



**DENTURE SERVICES FOR OLDER ADULTS WITHIN THE FRAMEWORK OF
UNIVERSAL HEALTH COVERAGE: A SCOPING REVIEW USING THE WHO
UNIVERSAL COVERAGE CUBE**

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ABSTRACT

Older adults are particularly vulnerable to oral health problems, especially tooth loss, which affects chewing function, nutritional status, and quality of life. Dentures are an important rehabilitative intervention to address these issues. Although many countries, including Indonesia, have implemented Universal Health Coverage (UHC), coverage of denture services for older adults remains variable and limited. Objective is To map denture services for older adults within the Universal Health Coverage framework using the WHO Universal Health Coverage Cube. Methods is This scoping review followed the Joanna Briggs Institute methodology and was reported in accordance with the PRISMA-ScR guidelines. Literature searches were conducted across multiple scientific databases and relevant grey literature sources. Eligible studies were analyzed descriptively and mapped according to the three dimensions of UHC: population coverage, service coverage, and financial protection. The results: A total of 20 studies were included in the review. The findings revealed considerable variation in denture services for older adults across countries. In terms of population coverage, older adults were not consistently prioritized as beneficiaries. Regarding service coverage, coverage was generally limited to basic removable dentures, with restrictions on materials and replacement frequency. In the financial protection dimension, older adults remained exposed to out-of-pocket payments despite formal inclusion of denture services in health policies. These findings indicate an imbalance across the three UHC dimensions. Conclusion is Although the UHC framework has been widely implemented, coverage of denture services for older adults remains suboptimal. Strengthening equity, service comprehensiveness, and financial protection is necessary to ensure more responsive health systems for ageing populations. The WHO Universal Health Coverage Cube provides a useful framework for identifying policy gaps.

Keywords: dentures; financial protection; older adults; scoping review; universal health coverage

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INTRODUCTION

Indonesia is experiencing a rapid demographic transition toward an ageing population. In 2024, the total population reached approximately 281 million, with around 12% classified as older adults aged 60 years and above, representing approximately 33–34 million people. This proportion has increased significantly compared to previous decades, indicating an accelerated ageing trend (BPS, 2024). The increasing number of older adults has important implications for health service needs, including oral health care. Tooth loss remains a significant public health issue among older adults. Data from the 2018 National Basic Health Research (Riskesdas) reported that the prevalence of tooth loss among individuals aged ≥ 65 years was 30.6%, while only 4.1% used dentures (Falatehan & Denilson, 2022). This gap indicates unmet rehabilitative oral health needs among the elderly population.

Denture services play a crucial role in restoring masticatory function, improving aesthetics, and enhancing psychosocial well-being. From a public health perspective, dentures should be

considered essential rehabilitative interventions that contribute to quality of life and overall health among older adults (Intan Sari, 2025; Ratnasari *et al.*, 2019). However, in health financing systems, prosthodontic services are often treated as secondary services, with restrictions on types of dentures covered, claim frequency, and reimbursement mechanisms. Universal Health Coverage (UHC), as promoted by the World Health Organization (WHO), aims to ensure that all individuals receive the health services they need without suffering financial hardship. UHC is conceptualized through three dimensions: population coverage, service coverage, and financial). These dimensions must be balanced to ensure equitable access to care (Whiting *et al.*, 2011; Sudrajat, 2022).

Despite global commitments to UHC, oral health services including denture rehabilitation are frequently excluded or only partially covered in benefit packages. Cost-sharing mechanisms and coverage ceilings may limit financial protection and increase out-of-pocket expenditure, particularly among economically vulnerable older adults (Winkelmann *et al.*, 2022). Existing studies tend to examine access or financing aspects separately. There remains limited comprehensive mapping of denture services for older adults across the three dimensions of the WHO Universal Coverage Cube. Therefore, this study aims to map denture services for older adults within the UHC framework to identify policy gaps related to population inclusion, service scope, and financial protection.

Based on the background described above, this study aims to map denture services for older adults within the Universal Health Coverage framework using the WHO Universal Coverage Cube. Through a scoping review approach, this study seeks to provide a comprehensive overview of the position of denture services within UHC systems and to identify policy gaps to support healthy ageing and equitable access to health services.

METHOD

Study Design

This study used a scoping review approach to systematically map scientific evidence and policy documents related to denture services for older adults within the framework of Universal Health Coverage (UHC). This approach was chosen because the topic includes diverse types of literature, both empirical studies and policy analyses, and aims to identify the scope of evidence and implementation gaps across the three UHC dimensions: population coverage, service coverage, and financial protection. The scoping review method allows for broad mapping of issues without limiting the type of research design, making it suitable for exploring variations in policies and financing systems across countries. The review process followed the PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines to ensure transparency, systematic procedures, and accountability in the stages of identification, selection, and reporting of studies.

