# FINAL REPORT
# ORAL HEALTH DATA REGISTRATION & EVALUATION SYSTEM AMONG THE BELGIAN POPULATION 2023-2024

INTERUNIVERSITY CONSORTIUM EPIDEMIOLOGY

*COMMISSIONED BY* RIZIV-INAMI

*IN COLLABORATION WITH* sciensano

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# 1. PREFACE

The “Oral Health Data Registration and Examination Survey (OHDRES) 2023-2024” is the next round of oral health data collection among the Belgian population, following previous editions carried out in 2008-2010 and 2012-2014. OHDRES 2023-2024 links information collected through face-to-face interviews as part of the national Health Interview Survey (HIS) 2023-2024, with oral health data obtained by clinical examination and selected health care consumption data, at an individual level, resulting in a unique database enabling well-founded decision-making and policy development with regard to oral health care organization and delivery in Belgium.

This report presents a selection of results obtained in the sample of OHDRES 2023-2024 participants and compares these results with those of previous editions of the OHDRES. More details are provided in the next chapters of this document.

OHDRES 2023-2024 was commissioned and financed by the National Institute for Health and Disability Insurance (NHIDI). The study is a secondary study of the Belgian Health Interview Survey (HIS 2023-2024), carried out by Sciensano, which was commissioned and co-financed by the different Belgian authorities responsible for public health. For the OHDRES 2023-2024 project, a collaboration agreement was concluded between Sciensano and the Interuniversity Consortium Epidemiology (ICE), a partnership between KU Leuven (Dominique Declerck), ULB (Peter Bottenberg), UCLouvain (Joana Carvalho) and UGent (Martijn Lambert).

The Sciensano HIS scientific team coordinated the activities between HIS and OHDRES and provided methodological support. The ICE team wants to acknowledge the collaboration with Stefaan Demarest (coordinator), Johan Van der Heyden, Christina Stabourlos and Manon Janssens.

The OHDRES 2023-2024 execution and progress were monitored by a Guidance Committee, chaired by NIHDI Director-General Mickaël Daubie, and consisting of representatives of the Medical Care Department *(Dienst Geneeskundige Verzorging/Service des soins de santé)*, Insurance Committee and National Committee Dentists-Mutualities of the NIHDI; representatives of health insurance funds, the policy cell of the Minister of Health and the Federal Public Service for Public Health, Food Chain Safety and Environment.

For the linkage of data obtained from different sources, collaboration with the following partners was essential: the Information Security Committee, the Belgian Statistical Office (Statbel), the InterMutualistic Agency (Montse Urbina, David Jaminé). The ICE team appreciates their efforts to realize this process.

The ICE team wants to acknowledge in particular Kris Bogaerts and Ann Belmans from the Leuven Biostatistics and Statistical Bioinformatics Centre (L-Biostat, Department of Public Health and Primary Care, KU Leuven) for statistical analyses and efficient collaboration.

The ICE team wants to thank all HIS interviewers that contributed to the collection of questionnaire data. Dentist-examiners and ICE-screeners collected the clinical data based on oral health examinations. The ICE team acknowledges their work and appreciates the extra efforts this required.

Finally, the ICE wants to thank the members of the project team: Doris Voortmans (scientific collaborator), Ezgi Öğün (scientific collaborator), Truu Ravelengee (administrative support) and Hilde Gevaert (administrative support). Their efforts were indispensable to successfully complete the project.

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# 2. INTRODUCTION

In the latest *Global Oral Health Status Report* by the World Health Organisation (WHO), oral diseases remain the most common health conditions worldwide across all four income groups into which countries are categorized (WHO, 2022). It is estimated that in 2019, 3.5 billion people globally had an untreated oral condition. Between 1990 and 2019, the global prevalence of oral diseases increased by 3.2%. Although the prevalence of caries in the primary dentition (42.7%) and permanent dentition (28.7%) slightly decreased during that period by 3.3% and 2.6% respectively, it is primarily severe periodontitis that is on the rise, with a total prevalence of 18.8% globally, an increase of 24.0% compared to 30 years earlier. Since periodontitis mainly affects people over the age of 50, the global ageing population and increased life expectancy suggest that the prevalence of periodontitis is unlikely to decline quickly without additional measures.

Oral diseases carry a significant burden, both in terms of health and economic costs. In addition to the WHO report, the World Economic Forum (WEF) also published a report highlighting the importance of investing in oral health (WEF White Paper, 2024). Both reports draw attention to the undeniable link between oral and general health and express the impact of oral diseases in terms of both direct and indirect economic costs.

Scientists have demonstrated a clear link between periodontitis and type II diabetes (Alwithanani, 2023). This relationship is bidirectional: a person with diabetes is at greater risk of developing periodontitis or may experience a faster progression of the disease. Moreover, a person with poorly controlled diabetes has a higher risk of developing candida infections, salivary gland dysfunctions, and delayed healing after tooth extractions. Conversely, it is also more difficult to manage blood sugar levels when periodontitis is present. When periodontitis is treated, blood sugar control improves, reducing the risk of serious complications related to diabetes and its associated costs (Nasseh et al., 2016).

An increased prevalence and incidence of cardiovascular diseases have also been demonstrated in people with chronic periodontal inflammation, along with a link to hypertension (Sanz et al., 2020; Martin-Cabezas et al., 2016). There is also a real risk of bacterial endocarditis - an inflammation of the endocardium caused by bacteria circulating through the body and attaching to vulnerable areas in the bloodstream.

Another medical condition linked to oral bacteria is aspiration pneumonia, an inflammation of the lung tissue caused by oral bacteria accidentally entering the airways (Khadka et al., 2021). Good oral hygiene can significantly reduce the risk of aspiration pneumonia and related mortality (Van der Maarel-Wierink et al., 2013). Regarding Alzheimer’s disease, a correlation has also been observed with periodontitis, although the biological mechanism behind this link is not yet fully understood (Barbarisi et al., 2024). However, the oral bacterium P. Gingivalis has been found in higher numbers in the brains of individuals with Alzheimer’s disease.

Both the direct health effects and the treatment of oral diseases are highly costly. A 2019 estimate calculated that global direct spending on the treatment of oral conditions exceeded 387 billion USD, which corresponds to an average of 50 USD per person globally, and nearly 5% of total health expenditures (Jevdjevic and Listl, 2025). Moreover, indirect costs must also be considered, such as productivity loss and other consequences of living with poor oral health, which were additionally estimated at 323 billion USD. Preventing oral diseases can therefore be seen as an important policy measure that promotes economic savings, public health, and oral-health-related quality of life.

When governments aim to improve oral health, they must take into account the unequal distribution of oral diseases. Just like general health, oral health depends on a range of health determinants related to the individual, their physical and social environment, and the broader societal context and health system of the country in which they live. Clear socio-economic health disparities emerge, presenting along a social gradient: as social vulnerability increases, so does the risk of oral diseases (Tellez et al., 2014).

