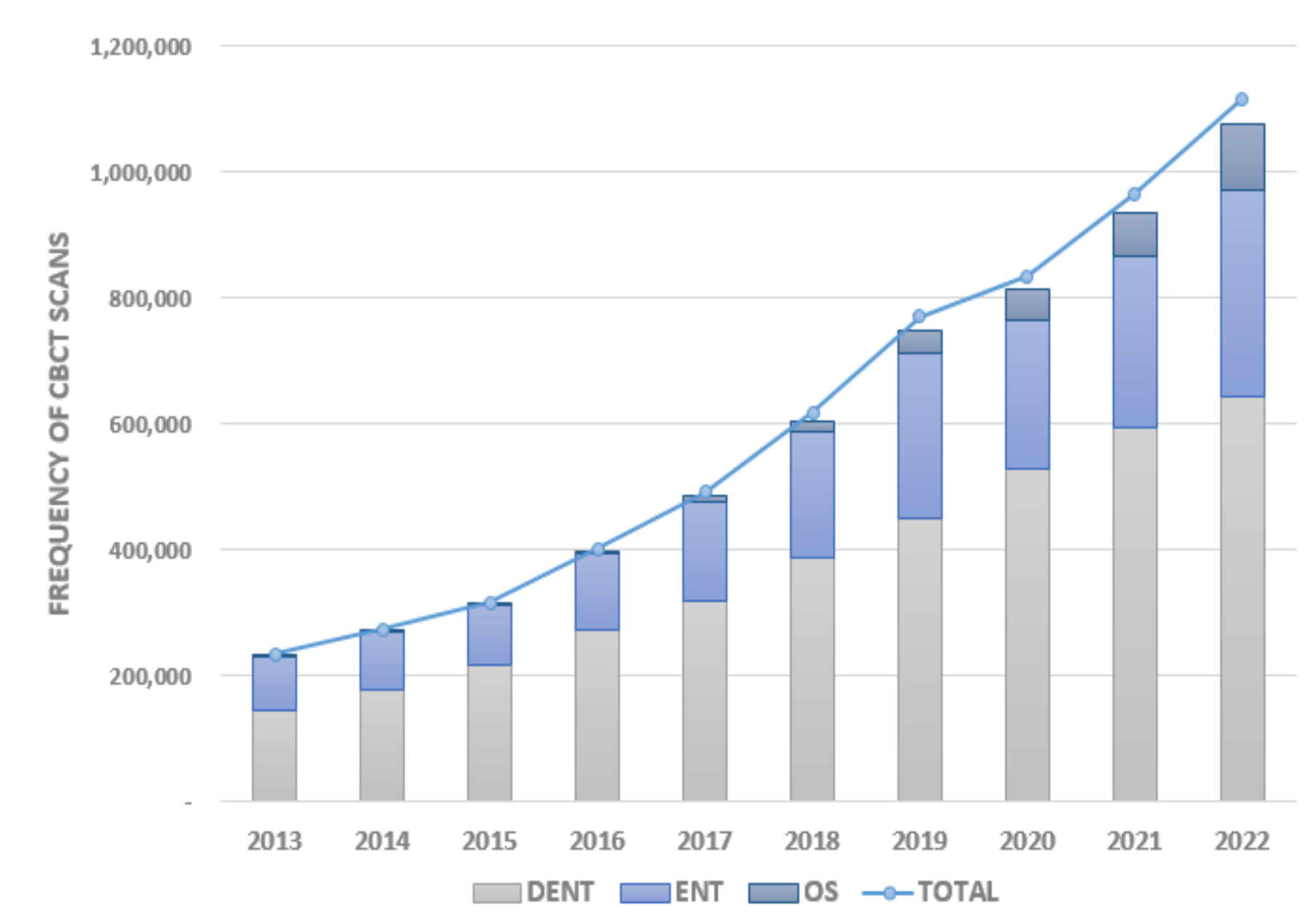


➤ **The utilization of CBCT**

- **CBCT fees** rose from 10.9 billion KRW in 2013 to 61.9 billion KRW in 2022, reflecting a yearly average increase of 21.3%.
- **The number of billing institutions** increased from 2,603 in 2013 to 11,501 in 2022, which is a 4.4-fold increase.