Literature Search Strategy

The literature search was conducted systematically in international databases, including PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar, as well as in official documents from the World Health Organization (WHO) and relevant ministries of health. The search strategy was developed based on three main research concepts: the older adult population (older adults, elderly, aged), prosthodontic services (denture, dental prosthesis), and access and financing aspects (utilization, access, unmet need, coverage, affordability, cost). The combination of terms was adapted for each database using Boolean operators (AND/OR) to optimize the sensitivity and specificity of the search results. Only articles published in English were included. No restriction on publication year was applied in order to capture a comprehensive range of evidence related to denture services within the UHC framework. In addition to the electronic search, a manual review of the reference lists of relevant articles was conducted to identify additional sources that met the inclusion criteria.

Study Selection

The study selection process is carried out in a gradual and systematic manner to ensure that all included articles are relevant to the research objectives. The initial stage involves screening titles and abstracts to identify the suitability of the topic with the focus of the study. Articles deemed relevant at this stage then proceed to a full-text review to assess overall eligibility based on the pre-established inclusion criteria. Studies are included in the analysis if they meet the following criteria:

1. Involves an older adult population, defined as individuals aged ≥ 60 years or ≥ 65 years, according to the definition used in each study.
2. Explicitly addresses denture services or prosthodontic care, whether in the context of clinical services, financing policies, or access to these services.
3. Contains information relevant to one or more dimensions of Universal Health Coverage (UHC), namely population coverage, service coverage, and financial protection.
4. Is an observational study, policy analysis, official report from a government or international organization, or other publication providing data or policy information that can be analyzed.

The screening process was conducted systematically to ensure consistency with the research objectives. The screening was conducted by two independent reviewers. Any disagreements were resolved through discussion until consensus was reached. Studies were excluded from the analysis if they did not specifically address the older adult population, were not related to denture services, or did not contain information that could be mapped to the dimensions of UHC. This selection process was conducted to maintain consistency in the research focus and to ensure that the resulting synthesis accurately represents the position of denture services for older adults within the UHC framework. The study selection process is presented in a PRISMA-ScR flow diagram.

Data Extraction

The extracted information includes general publication characteristics, the geographical context and country income level, the study design or document type, and the characteristics of the older adult population studied. In addition, specific data related to denture services, the context of financing or health insurance, utilization indicators and unmet needs, as well as out-of-pocket expenditure information, were systematically collected. All findings were then mapped to one or more dimensions of the WHO Universal Health Coverage Cube (population coverage, service coverage, and financial protection) to facilitate thematic and conceptual synthesis. A summary of the variables extracted from the original articles can be found in Table 1.

Table 1.
Data extracted and included in the mapping results table

Variabel	Operational Description
Author and Year	Name of the first author and year of publication
Title	Title of the article or document
Source Type	Empirical study / policy document / organizational report
Country	Country where the study was conducted or the policy implemented
Country Income Level	World Bank classification (HIC, UMIC, LMIC, LIC)
Study Design / Document Type	Cross-sectional, cohort, survey analysis, national policy, report
Population Characteristics	Older adult age, sex, socio-economic group
Type of Denture Service	Complete denture, removable partial denture, fixed denture
Financing / Insurance Context	Public insurance, social insurance, private insurance, out-of-pocket payment
Utilization Indicators	Denture use, prosthesis ownership
Unmet Need Indicators	Unmet need, edentulism without prosthesis
Cost Information	Out-of-pocket expenditure, affordability
UHC Cube Dimension	Population coverage / service coverage / financial protection
Key Notes	Key findings or special context

RESULT

Study Distribution

The literature search process yielded a number of articles from various databases, which were then subjected to duplicate removal and screening based on titles and abstracts. After conducting a full-

text review according to the inclusion criteria, a total of 20 studies were deemed eligible and included in the analysis. The following figure presents a PRISMA diagram illustrating the entire study selection process.