Due to the high prevalence and impact of oral diseases, combined with their unequal distribution, it is crucial for governments to systematically monitor the oral health of the population. This enables timely responses to changes in oral health itself as well as to shifts in risk profiles. It is therefore no coincidence that the WHO included one of the six strategic goals in its *Global Strategy on Oral Health 2023-2030* focused on health information acquisition: "Enhance surveillance and health information systems to provide timely and relevant feedback on oral health to decision-makers for evidence-based policy-making" (WHO, 2024).

In order to obtain an instrument to monitor the oral health status of the Belgian population, the Insurance Committee of the National Institute for Health and Disability Insurance (NIHDI) took initiative, already more than 20 years ago. They commissioned the Interuniversity Consortium Epidemiology (ICE) to develop a system for data registration and evaluation with regard to the oral health of the Belgian population.

An important aspect of this assignment was to develop a proposal that fitted within the national accreditation system for dentists. The ICE developed an initial draft proposal in 2004, with a detailed description of the objectives and research questions of the data registration system, the possible partners, the intended population and sample, material and methods, ways in which the data can be collected and entered, the statistical analysis, budget and time schedule.

Subsequently, in 2007, the ICE was charged with carrying out a feasibility study with the aim of validating the proposed measurement instruments and process evaluation. The final report of this feasibility study was presented to the Insurance Committee of the NIHDI on September 1st 2008. Based on this report, it was decided to proceed with the definitive implementation of the proposed data registration system, also known as ‘Oral Health Data Registration and Evaluation System (OHDRES)’.

An initial data registration was carried out in the period 2008-2010 (OHDRES 2008-2010). From the start of the project, and already in the feasibility study, an integration with the national health interview survey (HIS) was intended and tested in terms of process. However, due to legal restrictions, it was impossible to obtain the necessary authorizations from the various instances involved. This first data collection round therefore consisted of data collected on the basis of the oral examination, data obtained through questionnaires to participants and data relating to healthcare consumption, but without a link to data from the national health interview survey. A detailed report of the OHDRES 2008-2010 can be consulted via the NIHDI website (link FR/NL ).

The NIHDI recognizes the importance of monitoring the oral health status of the Belgian population over time. For this reason, a subsequent data collection was launched in 2012. For this project, the necessary permissions were obtained to enable a link at the individual level with the data from the national health survey. Collecting oral health data in combination with general health data offers considerable added value. The online report can be consulted via the website of NIHDI and bundles the methods used and describes the results of the OHDRES 2012-2014 project (link FR/NL).

After a 10-year break, a next data collection was planned, being the OHDRES 2023-2024 project, the subject of this report. Sciensano was assigned to coordinate the project, and established a partnership with the ICE.

The aim of the OHDRES 2023-2024 project was to provide a representative and up-to-date picture of the oral health status, oral health-related behavior, relevant general health aspects and impact on quality of life of the Belgian population for the period 2023-2024. A link was made with relevant medical and dental care consumption data from the period 2018 to 2022, as well as with data from the national health survey (HIS 2023-2024).

The data thus obtained provide an overview of the current oral health status of the Belgian population, as well as trends that emerged over time. The data form a valuable basis for formulating recommendations and conducting additional research with implications for oral health policy in Belgium.

The report describes in detail the structure of the project, the partners involved, the materials and methods used, data collection, analysis, results, a final evaluation of the project and further recommendations. Where possible, a comparison with the results of the previous data collection rounds was presented.

This report is based on the data collected from participants in the national health survey (HIS 2023-2024) who agreed to participate in the OHDRES 2023-2024. The questionnaire on oral health habits was part of the HIS 2023-2024 and was conducted in a larger group of participants; these results are reported separately (see LINK NL/FR).

# 3. PROJECT TEAM AND TASKS

## 3.1. Project Team

The National Institute for Health and Disability Insurance (NIHDI) assigned the execution of the *Oral Health Data Registration and Evaluation System of the Belgian Population* (OHDRES) - a nationally representative epidemiological study on oral health in Belgium - to Sciensano, in conjunction with the 2023-2024 National Health Interview Survey (HIS 2023-2024).

For the oral health component, a subcontracting agreement was established between Sciensano and the Interuniversity Cell for Epidemiology (ICE), which includes representatives from the various dental schools in Belgium. KU Leuven acted as the official representative of ICE during the collaboration with all partners and relevant stakeholders, as described in the following chapter.

The ICE team included the following experts:

- Dominique Declerck (KU Leuven, Project coordinator)
- Peter Bottenberg (ULB)
- Joana Carvalho (UCLouvain)
- Martijn Lambert (UGent)

Collaborators of the project team:

- Doris Voortmans (KU Leuven)
- Ezgi Öğün (KU Leuven)
- Truu Ravelengee (KU Leuven)
- Hilde Gevaert (KU Leuven)
- Kris Bogaerts (KU Leuven, L-Biostat)
- Ann Belmans (KU Leuven, L-Biostat)

Advisor:

- Stefaan Hanson (Verbond der Vlaamse Tandartsen – VVT)

Fieldwork:
The fieldwork was conducted partly by a team of ICE-screeners (dentists), and partly by the participants' own dentists (dentist-examiners).

## 3.2. Tasks of the Project Team

The development and implementation of the Oral Health Data Registration and Evaluation System of the Belgian Population (OHDRES 2023-2024) consisted of several steps:

A. Drafting the research protocol
B. Concluding necessary agreements (Sciensano, IMA-AIM)
C. Requesting the necessary authorizations (Information Security Committee)
D. Updating the different measurement instruments (questionnaire, clinical module)
E. Developing the fieldwork procedure
F. Disseminating project information and updates to the general public and dental professionals.
G. Developing training and calibration tools and a digital examination form
H. Establishing ICE secretariat and helpdesk
I. Selecting, contacting, training, and calibrating the ICE-screeners and dentist-examiners
J. Preparing the codebook for statistical analysis
K. Conducting and monitoring the survey, in close collaboration with Sciensano
L. Sending compensation to participants (vouchers)
M. Cleaning the research data in the purpose-built databases
N. Monitoring the data linkage process
O. Analyzing the research results
P. Conducting a process evaluation and providing recommendations
Q. Preparing the final report

For a more detailed description of the assignment, we refer to chapter 5, and the project protocol (see annex 1).

# 4. PARTNERS AND INVOLVED INSTITUTIONS

## 4.1. National Institute for Health and Disability Insurance (NIHDI)

### 4.1.1. *Insurance Committee of NHIDI*

The National Institute for Health and Disability Insurance (NIHDI) acted as both the initiator and the supervisory committee for the Oral Health Data Registration project (OHDRES 2023-2024). For this project, a formal agreement was concluded between the NIHDI Insurance Committee and Sciensano on 03/10/2022.

For the elaboration of the OHDRES 2023-2024 project protocol and execution of the data collection, Sciensano entered into an agreement with the ICE for the period between 01/06/2022 and 31/12/2024, signed on the date of 19/12/2022. A prolongation of the project (additional 6 months, till 30/06/2025) was approved by the Insurance Committee on 10/03/2025 and signed on 10/04/2025.