➤ **The frequency of CBCT scans in medical speciality (2013~2022)**

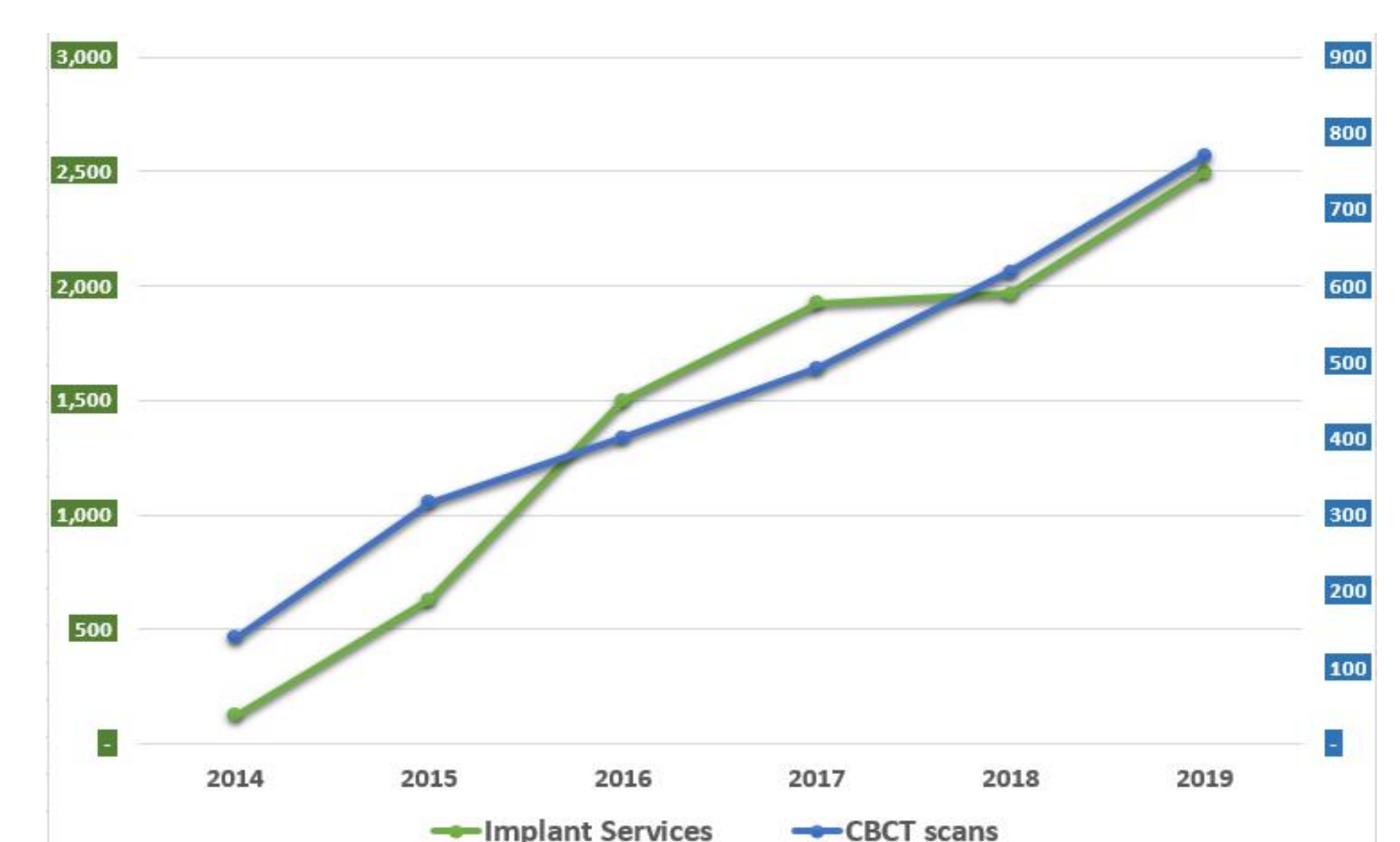
- Following the expansion of coverage for ENT-related services in 2015, the number of claims for ENT increased by 29.0% compared to the previous year



- DENT : Dentistry
- ENT : Ear, Nose and Throat (Otorhinolaryngology)
- OS : Orthopedic Surgery

➤ **The frequency of implant services and CBCT scans(2014~2019)**

- A high correlation : coefficient of 0.93 ($P < 0.001$)



CONCLUSIONS

- **In the unique Korean environment**, where the people have easy access to dental facilities, the number of CBCT scans carried out by dental clinics, which own the majority of the scanners, increased with the rise in coverages offered.
- Furthermore, it is hypothesized that the increased cases of non-billable procedures (such as implants) that guarantee high profits for dental clinics are correlated with an increase in CBCT exams, although further in-depth analysis is needed to confirm this.
- Since repeated CBCT scans increase the patients' exposure to radiation, and financial burden, **reasonable levels of use must be maintained**.
- To achieve this, several measures are necessary. First, **guidelines should be established** for the appropriate number of reimbursable scans. Second, **differential reimbursement rates** should be applied based on the age of the equipment. Third, **a monitoring system** should be implemented to oversee non-insured scans, along with mechanisms for proper management.

REFERENCES

- **Bornstein, M. M. et al.** Use of cone beam computed tomography in implant dentistry: Current concepts, indications and limitations for clinical practice and research. *Periodontology* 2000; 73: 51–72.
- **Ibrahim Nasseh et al.** Cone Beam Computed Tomography. *Dental Clinics of North America* 2018; 361-391
- **Ryu JI et al.** Utilization rate of dental implant for elderly in national health insurance in Korea. *J Korean Dent Association* 2019

CONTACT INFORMATION

- Jeonghye Kim : kjh0301@hira.or.kr