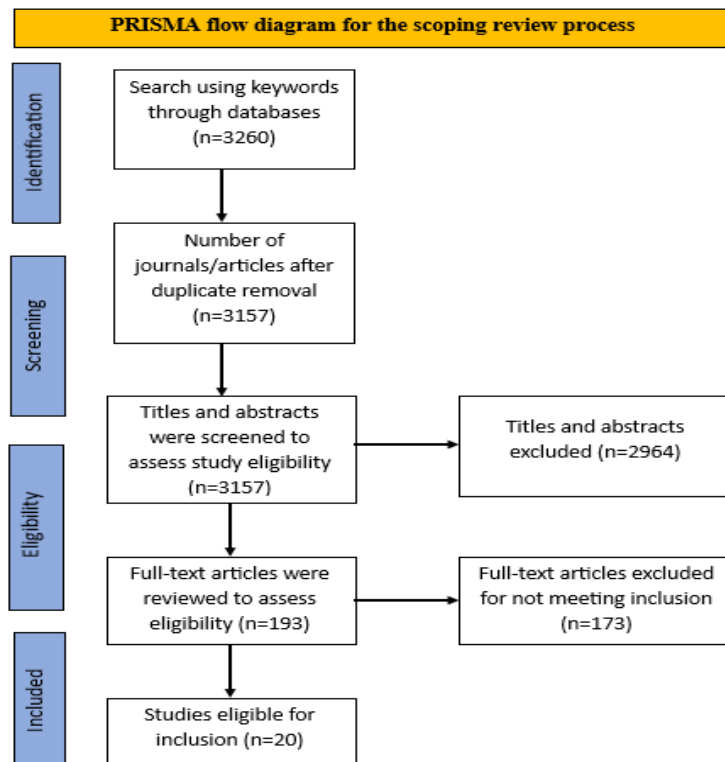


Figure 2. PRISMA Flow Diagram

The complete mapping results for each study are presented in Appendix 1. The table systematically details the characteristics of each study as a form of methodological transparency and documentation of the analyzed evidence sources. Placing the results in the appendix allows the main Results section to remain focused on the synthesis of key findings, without limiting readers' access to the detailed data. A total of 20 studies meeting the inclusion criteria, published between 1987 and 2025, were included in this review. Geographically, research on denture services for older adults was dominated by studies from Asia and the Americas. In Asia, there were 10 studies: Japan (2 studies), South Korea (4 studies), Thailand (2 studies), China (1 study), and India (1 study). In the Americas, 8 studies were identified: Brazil (6 studies), Chile (1 study), and the United States (1 study). The remaining 2 studies originated from Europe, conducted in the Netherlands (1 study) and Denmark (1 study).

Table 1.
Characteristics of the Included Study Populations

Author & Year	Title	Source Type	Country	Country Income Level	Study Design	Population Characteristics	Type of Denture Service	Financing Context	Utilization Indicators	Unmet Need Indicators	Cost Information	UHC Dimension	Key Notes
(Matsuyama et al., 2014)	Inequalities of dental prosthesis use under universal healthcare insurance	Empirical study	Japan	High Income Country (HIC)	Cross-sectional	4,001 older adults aged ≥65 years	General use of dentures to replace missing teeth	Universal Healthcare Insurance (UHI). Patients generally pay a co-payment 10–30%. The poor receive public assistance, making their co-payment 0%.	Denture use was reported in 54.6% of the total respondents	Access inequalities were observed (social gradient); low-income groups were unable to meet their clinical denture needs due to financial barriers (Financial Unmet Need).	Out-of-pocket expenses consisted of a payment of 10% of the total treatment cost.	Financial Protection & Population Coverage	U-shaped pattern: very poor (0% cost) and wealthy groups had good access; those paying 10–30% without subsidy had lowest access.

Author & Year	Title	Source Type	Country	Country Income Level	Study Design	Population Characteristics	Type of Denture Service	Financing Context	Utilization Indicators	Unmet Need Indicators	Cost Information	UHC Dimension	Key Notes
(Peron et al., 2022)	Use and need of dental prosthesis among community dwelling elderly: a cross-sectional population-based study	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	390 older adults aged ≥60 years	Complete dentures and removable partial dentures, for both the upper (maxilla) and lower (mandible) jaws.	Public insurance (Sistema Único de Saúde (SUS))	Denture use: 80.8% of older adults used at least one type of denture, with complete dentures for the maxilla being the most common at 63.6%.	Unmet Need: 35.6% of older adults still required new dentures, with the greatest need observed for the mandible.	Out-of-Pocket	Service coverage	Although population coverage appeared high (80.8% users), many were still using dentures that were no longer adequate.
(Choi & Jung, 2020)	The Impact of Expanded National Health Insurance Coverage of Dentures and Dental Implants on Dental Care Utilization among Older Adults in South Korea: A Study Based on the Korean Health Panel Survey	Empirical study	South Korea	High Income Country (HIC)	Survey Analysis (Korea Health Panel Survey)	Elderly aged ≥65 years (3,655 in 2012 and 4,223 in 2015)	Dentures and Dental Implants	National Health Insurance Service (NHIS)	Denture use increased significantly from 2.4% (2012) to 4.5% (2015)	Unmet need	There was a shift in the cost burden from pure out-of-pocket payments to a co-payment system following the implementation of insurance coverage expansion policies	Service Coverage & Financial Protection	Insurance expansion policies in South Korea have been proven effective in quantitatively increasing utilization, particularly for dentures and implants among the elderly population
(VIEIRA et al., 2021)	Use and need of removable dental prostheses in an institutionalized Brazilian elderly population: a cross-sectional study	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	191 elderly residents living in private long-term care institutions, with a mean age of 81.1 years, the majority of whom were female (74.3%)	Conventional removable dentures : Complete Dentures and Partial Removable Dentures	Public insurance (Sistema Único de Saúde (SUS))	Denture use was observed in 73.3% of the elderly (at least one type of denture; most commonly maxillary complete dentures)	Unmet need was observed in 61.3% of elderly individuals who required new dentures	Out-of-Pocket	Population & Service Coverage	-
(Rebello et al., 2018)	Need of dental prosthesis in older people and the offer of specialized care in the unified health system, Brazil	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	7,619 elderly individuals aged 65–74 years	Complete Dentures and Partial Removable Dentures	Public insurance (Specialized Dental Centers (Centros de Especialidades Odontológicas – CEOs) and Regional Dental Prosthesis Laboratories (LRPDs))	The use of complete dentures was very high in the maxilla	Unmet need	Out-of-Pocket	Population & Service Coverage	-