### 4.1.2. *Guidance Committee*

A Guidance Committee was installed, chaired by NIHDI Director-General Mickaël Daubie, and consisting of representatives of the Medical Care Department *(Dienst Geneeskundige Verzorging/Service des soins de santé)*, Insurance Committee and National Committee Dentists-Mutualities of the NIHDI; representatives of health insurance funds, the policy cell of the Minister of Health and the Federal Public Service for Public Health, Food Chain Safety and Environment. The Guidance Committee was regularly updated on the progress of the project. An interim report on the project status was submitted and discussed with the Guidance Committee on 09/10/2023 and on 13/09/2024. In the latter meeting, a prolongation of the data collection period with 6 months was requested because of the slow recruitment of participants.

### 4.1.3. *Steering Committee for Quality Promotion of Dentists*

Since participants in the OHDRES 2023-2024 project had the option of undergoing the clinical examination with their own dentist, permission was requested from the Steering Committee to link the clinical oral examination to the accreditation requirements for general dentists. This was done to avoid a low participation rate among participants' own dentists.

## 4.2. Sciensano

Sciensano is the Belgian national public health institute. It supports health policy and public health through scientific research, surveillance, and expert advice. Sciensano collects and analyzes health data to monitor trends, ensure quality of care, and protect public health. It is also responsible for conducting the national Health Interview Surveys (HIS) in Belgium.

An agreement was concluded among Sciensano and the ICE for the data collection on oral health. The Sciensano HIS scientific team coordinated the activities between HIS and OHDRES and provided methodological support.

## 4.3. Intermutualistic Agency

The Intermutualistic Agency (IMA) is a non-profit organization established by the seven health insurance funds. Its mission is to analyze the health data collected by the insurance organizations within the scope of their mandate and to provide relevant information.

IMA supported the ICE during its application for data linkage with the Information Security Committee, assisting in the development of the data flow scheme and ensuring that all required procedures were properly followed. Once approval from the IVC was obtained (deliberation of 03/12/2024, amended 01/04/2025), IMA provided the requested data on medical and dental care utilization via a secure server.

## 4.4. Leuven Biostatistics and Statistical Bioinformatics Centre (L-Biostat)

The Leuven Biostatistics and Statistical Bioinformatics Centre (L-BioStat) at KU Leuven is part of the Department of Public Health and Primary Care. L-BioStat was responsible for the statistical analysis of the linked data in this project.

# 5. MATERIALS AND METHODS

## 5.1. Study Design

The OHDRES 2023-2024 is a cross-sectional epidemiologic study carried out in the general population of Belgium. It has been repeated over time since it was launched in 2008-2010. The present edition is the 3rd edition of its kind. As similar information was already collected in previous rounds of data collection, comparable data from these studies can be merged, and the combination of studies can be considered as a repeated cross-sectional epidemiologic study. The study design considered compatibility with information obtained in previous editions of the OHDRES and with international oral health data, allowing longitudinal and cross-sectional comparisons.

### 5.1.1. *Study Set-up*

The organization of the HIS 2023-2024 offered an excellent opportunity for a next round of oral health-related data collection. Therefore, eligible HIS participants were invited to additionally participate in OHDRES 2023-2024. Participation in OHDRES 2023-2024 implied an oral health examination taking place preferably within 2 months of participation in HIS. For those who consented, linkage at an individual basis of data derived from the HIS 2023-2024-2024, the oral health examination data and relevant health care consumption data was established.

The OHDRES 2023-2024 consisted of 3 parts:

- an oral health module integrated in the HIS 2023-2024 face-to-face questionnaire, collected by the HIS interviewers;
- an oral health examination (OHE) carried out by a calibrated dentist using standardized criteria;
- selected data on use of health care services and reimbursed medicines extracted from the registers of the Inter-Mutuality Agency (AIM-IMA).

### 5.1.2. *Study Period*

The study period was determined by the timing of the HIS 2023-2024.
The HIS 2023-2024 field work took place between February 2023 and December 2024. HIS 2023-2024 participants were to be invited to take part in OHDRES 2023-2024 until the anticipated net sample size was reached. OHDRES 2023-2024 data collection started October 15th, 2023 and was closed on January 15th, 2025.

## 5.2. Population and Sample

### 5.2.1. *Target Population and Study Population*

Participants of the OHDRES 2023-2024 project were recruited among participants of the HIS 2023-2024, following the principle of second-stage recruitment.

The main objective of the HIS 2023-2024 is to describe the health status and related behaviors of Belgian residents, regardless of their place of birth, nationality or any other characteristic. For this purpose, the sampling frame consisted of all households listed in the Belgian National Register (NR).

It should be noted that, for practical reasons, exclusion rules were applied and therefore the study population did not include:

- people living in Belgium but who are not listed in the NR (homeless people, illegal immigrants, etc);
- people residing in:
    - an institution (including psychiatric institutions), with the exception of older people living in residential care centers, nursing homes and psychiatric nursing homes
    - a religious community or cloister
    - a prison
- people in newly created households not registered as such in the NR.

More detailed information on the HIS 2023-2024 sample can be found in the HIS 2023-2024 study protocol: (https://www.sciensano.be/sites/default/files/studyprotocol_his2023_1.pdf).

### 5.2.2. *Sample Size*

A distinction has to be made between the 3 data collections that are part of the OHDRES 2023-2024.

- The sample size for persons taking part in the **oral health interview module** corresponds with the number of HIS participants within the study group. For the HIS 2023-2024 the basic sample size was set at 10,700 people (4,200 for Flanders, 3,500 for Wallonia, including 300 for East Belgium, and 3,000 for Brussels). The German Community authorities requested and provided funding for an oversampling of 600 units. As a result, the final sample size for the HIS 2023-2024 was set at 11,300.
- The sample size for participants in the **oral health examination** (OHE) was set to match that of the national Food Consumption Survey (FCS-2014), with a target of 3,200 individuals. This implied that 30% of the eligible HIS 2023-2024 participants had to participate in the OHDRES 2023-2024. Given the experience from the previous OHDRES (with final sample n = 1,875) and the national Health Examination Survey HES-2018 (participation of 24% among eligible HIS-2018 respondents), and taking into account that participants needed to take up a far more active role than in those previous surveys, it was considered doubtful that this participation rate could be reached. The maximum sample size for the OHDRES 2023-2024 was set at a number corresponding to a participation rate of 25%. This resulted in a sample size of 2,675 people.

- The sample size of the persons for whom a linkage was done with selected data on **use of health care services and reimbursed medicines** extracted from the registers of the Inter-Mutuality Agency (AIM-IMA), is the same as for the HIS 2023-2024 interview, minus an anticipated drop-out of around 10% due to refusal for linkage and failure to identify NR numbers of HIS respondents in the IMA database.