Author & Year	Title	Source Type	Country	Country Income Level	Study Design	Population Characteristics	Type of Denture Service	Financing Context	Utilization Indicators	Unmet Need Indicators	Cost Information	UHC Dimension	Key Notes
(Limpuangthip et al., 2019)	Predisposing and enabling factors associated with public denture service utilization among older Thai people: a cross-sectional population-based study	Empirical study	Thailand	Upper-Middle Income Country (UMIC)	Cross-sectional	38,695 elderly individuals in Thailand aged ≥60 years	Complete Dentures and Partial Removable Dentures	Public insurance	Utilization of denture fabrication services at public facilities over a 5-year period	Unmet need	Out-of-Pocket	Population Coverage & Financial Protection	Social and community support is crucial in improving elderly access to public services
(Silva et al., 2020)	Impact on the Quality of Life of Older Adults Who Use Inadequate Dental Prostheses: A Cross-Sectional Study	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	147 elderly individuals (aged 60–90 years); the majority were female (90.5%); 79.6% had low income (1× minimum wage); 70.1% had a low educational level	Maxillary complete dentures (71.4%), mandibular complete dentures (32.7%), and partial removable dentures (24.5%)	Public insurance (Brasil Sorridente (Smiling Brazil) organization: dan Specialized Dental Centers (Centros de Especialidades Odontológicas – CEOs)	Denture use among 147 respondents	High unmet need (70.3%) in terms of technical quality; there are barriers to access secondary oral rehabilitation and service delivery organization remains suboptimal	Focus on access inequities; if the public system cannot absorb demand, costs are shifted to the private sector (out-of-pocket)	Service Coverage & Financial Protection	Elderly individuals in Brazil did not benefit from past fluoridation policies resulting in a high disease burden. Oral health services within the scope of UHC must be clinically adequate
(Zhao & Kim, 2024)	The Effects of the Expansion of Dental Care Coverage for the Elderly	Empirical study	Korea	High Income Country (HIC)	Quasi-experimental	Elderly individuals aged ≥65 years in South Korea	Complete dentures, partial dentures, and dental implants	National Health Insurance	The use of partial complete dentures increased by 13.5%	Unmet need	Out-of-pocket, affordability	Service Coverage & Financial Protection	-
(Shah et al., 2004)	Edentulousness, denture wear and denture needs of Indian elderly – a community-based study	Empirical study	India	Lower-Middle Income Country (LMIC)	Cross-sectional	1,240 elderly individuals aged ≥60 years (716 urban, 524 rural)	Complete dentures and partial dentures	Out-of-pocket payment	Denture use	Unmet need	Out-of-pocket, affordability	Service Coverage & Financial Protection	There was a significant difference between urban and rural areas; elderly individuals in rural areas had higher rates of edentulism but lower access to denture services compared to those in urban areas wilayah perkotaan.
(Ahn et al., 2018)	The Effects of National Health Insurance Denture Coverage Policies for the Elderly on the Unmet Dental	Empirical study	South Korea	High Income Country (HIC)	Cross-sectional	20,400 elderly individuals aged ≥75 years who were	Complete Denture	Social Insurance	Dental Care Use	Unmet need	Affordability	Service Coverage & Financial Protection	-