### 5.2.3. *Sampling Methodology*

Participants of the OHDRES 2023-2024 were recruited among participants of the HIS 2023-2024 following the principle of second stage recruitment. In this section, the overall sampling procedure used for the HIS 2023-2024 is briefly described, followed by the procedure used for the OHDRES 2023-2024.

**HIS 2023-2024 sampling strategy**

In the design of the sampling scheme, both the coverage of the population in Belgium and the logistical feasibility of the fieldwork were important concerns. Therefore, a stratified clustered multi-stage design was developed. In this design, municipalities served as primary selection units, while households within the municipalities and individuals within households were respectively second and third-stage units.

The final sampling scheme, i.e. the mechanism to get a probabilistic sample of households and respondents, was a combination of several sampling techniques: stratification, multistage sampling and clustering. The selection process consisted of the following steps:

- Regional stratification (the Flemish Region, the Walloon Region and the Brussels Capital Region):
- Stratification at the level of the provinces, proportional to the population size of the province;
- Stratification at the level of the *'zorgregio's/arrondissements électoraux'* allowing to make geographical comparisons at a lower geographical level;
- Within each stratum, municipalities were selected with a selection probability proportional to their size. These municipalities were called the Primary Sampling Units (PSU);
- Within each municipality, a sample of households - the Secondary Sampling Units (SSU) - was drawn in such a way that 50 individuals per PSU could be interviewed in total;
- Finally, at most four individuals - the Tertiary Sampling Units (TSU) - were chosen for the interviews within each household. For households with at least five members, the reference person and his/her partner (if any) were selected. Among the remaining household members, a random selection was made, so as to yield four selected household members.

The sampling procedure was carried out by the Belgian statistical office, Statbel.
More detailed information on the HIS 2023-2024 sampling procedure can be found in the HIS 2023-2024 study protocol:
(https://www.sciensano.be/sites/default/files/studyprotocol_his2023_1.pdf).

**Oral health interview sampling strategy**

All eligible HIS 2023-2024 participants answered the oral health module in the HIS 2023-2024 interview. For respondents younger than 15 years and adults who were not able to complete the questionnaire by themselves, this was done by a proxy interview.

**Use of health care services and reimbursed medicines**
All HIS 2023-2024 participants were asked for their consent to link their data with IMA data. Only in case of informed consent (by parents or tutor in case of a minor), a linkage was done.

**Oral health examination sampling strategy**
All participants of the HIS 2023-2024 were eligible for participation in the OHDRES 2023-2024 project, except children younger than 5 years. All eligible HIS 2023-2024 participants were invited to take part in the oral health examination until the target sample was reached or until the HIS 2023-2024 fieldwork was finished.

### 5.2.4. *Recruitment and Motivation of Participants*

The data collection phase for the HIS 2023-2024 started when the households were notified that they were randomly selected to take part in the HIS 2023-2024. In order to inform a household that it was selected for participation in the survey, Statbel sent an invitation letter (annex 2) and an introductory leaflet (annex 3) addressed to the reference person of the household. The leaflet explained, amongst others, the goal and the content of the HIS 2023-2024 as well as the contact practicalities, i.e. that an interviewer would contact them shortly after receiving the letter. In the letter, reference was made to the possibility to participate in the OHDRES 2023-2024.

As soon as these information documents were sent to the household, the interviewer responsible for the given (group of) households received access to the contact data of the household (full names of the household members and address), with an indication which household members were selected for participation in the HIS 2023-2024. The interviewer then attempted to establish contact to find out whether the household was willing to participate, and if so, to set an appointment for the interview phase.

Before the start of the HIS 2023-2024 interview, the interviewers asked eligible HIS 2023-2024 respondents if they were willing to be re-contacted for participation in the OHDRES 2023-2024 project. If so, the participant was asked to sign an informed consent form to agree that contact details could be shared with the ICE secretariat and the dentist to organize the oral health examination. An item on the informed consent form of the HIS 2023-2024 was dedicated to this purpose.

At the end of the HIS 2023-2024 face-to-face interview, respondents willing to be re-contacted for the oral health examination were asked whether they preferred the examination to be performed by their own dentist or by an ICE-screener. In case they preferred their own dentist, information on this dentist was registered (name, address, telephone number, e-mail address), allowing the ICE secretariat to contact the dentist and plan the appointment.

Because a low participation rate was considered a major risk, particularly in vulnerable population groups, incentives were used to motivate participation. Especially because participants needed to invest time and faced travel costs to visit the dentist. Therefore, a voucher of €40 was provided to participants who visited their own dentist and €20 to those who were examined at home by an ICE-screener. The HIS 2023-2024 interviewers explained that a higher incentive was offered if participants visited their own dentist, as compensation for travel expenses. Incentives were provided to the participants once the oral health examination data had been entered in the central database.

## 5.3. Interviewers and Dentists

The basic principle applied was that HIS 2023-2024 participants willing to participate in the OHDRES 2023-2024 project, indicated the dentist of their own choice to record relevant oral health conditions, using the tools developed for this purpose. Only in case this was not possible, an ICE-screener performed the oral health examination at the home of the participating household.

### 5.3.1. *Statbel Interviewers*

Interviewers, employed by Statbel, collected interview data through the HIS 2023-2024 questionnaire, including oral health-related information. The role of these interviewers was twofold: (1) to establish contact with all households selected for an interview in the group assigned to them, and (2) to conduct the interviews with the selected members of the participating households. The structured interviews were carried out in a face-to-face setting with all selected household members (or proxy interview for those under 15 years of age and for those adults with special needs). The data were collected via a “computer-assisted personal interview” (CAPI). The interviewers read out the questions on screen to each respondent and entered their answers directly into the software application available on their laptop. After conducting the interviews, the data collected were directly uploaded to the HIS 2023-2024 database at Statbel without further treatment. The CAPI application was developed by Sciensano and Statbel using the software package Blaise® 5.10.7.

The questionnaires were available in French, Dutch, German (the three national languages in Belgium) and English (for foreigners). If a selected individual did not speak any of these languages, a translator could be used. The translator was generally a household member who was fluent in both the participant’s native language and one of the languages spoken in Belgium. All interviewers active in the HIS 2023-2024 had to follow a one-day training in order to ensure the standardization of all data collection and fieldwork procedures. This included information on supplementary tasks in the context of the OHDRES 2023-2024. The ICE developed an interview guide (annex 4) for Statbel interviewers to assist them in their task of collecting the oral health-related information.

For more details on the procedures related to the HIS 2023-2024, we refer to the HIS 2023-2024 study protocol: (https://www.sciensano.be/sites/default/files/studyprotocol_his2023_1.pdf).

### 5.3.2. *Dentist-examiners and ICE-screeners*

Field procedures adopted for the OHDRES 2023-2024 differed from those applied in previous OHDRES rounds. In previous editions, every oral health examination was carried out by dentist-interviewers at the participant’s home. In the 2023-2024 edition, participants who agreed to participate in the OHDRES 2023-2024 were asked to visit their own dentist for an oral health examination. If participants did not have an own dentist or preferred not to involve their own dentist, a home visit by an ICE-screener was arranged. For this purpose, a team of dentist-screeners was recruited. More information on this is provided in subsequent sections.