Author & Year	Title	Source Type	Country	Country Income Level	Study Design	Population Characteristics	Type of Denture Service	Financing Context	Utilization Indicators	Unmet Need Indicators	Cost Information	UHC Dimension	Key Notes
	Needs of the Edentulous Elderly					edentulous							
(Bakker et al., 2021)	General health, healthcare costs and dental care use of elderly with a natural dentition, implant-retained overdenture or conventional denture: an 8-year cohort of Dutch elderly (aged 75 and over)	Empirical study	Netherlands	High Income Country (HIC)	Cohort	168,122 lansia berusia ≥75 tahun.	Conventional Dentures and Implant-retained Overdentures	Social Insurance	Dental Care Use	Unmet maintenance need.	Affordability	Service Coverage & Financial Protection	-
(Silva et al., 2019)	Oral Health Impact Profile: need and use of dental prostheses among Northeast Brazilian independent-living elderly	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	240 elderly individuals (aged ≥60 years)	removable dentures: Complete Dentures (CD) and Partial Removable Dentures (PRD)	public insurance	denture use was 68.3%	unmet need was observed in 51.7% of elderly individuals who required new dentures	Affordability	Service Coverage	-
(Gomes Filho et al., 2020)	Universal health coverage and the use of dental prosthesis by the elderly in Brazil	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	7,619 elderly individuals aged 65–74 years.	Removable dentures and Partial Removable Dentures in the maxilla and mandible	public insurance	denture use	Unmet need	Affordability	Population Coverage	-
(Lin et al., 2025)	Prevalence and associated factors of denture use among older adults living in rural and urban areas of China: a national cross-sectional study	Empirical study	China	Upper-Middle Income Country (UMIC)	Cross-sectional	2,709 elderly individuals aged ≥60 years	dentures in general (including removable and fixed/implant-supported)	public insurance	denture use was observed in 54.3% of elderly individuals who had lost teeth	Unmet need	Affordability	Population Coverage	-
(Techapiroontong et al., 2022)	The impact of poor dental status and removable dental prosthesis quality on body composition, masticatory performance and oral health-related quality of life: a cross-sectional study in older adults	Empirical study	Thailand	Upper-Middle Income Country (UMIC)	Cross-sectional	110 elderly individuals (mean age 70.5 years) who received prosthodontic treatment at the Dental Faculty Clinic of Chulalongkorn University.	Complete Dentures (CD), Partial Removable Dentures (PRD), and Fixed Dentures (FD)	public insurance	denture use consisted of PRD (41.8%), followed by CD (30%), and FD (28.2%)	Unmet need	Affordability	Service Coverage	Poor denture quality was significantly associated with lower quality of life and ineffective masticatory performance
(Harada et al., 2025)	Contribution of dental prostheses on the association between dental visits and self-reported chewing ability among older Japanese adults: a cross-sectional study	Empirical study	Japan	High Income Country (HIC)	Cross-sectional	8,358 elderly individuals in Japan (aged ≥65 years) with ≤19 remaining teeth	complete and partial dentures.	public insurance	denture use	Unmet need	Affordability	Service Coverage	-
(Ahn et al., 2015)	Dental Utilization Associated Factors among Elderly	Empirical study	Korea Selatan	High Income Country (HIC)	Cross-sectional	4,521 elderly individuals aged ≥65 years	complete and partial dentures	public insurance	denture use	Unmet need	Affordability	Population Coverage	Economic and educational factors are the main determinants of dental

Author & Year	Title	Source Type	Country	Country Income Level	Study Design	Population Characteristics	Type of Denture Service	Financing Context	Utilization Indicators	Unmet Need Indicators	Cost Information	UHC Dimension	Key Notes
(Barahona et al., 2025)	Removable Dental Prostheses and Handgrip Strength in the Elderly Population of the Chilean Public and Private Health System	Empirical study	Chile	High Income Country (HIC)	Cross-sectional	120 elderly individuals (aged ≥60 years) divided into two groups: users of the public health system and the private system	Removable Dental Prostheses	public insurance dan pembiayaan mandiri	denture use	Unmet need	Affordability	Financial protection	- service utilization among the elderly
(Vigild, 1987)	Denture status and need for prosthodontic treatment among institutionalized elderly in Denmark	Empirical study	Denmark	High Income Country (HIC)	Cross-sectional	685 elderly individuals in nursing homes	Complete Denture, Partial Denture, relining, and occlusal correction.	public insurance	denture use	Unmet need	Affordability	Service Coverage and Population Coverage	-
(da Veiga Pessoa et al., 2016)	Economic and sociodemographic inequalities in complete denture need among older Brazilian adults: a cross-sectional population-based study	Empirical study	Brazil	Upper-Middle Income Country (UMIC)	Cross-sectional	7,619 elderly individuals aged 65–74 years	Complete Denture	public insurance	denture use	Unmet need	Affordability	Population Coverage	-

Based on country income level according to the World Bank classification, the studies were almost evenly divided between high-income countries (HIC) and upper-middle-income countries (UMIC). Ten studies were conducted in HICs, including Japan, South Korea, the Netherlands, the United States, Chile, and Denmark, while nine studies were conducted in UMICs, including Brazil, Thailand, and China. Only one study represented a lower-middle-income country (LMIC), which was India. All included studies employed observational study designs, with 19 being cross-sectional studies based on population surveys or clinical surveys, and one study using a cohort design. The study participants in all cases were older adults, with most studies defining a minimum age of 60 or 65 years. The focus of the dental health services examined included the use of complete dentures, removable partial dentures, and more advanced technologies such as implant-retained overdentures, which were specifically reported in studies conducted in the Netherlands and Japan.