#### *5.3.2.1. Recruitment, selection and motivation of dentists*

The ICE launched a campaign to inform and motivate dentists to carry out the oral health examinations. For this purpose, an informative letter (annex 5) was circulated by the NIHDI to all general dentists licensed to practice in Belgium. In addition, representative dental associations were approached (Verbond Vlaamse Tandartsen (VVT), Vlaamse Beroepsvereniging Tandartsen (VBT), Société de Médecine Dentaire (SMD) and Chambre de Médecine Dentaire (CMD)) and asked to circulate the announcement of the OHDRES 2023-2024 to their members, using their own information channels.

Participation of dentists was considered part of the accreditation requirements for general dentists (and explicitly mentioned in section 'Participate in data collection as part of the oral health policy', consultable via web page https://www.riziv.fgov.be/nl/professionals/individuele-zorgverleners/tandartsen/gegevensverzameling-mondzorgbeleid), which was intended to increase the willingness of general dentists to participate.

As compensation for time and efforts to carry out the examination(s), dentists received €100 per examination. If the oral health examination was performed by the own dentist, this amount covered the actual examination (€75) and the time needed for preparation, training and calibration for this examination (€25). If the oral health examination was performed by an ICE-screener it covered both the examination (€75) and a fixed amount for compensation of time needed for training and calibration (once) and travel costs (€25).

#### *5.3.2.2. Dentist-examiners*

When a participant in the OHDRES 2023-2024 chose to have the oral health examination conducted by their own dentist, the ICE secretariat received the dentist's contact information from the HIS-interviewer through a digital application developed specifically for this purpose (see also 5.5.1.5). The ICE secretariat then contacted the dentist by postal mail, explaining the purpose of the oral health examination and forwarding all necessary practical information and documentation: invitation letter (annex 6), contact details of participant(s), consent forms (annex 7), instructions for preparing the oral health examination, including training and calibration instructions (annex 8) and compensation application form (annex 9). The dentist then invited participants belonging to their own patient database to their dental office to conduct the oral health examination following standardized instructions (see also 5.3.2.4).

#### *5.3.2.3. ICE-screeners*

As part of the information campaign (see also 5.3.2.1), dentists were also invited to act as ICE-screener. These dentists were willing to conduct oral health examinations at the participants' home, using identical standardized examination procedures. For this purpose, the ICE-screener received an examination kit (per participant).

When a participant in the OHDRES 2023-2024 chose to have the oral health examination conducted by an ICE-screener, the ICE secretariat contacted an available ICE-screener and provided them with all the necessary instructions and documents. ICE-screeners followed the same training and calibration procedure as developed for the dentist-examiners (see also 5.3.2.4).

#### *5.3.2.4. Training and calibration*

In order to standardize the oral health examination, an illustrated clinical guidelines (annex 10) was developed. It included a 32-page document explaining the oral health examination in detail, including the criteria to be used for each clinical condition, illustrated with clinical pictures. This guideline was provided to the dentist-examiners and ICE-screeners in Dutch and French using a link to the project platform. The document could be downloaded, and printed copies were sent upon request. In order to standardize the oral health examination as much as possible, the ICE developed online training and calibration modules in collaboration with Sciensano, using © LimeSurvey GmbH.

The **training module** comprised six clinical cases which were initially set up in a PowerPoint presentation. The clinical cases were developed to cover all relevant oral health conditions as described in the OHDRES oral examination form. The cases were based on real patients of different ages who came for a routine oral health examination and consented to have their oral health status photographed for educational purposes. Each case was illustrated by standardized full mouth photographs consisting of lateral right, central and lateral left views of the dentition, together with occlusal maxilla and mandible views. This simulates as far as possible the dentitions of persons undergoing oral health examinations in daily practice. This method of assessment was previously validated (Carvalho et al. 2018; Kanaan et al, 2021).

In the online training module, dentists were asked to assess selected clinical conditions per case. If their first assessment was incorrect, a second attempt was allowed. If the second attempt was also incorrect, the correct answer was provided. Completion of the training module was optional, and dentists could proceed to the calibration module once they felt confident in their scoring.

The **calibration module** consisted of seven other clinical cases, including a variety of clinical conditions to be assessed. The clinical cases were developed following the above-mentioned specifications for the training module. Upon completion of this online module, dentists received a score based on the number of correct responses, compared to a benchmark established by the ICE. Dentists achieving ≥75% agreement with the benchmark were authorized to perform OHDRES 2023-2024 clinical examinations. Those who did not meet this minimum score were invited to repeat the training and calibration modules. Dentists experiencing difficulties in passing the calibration test could contact the ICE to receive tailored feedback and individual help. Passing the calibration module was mandatory prior to performing OHDRES 2023-2024 examinations.

#### *5.3.2.5. Documents and materials used in the survey*

Documents and materials made available to the examiners to carry out the clinical examination are listed below and are available as an attachment:

- Invitation letter dentist (annex 6) including general instructions and links (available in Dutch, French and German)
- Training and calibration instructions (annex 8) (available in Dutch, French and English)
- Illustrated guidelines for clinical examination (annex 10) (available in Dutch, French and English)
- Information and consent forms for participants (annex 7) (adult/minors) (available in Dutch, French and English)
- Compensation application form for dentists (annex 9) (available in Dutch and French)

- Material for clinical examination (only ICE-screeners, made available in box containing sets for examining 20 participants, shipped by post:
    - examination kits (per participant, MDDI dental diagnosis instrument kit SI951ST-1) containing dental mirror, No.8 standard/CPITN-C probe 3.5/5.5/7.5/11.5 and examination tweezers;
    - disposable table covers;
    - cotton rolls;
    - ear-loop face masks IIR;
    - headlamp (Black Diamond);
    - medical waste disposal bags.

## 5.4. Collection of data and their sources

### 5.4.1. *General Health Condition and Socio-demographic Information*

Several variables, already being part of the HIS 2023-2024, were used to obtain information on:

- sociodemographic characteristics (nationality, educational level, housing, employment, income…);
- accessibility of (dental) care;
- nutritional habits (consumption of fruits/vegetables, soft drinks,…);
- use of addictive substances (alcohol, tobacco, drugs,…);
- selected medical conditions (cardiovascular diseases, diabetes, cancer, dementia, …);
- chronic physical disabilities;
- mental health (anxiety, depression,…);
- quality of life.

A detailed overview of all questions relevant to oral health included in the HIS 2023-2024 can be found in the Information Security Committee deliberation (annex 11 or pages 15-18: 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf).

### 5.4.2. *Oral Health-related Habits and Perceived Oral Health*

Information on oral health related habits and oral health-related quality of life formed an integral part of the HIS 2023-2024 face-to-face interview, more specifically in the ‘oral health/dental care’ and ‘contacts with the dentist’ modules. The questions were selected, prepared and validated by the ICE. In this process, comparability with previous data collection rounds was considered the guiding principle, in order to allow comparison across surveys and monitor the evolution of indicators over time. Most questions were identical to those used in the previous OHDRES. At the same time, evolutions in the international scientific field, emerging public health concerns, specific requests (eg from WHO) and actual research topics were considered. Whenever possible and available, validated instruments and indicators were used. The development of the HIS 2023-2024 questionnaire was also guided by the need to keep an optimal length, meaning all demands for additional topics/questions could not be honored. This approach was necessary in order not to jeopardize the participation in the study and the validity of the results.

The questionnaires used for the HIS 2023-2024 are available on the HIS website (https://www.sciensano.be/en/projects/health-interview-survey).
For more details on the overall HIS 2023-2024 questionnaire development procedure, we refer to the HIS 2023-2024 study protocol:
(https://www.sciensano.be/sites/default/files/studyprotocol_his2023_1.pdf).

Specific **oral health-related information** collected as part of the HIS 2023-2024 consisted of:

- reported presence of natural dentition
- wearing of a removable dental prosthesis
- oral hygiene practices
    - frequency of tooth brushing
    - use of fluoridated toothpaste
    - frequency of interdental cleaning
    - frequency of cleaning removable denture
- own assessment of oral health conditions
- dental attendance
    - need for dental exam/treatment
    - most important reason for attending dentist
    - last dental visit
    - reason for postponing dental visit > 12 months

**Oral health-related quality of life** was measured using questions related to perceived oral health, pain at the level of the temporomandibular joint, presence of bleeding gums and other pain/discomfort. These questions asked whether any of these complaints were present during the 4 weeks before the interview. A detailed overview of all questions related to oral health included in the HIS 2023-2024 can be found in the Oral Health Section of the HIS (see chapter 10.1).

### 5.4.3. *Clinical Findings*

Information on the oral health condition of the participants was collected based on a clinical oral examination performed by a calibrated dentist (see also 5.3.2). The oral health status comprised a selection of relevant oral health indicators, providing an overall picture of the oral health of the Belgian population. The following oral health conditions were assessed during the clinical examination (in the sequence as described):

- **Dento-facial anomalies:**
  Crowding, horizontal (overjet) and vertical malocclusion (open bite, overbite).
  Recorded in the front region of the upper and lower jaw, in participants ≥12 years, based on Mohlin et al (2017).

- **Oral hygiene status:**
  Recorded on selected teeth (teeth 16, 12, 24, 36, 32 and 44 in permanent dentition; teeth 55, 52, 64, 75, 72 and 84 in primary dentition), in all age groups, using Plaque-Index as described by Löe (1967).

- **Periodontal status:**
  Recorded in all sextants, in participants ≥15 years using the Dutch Periodontal Screening Index (DPSI) as described by Van der Velden (2009).

- **Tooth wear:**
  Recorded in all sextants on incisors and 1st permanent molars, in participants ≥6 years based on the Basic Erosive Wear Index (BEWE, Bartlett et al, 2008) and recommendations published by Martignon et al (2019).

- **Hypomineralisation of first molars:**
  Recorded on 1st permanent molars, in participants ≥6 years, based on Ghanim et al (2017).

- **Tooth status:**
  Caries experience was recorded on all teeth, in all age groups, based on the principles described in the Basic Methods for Oral Health Surveys issued by the World Health Organization (WHO) (2013).

- **Prosthodontic status:**
  Presence of fixed or removable prosthetic devices, recorded in all age groups.

- **Functional occlusal contacts:**
  Number of contacts between occluding tooth pairs, recorded on both sides (right/left) and with/without wearing removable denture, in participants ≥15 years, as described by Reismann et al (2019).

For more detailed information on the indicators used, we refer to the clinical examination form (see chapter 10.2) and illustrated guidelines for clinical examination (annex 10).

### 5.4.4. *Health Care Services Consumption and Use of Medicines*

#### *5.4.4.1. Data source*

Information on the use of health care services and reimbursed medicines was extracted from the registers of the Inter-Mutuality Agency (AIM-IMA). The data described below were requested for all HIS 2023-2024 participants. In this way, the healthcare consumption of the entire sample could be examined in relation to reported data on oral health-related behavior, well-being, socio-demographic data, chronic diseases and drug use. In the subsample participating in the OHDRES 2023-2024, the data were additionally associated with the actual oral health condition of the participant (clinical data). Furthermore, a link was made with Farmanet data allowing for the examination of the association between the use of certain types of medication and oral health.

#### *5.4.4.2. Data period*

The data were requested for the period of data collection (2023-2024) as well as for the 5 preceding years, covering the period from 2018 to 2022.

*5.4.4.3. Variables included*

**Dental care consumption**

For this component, all dental codes included in the NIHDI nomenclature of medical services were considered. This overview is included in the Information Security Committee deliberation (annex 11 or on pages 22-42: 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf). For processing, the codes were aggregated to obtain a clearer picture (for an overview, see page 22 of the deliberation). When aggregating, the various changes in the nomenclature that took place over the years in the period in question were taken into account. The numbers (n) per category of services were collected for each year considered. In addition, the AIM-IMA also aggregates certain variables of sub-areas in dentistry. These aggregated variables were also requested:

- Number of dental visits: FR / NL
- Number of preventive dental services: FR / NL
- Number of dental radiographs: FR / NL
- Number of dental imagery by a dentist: FR / NL
- Number of orthodontic services: FR / NL
- Number of early orthodontic services: FR / NL

All data were analyzed per year for the years 2018-2022 to gain an idea of the regularity of care consumption. The grouping of the data allowed to obtain a profile of patients with a high consumption of restorative care (many fillings or root canal fillings), a group with regular follow-up and mainly preventive care (dentally healthy patient) and a group with irregular (respectively no) dental visits. Important is to note that the NIHDI nomenclature only covers part of the dental treatment options and/or reimbursement is limited to certain age groups.

**Stomatological and maxillofacial services**

The codes for stomatological and maxillofacial services include highly specialized technical procedures (for an overview, see the Information Security Committee deliberation (annex 11 or on pages 43-50: 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf). A detailed breakdown was of little use in the context of this study. A grouping was therefore made with a division into consultations, placement of implants, extractions under general anesthesia and other treatments (for an overview, see page 22 of the deliberation).

**Medical care consumption**

For this group of variables, only the codes for medical consultations were considered, with the exception of a few codes that were considered of little relevance to the research question (for an overview, see the Information Security Committee deliberation (annex 11 or on pages 22 and 63: 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf). Here too, the numbers (n) per category of services were collected.

In the final data analysis, the multitude of codes was reduced to the following groups: consultation with a general practitioner (and similar care providers); home visits by general practitioners, whether or not outside regular working hours and consultations with medical specialists (without further distinction of specialty); home visits by specialists, whether or not outside regular working hours. In this way, an attempt was made to generate a profile of medical care consumption, such as the "urgent patient" (few contacts with a doctor, but if so at unusual hours), the "healthy patient" (few but regular contacts with a general practitioner or specialist) or the "patient in need of care" (frequent contacts with a multitude of specialists and the general practitioner).