Based on the 20 studies analyzed, utilization indicators were measured through the prevalence of different types of dentures used by older adults. Complete dentures (CD) were the most frequently reported type, particularly in studies from Brazil and South Korea, reflecting the high prevalence of total tooth loss (edentulism) in these populations. In addition to CDs, the use of removable partial dentures (RPD) was also commonly observed among older adults who retained some natural teeth. In high-income countries such as the Netherlands, there was a noticeable shift from conventional dentures toward more stable technologies, such as implant-retained overdentures. In contrast, in India, despite a high need for dental rehabilitation, actual denture use remained very low compared to basic curative procedures.

Most of the unmet needs identified were consistent across nearly all studies, although definitions varied. The majority of studies (such as those in Brazil and Thailand) defined unmet need based on clinical criteria (normative need), referring to older adults who had lost teeth but did not possess a prosthesis. However, studies in Denmark and Thailand highlighted an important perspective on the

“quality of unmet need,” where older adults had dentures but were unable to use them effectively due to looseness or damage. Additionally, studies in Japan specifically identified financial unmet need, referring to older adults who recognized the need for dentures but could not afford them due to cost constraints.

Cost-related information in the included studies indicated differences in financial protection across countries. In high-income countries (HIC) such as Japan and South Korea, patient costs appeared in the form of co-payments ranging from 10% to 30%. Although subsidized, these costs were still reported as burdensome for older adults with low to middle incomes. In contrast, studies from the United States and India reported very high out-of-pocket expenses due to the lack of denture coverage in basic public insurance schemes. In Thailand, where the Universal Coverage scheme allows older adults to receive dentures free of charge, access barriers shifted instead to factors such as laboratory availability and transportation.

Analysis of these 20 studies revealed a varied focus across the three dimensions of the UHC Cube. The Population Coverage dimension was the primary focus in 12 studies, particularly those addressing disparities in access based on geographic location (rural–urban) and socio-economic status. The Financial Protection dimension was examined in depth in 6 studies, especially those evaluating the impact of national insurance policies on household expenditures. Meanwhile, the Service Coverage dimension (related to the type and quality of services) was the least frequently addressed as a primary focus, though it often appeared as a secondary finding concerning the technical effectiveness of dentures used by older adults.

Evidence Distribution Patterns by Country Income Level

Table 2.

Distribution of the 20 Included Studies by Geographic and Economic Characteristics

Characteristic	Category	f	%
Geographic Region	Asia (Japan, South Korea, China, Thailand, India)	10	50
	America (Brazil, Chile, USA)	8	40
	Europe (Netherlands, Denmark)	2	10
Income Level	High Income Country (HIC)	10	50
	Upper-Middle Income (UMIC)	9	45
	Lower-Middle Income (LMIC)	1	5

The synthesis of the 20 selected studies revealed a dominance of evidence from high-income (HIC) and upper-middle-income countries (UMIC), particularly in Asia and the Americas. High-income countries tended to offer more comprehensive benefit packages, including coverage for both complete and partial dentures, along with stronger financial protection mechanisms. In contrast, in middle-income countries, denture services were often considered an additional benefit with various restrictions, such as limits on the number of units, types of materials, or mandatory co-payments.

Table 3.

Thematic Summary Based on WHO UHC Dimensions

UHC Dimension	Findings on Access and Services
Population Coverage	Consistent patterns of access disparities were observed between urban and rural areas (China, Brazil, India). Older adults in nursing homes (Denmark) and ethnic minority groups (Brazil, USA) faced higher access barriers
Service Coverage	Most health systems covered basic services such as complete dentures (CD) or removable partial dentures (RPD). Poor technical quality of prostheses was a significant issue in Thailand and the USA.
Financial Protection	Financial protection varied, ranging from free-of-charge services as in Thailand, to insurance-subsidized services with co-payments in Japan and South Korea, and to fully out-of-pocket payments in LMICs, such as India.

Through the WHO Universal Health Coverage (UHC) Cube framework, it was found that, although national health insurance systems in some countries provided strong financial protection (e.g., the Netherlands and Thailand), access barriers persisted due to uneven distribution of dental

professionals between urban and rural areas and low technical quality of prostheses. This phenomenon confirms that achieving UHC in the dental sector requires not only expanding financing schemes to reduce out-of-pocket costs but also standardizing service quality and ensuring geographic equity to guarantee effective coverage for older adults.

DISCUSSION

This study indicates that denture services for older adults within the framework of Universal Health Coverage (UHC) are implemented unevenly across countries and are not yet optimally integrated across the three main UHC dimensions. Although some countries have included dental services within their national health insurance systems, prosthodontic services remain relatively limited and are not always explicitly prioritized for older adult populations. In the Indonesian context, the implementation of Universal Health Coverage through the National Health Insurance (Jaminan Kesehatan Nasional/JKN) has expanded access to basic dental services. However, denture services for older adults remain subject to certain limitations, including service ceilings and specific reimbursement regulations. Although older adults are formally covered under the UHC scheme, denture services are not explicitly positioned as a priority benefit for ageing populations. This reflects a similar pattern observed in several middle-income countries, where prosthodontic services are included but remain limited in scope and financial protection.

From the population coverage perspective, the findings indicate that not all policies explicitly designate older adults as a priority group for denture services. Some countries adopt a universal approach, while others restrict access based on age criteria or socio-economic status. This reflects that, despite increasing needs among older adults due to population aging, policies are not yet fully responsive to the specific vulnerabilities of this group. In terms of service coverage, most health systems limit the types of dentures covered, generally only including removable dentures made from certain materials and imposing restrictions on replacement frequency. More complex services, such as implants or fixed dentures, are rarely included in basic benefit packages. While this reflects cost-containment considerations, it also restricts access to more optimal rehabilitative options for older adults.

In Indonesia, denture services under the national insurance scheme are generally limited to basic removable dentures with defined reimbursement caps. These limitations may affect the quality and durability of prostheses provided, as well as the frequency of replacement. As a result, although service coverage formally exists, the comprehensiveness of rehabilitative care for older adults remains constrained. Meanwhile, in the financial protection dimension, the inclusion of services in benefit packages does not always guarantee affordability. Funding caps, claim limits, and cost-sharing schemes still impose direct out-of-pocket expenses on older adults. Consequently, there is a gap between the formal coverage specified in regulations and the financial protection actually experienced by beneficiaries. From the financial protection perspective, Indonesian older adults may still face out-of-pocket payments when the cost of denture services exceeds the reimbursement ceiling or when seeking services outside the contracted provider network. This indicates that formal inclusion within the UHC scheme does not necessarily eliminate financial barriers, particularly for prosthodontic rehabilitation.

Overall, the findings of this study underscore that the integration of denture services for older adults within the UHC framework remains partial. The three UHC dimensions are not yet balanced, resulting in inequitable access and insufficient financial protection for older adults. These findings highlight the importance of repositioning prosthodontic services as part of essential health services to address the growing older adult population

CONCLUSION

Denture services for older adults have been accommodated within various health systems under the Universal Health Coverage (UHC) framework; however, their implementation remains variable and not yet fully optimally integrated. Population coverage, the types of services guaranteed, and financing mechanisms show restrictions that impact both access and financial protection for older adults. In the Indonesian context, although denture services are formally included under the National Health Insurance scheme, limitations in benefit ceilings and service scope indicate that coverage remains partial. Strengthening policy responsiveness to the needs of the ageing population is necessary to ensure that denture services are positioned as essential rehabilitative care within the UHC framework.

REFERENCE

- Ahn, E., Hwang, J.-M., & Han, J.-H. (2018). The effects of national health insurance denture coverage policies for the elderly on the unmet dental needs of the edentulous elderly. *Journal of Dental Hygiene Science*, 18(3), 182–187.
- Ahn, E., Hwang, J.-M., & Shin, M.-S. (2015). Dental utilization associated factors among elderly. *Journal of Dental Hygiene Science*, 15(1), 60–66.
- Bakker, M. H., Vissink, A., Raghoobar, G. M., Peters, L. L., & Visser, A. (2021). General health, healthcare costs and dental care use of elderly with a natural dentition, implant-retained overdenture or conventional denture: An 8-year cohort of Dutch elderly (aged 75 and over). *BMC Geriatrics*, 21(1), 477.
- Barahona, P., Santibáñez, B., Celis, A., Fasce, G., & Dreyer, E. (2025). Removable dental prostheses and handgrip strength in the elderly population of the Chilean public and private health system. *Prosthesis*, 7(5), 130.
- Badan Pusat Statistik. (2024). *Statistik penduduk lanjut usia 2024*. BPS.
- Choi, J.-S., & Jung, S.-H. (2020). The impact of expanded national health insurance coverage of dentures and dental implants on dental care utilization among older adults in South Korea: A study based on the Korean health panel survey. *International Journal of Environmental Research and Public Health*, 17(17), 6417.
- Da Veiga Pessoa, D. M., Roncalli, A. G., & De Lima, K. C. (2016). Economic and sociodemographic inequalities in complete denture need among older Brazilian adults: A cross-sectional population-based study. *BMC Oral Health*, 17(1), 5.
- Falatehan, N., & Denilson, D. (2022). Effectiveness of control time on behavioral changes in complete denture cleaning among elderlies. *e-GiGi*, 10(1), 51–56.
- Gomes Filho, V. V., Moreira, R. D. S., Silva Junior, M. F., Gondinho, B. V. C., Cavalcante, D. D. F. B., Bulgareli, J. V., et al. (2020). Factors associated with the need for a complete denture in one arch or both arches among the elderly population. *Brazilian Oral Research*, 34, e040.
- Harada, M., Umemori, S., Matsuyama, Y., Nitta, H., & Aida, J. (2025). Contribution of dental prostheses on the association between dental visits and self-reported chewing ability among older Japanese adults: A cross-sectional study. *BMC Oral Health*, 25(1), 1363.
- Intan Sari, E. (2025). *Pengaruh mind mapping kehilangan gigi terhadap pengetahuan dan minat penggunaan gigi tiruan pada pra lansia* [Thesis, Poltekkes Kemenkes Yogyakarta].
- Limpuangthip, N., Purnaveja, S., & Somkotra, T. (2019). Predisposing and enabling factors associated with public denture service utilization among older Thai people: A cross-sectional population-based study. *BMC Oral Health*, 19(1), 220.
- Lin, Y. E., Zhang, X., Chen, M., Ji, Y., Shi, Y., Lin, Y., et al. (2025). Prevalence and associated factors of denture use among older adults living in rural and urban areas of China: A national cross-sectional study. *BMC Oral Health*, 25(1), 415.
- Matsuyama, Y., Aida, J., Takeuchi, K., Tsakos, G., Watt, R. G., Kondo, K., & Osaka, K. (2014). Inequalities of dental prosthesis use under universal healthcare insurance. *Community Dentistry and Oral Epidemiology*, 42(2), 122–128.