**Use of medicines**
This information was retrieved from the Farmanet database (FR / NL) in which medicines are classified according to an ATC (anatomical, therapeutic, chemical) classification (for more information see https://www.whocc.no/atc_ddd_index/). Not all classes of medicines were retrieved, for an overview, see the Information Security Committee deliberation (annex 11 or on pages 51-65: 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf). For the current study, the number of prescriptions per year was retrieved, without further differentiation by dosage (DDD) and packaging form.

## 5.5. Field Work

### 5.5.1. *Preparatory Activities for the Organization of the Field Work*

In order to facilitate the field work, several preparations were made.

#### *5.5.1.1. Development of letters to participants, dentists and dental associations*

An information campaign was launched among all Belgian dentists to inform them of the project. To this end, an informative letter (annex 5) was sent to all dentists by the NHIDI and dental associations informed their members via their usual information channels (see also 5.3.2.1).

Other activities in this phase included the preparation of communication material for participants (including the project website, see https://www.sciensano.be/nl/projecten/data-registratie-en-evaluatiesysteem-van-de-mondgezondheid), the creation of the template of the letter to be sent to dentists (annex 6) in case participants opted to have their OHE performed by their own dentist.

#### *5.5.1.2. Development of guidelines, clinical examination form, training and calibration modules*

The ICE selected, prepared and validated relevant clinical variables to be collected within the oral health examination, using standardized procedures and materials. For this purpose, the ICE developed detailed instructions and guidelines (annex 8 & 10), available in digital format, including online modules, a website and a helpline. Given the different settings for the examination, maximal efforts were deployed to align the examination circumstances and to apply statistical techniques to compensate for potential bias.

#### *5.5.1.3. Feasibility check of the online clinical examination form*

In order to test the different procedures for OHDRES 2023-2024, a feasibility study was conducted, with a focus on proposed procedures and data flows. Five volunteering dentists, not involved in the project team, received five patient cases each. The cases were virtual, based on fictional data. The dentists were asked to run the study protocol for each of the cases, in order to test the feasibility and to discover potential bugs or shortcomings. Where needed, changes were made.

#### *5.5.1.4. Feasibility check of the online training and calibration modules*

After several test rounds by the ICE, the training and calibration modules were evaluated by seven dentists (both Dutch- and French-speaking) affiliated with university hospitals. The average time required to complete both modules was recorded, leading to the removal of a few exercises to shorten the training module. Each dentist provided feedback via email. Minor technical issues were identified and resolved.

*5.5.1.5. Development of the online application for follow-up of the fieldwork (Sciensano)*

Specific IT applications were developed by Sciensano for the planning, management and follow-up of the fieldwork. The IT unit of Sciensano developed a digital platform through which the ICE secretariat was able to check for which HIS-ID numbers valid OHE data (including a valid consent form) were received.

### 5.5.2. *ICE Secretariat and Helpdesk for Follow-up of the Field Work*

Both the ICE and Sciensano were involved in the follow-up and management of the OHDRES 2023-2024 fieldwork. Through a secured SFTP connection, the ICE secretariat had access to the Statbel server with the contact information of participants and dentists that was provided during the HIS 2023-2024 interview. The ICE secretariat informed the different actors concerned, soon after a HIS 2023-2024 participant agreed to participate in the OHDRES 2023-2024 (see also section 5.5.5)

Through the digital platform, regularly updated by Sciensano, the ICE secretariat was informed on the HIS-IDs for which OHE data had been received. If there was no reaction from the contacted dentist within 3 months after the letter was sent, the ICE secretariat contacted the dentist to verify whether an appointment had been scheduled. If not, the secretariat encouraged the dentist to arrange one as soon as possible. Sciensano provided regular updates on the OHDRES 2023-2024 participation rate and the number of realised OHEs. This information was available at Sciensano since dentists entered the results of the OHE through a digital platform hosted by Sciensano. This information was used to monitor the progress of data collection and fine-tune the field work. Throughout the data collection period, the ICE-secretariat was available for questions of ICE-screeners, dentist-examiners and participants, both by mail and by phone.

### 5.5.3. *Start of Data Collection*

The ICE organised the recruitment of ICE-screeners, as from September 2023 onwards. This included defining the geographical areas in which each ICE-screener was able to work and the preparation of a calendar with time slots indicating the availability of the screener. The field work of OHDRES 2023-2024 was launched in October 2023. In a first period of 6 weeks, priority was given to the oral health examinations performed by ICE-screeners, allowing for further testing of the field work and the final fine-tuning of the different tools. From November 2023 onwards, dentists designated by their patients (participating in the HIS 2023-2024 survey) were contacted.

### 5.5.4. *Procedures to contact the Household*

Soon after HIS 2023-2024 participation and if the participant agreed to have an OHE performed, the different actors involved were contacted by the ICE secretariat.

If participants chose to have the OHE conducted by their own dentist, the ICE secretariat sent a personalized letter to the dentist including detailed information about the project, the expected examination procedures, payment modalities, and a link to the project website with further instructions. Along with the letter, the dentist received the required number of consent forms and a prepaid envelope to return the signed consent forms after the OHE by mail to Sciensano. Dentists were assumed to contact their patients to arrange an appointment for the OHE.

If participants opted for an ICE-screener, the ICE secretariat contacted the participant and organized an appointment with an ICE-screener. The appointed ICE-screener was then informed about the scheduled appointments and the ICE secretariat sent the required number of consent forms to the screener, including a prepaid envelope to return the signed consent forms after the OHE by mail to Sciensano.

### 5.5.5. *Clinical Examination, Data Entry and Formalities*

The OHE was conducted either in the dentist's office if the participant chose their own dentist or at the participant's home by an ICE-screener and was performed according to the provided guidelines available on the digital platform. The platform also included a link for on-site data entry using secured data transfer protocols.

Dentists were trained and calibrated to conduct the clinical examination using specific guidelines. When the dental examiner passed the test successfully, access was granted to the data registration platform. For more information, we refer to section 5.3.2.4.

The clinical examination of participants was performed by means of instruments and supplies routinely used by dentists (i.e. mouth mirror, periodontal probe, tweezers, cotton rolls, face mask, gloves, container for waste disposal, portable headlamp (only for ICE-screeners)). The dentists were responsible for infection control and waste disposal according to standard recommendations.

The dentist was also responsible for having the consent form signed both by him/herself and the participant (or the participant's tutor) and for sending the signed consent forms to Sciensano. Before the start of data collection, participants/proxies were asked about any health conditions that could contraindicate the clinical examination.

After the OHE, dentists entered all collected information into the database using the digital platform. Finally, they sent a completed form (annex 9) to the ICE secretariat with all necessary information (personal identification data, VAT number (if applicable), IBAN bank account, HIS-IDs of participants examined, date examinations took place) to claim payment for the carrying out of the examination.