- Peron, D., Muniz, F. W. M. G., Colaço, J., Marostega, M. G., Dias, J. J., Rösing, C. K., & Colussi, P. R. G. (2022). Use and need of dental prosthesis among community dwelling elderly: A cross-sectional population-based study. *Cadernos Saúde Coletiva*, 30, 274–284.
- Ratnasari, D., Isaeni, R. S., & Fadilah, R. P. N. (2019). Kebersihan gigi tiruan lepasan pada kelompok usia 45–65 tahun removable denture cleanliness in the 45–65 years age group. *Padjadjaran Journal of Dental Researchers and Students*, 3(2), 87–91.
- Rebelo, M. A. B., Emmi, D. T., Herkrath, F. J., Meira, G., De Goes, P. S. A., & Vettore, M. V. (2018). Need of dental prosthesis in older people and the offer of specialized care in the unified health system, Brazil. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*, 18(1).
- Shah, N., Parkash, H., & Sunderam, K. (2004). Edentulousness, denture wear and denture needs of Indian elderly: A community-based study. *Journal of Oral Rehabilitation*, 31(5), 467–476.
- Silva, M. A., Batista, A. U. D., Abreu, M. H. N. G., & Forte, F. D. S. (2019). Oral health impact profile: Need and use of dental prostheses among Northeast Brazilian independent-living elderly. *Ciência & Saúde Coletiva*, 24, 4305–4312.
- Silva, M. A., Batista, A. U. D., Abreu, M. H. N. G., & Forte, F. D. S. (2020). Impact on the quality of life of older adults who use inadequate dental prostheses: A cross-sectional study. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*, 20, e4713.
- Sudrajat, A. T. H. (2022). Program universal health coverage (UHC) di Indonesia. *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan*, 7(2), 462–473.
- Techapiroontong, S., Limpuangthip, N., Tumrasvin, W., & Sirotamarat, J. (2022). The impact of poor dental status and removable dental prosthesis quality on body composition, masticatory performance and oral health-related quality of life: A cross-sectional study in older adults. *BMC Oral Health*, 22(1), 147.
- Vieira, B. L. D. C., Morais, L. P. D., Vargas-Ferreira, F., Guimarães, M. R. C., Mattos, F. F., & Vargas, A. M. D. (2021). Use and need of removable dental prostheses in an institutionalized Brazilian elderly population: A cross-sectional study. *Brazilian Oral Research*, 35, e134.
- Vigild, M. (1987). Denture status and need for prosthodontic treatment among institutionalized elderly in Denmark. *Community Dentistry and Oral Epidemiology*, 15(3), 128–133.
- Whiting, P. F., Rutjes, A. W., Westwood, M. E., Mallett, S., Deeks, J. J., Reitsma, J. B., et al. (2011). QUADAS-2: A revised tool for the quality assessment of diagnostic accuracy studies. *Annals of Internal Medicine*, 155(8), 529–536.
- Winkelmann, J., Gómez Rossi, J., Schwendicke, F., Dimova, A., Atanasova, E., Habicht, T., et al. (2022). Exploring variation of coverage and access to dental care for adults in 11 European countries: A vignette approach. *BMC Oral Health*, 22(1), 65.
- Zhao, Y., & Kim, B. (2024). The effects of the expansion of dental care coverage for the elderly. In *Healthcare* (Vol. 12). MDPI.