### 5.5.6. *Vouchers for Participants*

Upon confirmation that the oral health examination data had been entered in the online database by the dentist-examiner or the ICE-screener, the ICE secretariat sent a gift voucher to the participants. The ICE secretariat was able to verify this information through the online platform, regularly updated by the Sciensano secretariat.

### 5.5.7. *Compensation of Dentist-examiners and Screeners*

As compensation for their time and effort put into carrying out the oral health examination, dentists received €100 per examination, regardless of whether the examination was done by their own dentist or an ICE-screener. For more detailed information, see also section 5.3.2.1. When ICE received a payment request, it was first checked whether the dentist was successfully calibrated prior to the OHE and if the OHE data was registered correctly. Sciensano was in charge of compensating the dentists.

On a monthly basis the ICE secretariat sent a list to the Sciensano secretariat with information needed to perform the payments to the dentists. This list included, per dentist, the following information: personal identification data, VAT number (if applicable), IBAN bank account, HIS-IDs of participants examined, date on which examination took place.

## 5.6. Ethical and Privacy Considerations

### 5.6.1. *Ethics Committee Clearance*

The Ethics Committee (EC) of the University Ghent (UGent) and Ghent University Hospital (UZ Gent) examined and discussed the project application and decided that the proposed study is scientifically relevant and ethically justified. The EC therefore gave a favourable opinion on this study on March 2nd, 2023. The study was registered with number B6702023000057.

### 5.6.2. *Informed Consent*

Informed consent was obtained from the participants at different moments.

Through a leaflet (annex 3) which was added to the invitation letter sent out to people who were invited to participate in the HIS 2023-2024, participants were informed on the possibility to take part in the oral health module, more specifically the OHDRES 2023-2024. Referring to this leaflet and providing some further information if necessary, the interviewers asked eligible HIS 2023-2024 respondents, before the start of the HIS 2023-2024 interview, if they were willing to be re-contacted for participation in the OHDRES 2023-2024 project. If so, the participant was asked to sign an informed consent form to agree that contact details could be shared with the dentist and the ICE secretariat to organize the OHE. An item on the informed consent form of the HIS 2023-2024 was dedicated to this purpose. The informed consent was obtained at an individual level, according to GDPR regulations.

Also, as part of the HIS 2023-2024 interview, the Stabel interviewer asked participants at the beginning of the interview whether they agreed to the linking of their survey data with other datasets in a pseudo-anonymous manner (through a TTP - trusted third party).

Consent for the oral health examination was obtained using documents handed over by the dentist-examiner or ICE-screener at the time of the oral examination, and was completed before performing the clinical procedure. The informed consent form also included a section allowing participants to authorize the linkage of their OHE data with HIS and/or IMA-data. Consent forms were sent by mail to Sciensano, where they were archived.

### 5.6.3. *Potential Risks and Benefits*

The risks associated with the procedures performed within the context of the OHE, were identical to a routine dental check-up visit and therefore considered to be limited. Dental practitioners were instructed to respect patient safety and infection control guidelines at all times. The examination was limited to visual-tactile procedures, without the use of ionizing radiation. Participants who had no dental check-up visit for a longer period of time could benefit directly from the OHE, as the examining dentist was obliged to inform the participant verbally of important oral health problems. Society can profit indirectly from the information regarding possible risk groups and barriers to the use of health care. The data gathered can assist in the planning of treatment needs and workforce.

#### 5.6.4. *Confidentiality*

Personal data collected within the OHDRES 2023-2024 were at all moments treated as confidential information, and all required measures were taken to ensure data safety. Dental examiners are bound by professional secrecy.

#### 5.6.5. *Study Insurance*

Together with the application to the Ethics Committee, a global insurance was contracted by Sciensano (Ethias, no 45.476.254). Furthermore, participating dental practitioners were covered by their professional liability insurance.

#### 5.6.6. *Data Processing and Privacy Protection*

Data processing was pseudonymised and reporting was done on an aggregated level. Data processing and protection for this study complied with the provisions of the regulations for the protection of Personal Data, including but not limited to the EU General Data Protection Regulation 2016/679 of 27 April 2016 and its implementing decrees. Questions and other issues regarding data protection are handled by the Sciensano Data Protection Officer, e-mail address: dpo@sciensano.be.

The General Data Protection Regulation (GDPR), the European legislation governing the protection of personal data, applies to this study. The legal basis on which the data were processed is consent. More specifically:

- Article 6 § 1 (e) of the GDPR: 'processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller';
- Article 9 § 2 (j) of the GDPR: 'processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject'.

### 5.7. Global Database

In the context of this project, a one-to-one link was established between HIS 2023-2024 data, OHDRES 2023-2024 data and data retrieved from the health insurance companies, centralized by the Inter-Mutuality Agency (AIM-IMA). This resulted in a final database consisting of:

- variables collected within the HIS 2023-2024, including the oral health module (questionnaire data) (for more details see section 5.4.)
- Oral Health Examination data (for more details, see section 5.4.3)
- selected AIM-IMA variables (for more details, see section 5.4.4)

Procedures to link the OHDRES 2023-2024/HIS 2023-2024 data with the AIM-IMA data were developed with all partners involved: ICE, Sciensano, AIM-IMA, Statbel and eHealth and were approved by the information security committee (ISC). The procedure is briefly described in this document; for more detailed information, we refer to the to the Information Security Committee deliberation (annex 11 or 24-224-n148-ohdres-ku-leuven-gewijzigd-op-1-april-2025.pdf).

**Step 1:** The person responsible for research data management at Sciensano selects the pseudonyms (=HISCode) of the study population and transfers the HISCode list to Statbel.

**Step 2:** Statbel converts each HISCode in the list to the corresponding Social Security identification number (INSZ). The INSZ list is then transferred to the Trusted Third Party (TTP) eHealth.

**Step 3:** The TTP eHealth creates a unique Cproject for each INSZ in the list, together with a random number RN1. The TTP eHealth will then take the following steps:

- ***Substep 3.1:*** The INSZ/RN1 conversion list is transferred to Statbel.
- ***Substep 3.2:*** The same INSZ/RN1 conversion list is transferred to the unique point of contact of the National Intermutualistic College (SPOC NIC).
- ***Substep 3.3:*** The conversion list RN1/Cproject is transferred to the Trusted Third Party of the insurance institutions – Crossroads Bank for Social Security (TTP VI (KSZ)).

**Step 4:** Statbel converts each INSZ in the INSZ/RN1 list to the corresponding HISCode and transfers the new HISCode/RN1 list to Sciensano.

**Step 5:** The person responsible for the research data at Sciensano selects all necessary HIS 2023-2024 and OHDRES 2023-2024 data based on the HISCode pseudonyms and then replaces each HISCode with the corresponding RN1 code. After this, RN1/OHDRES data and RN1/HIS data are transferred to the TTP VI (KSZ).

**Step 6:** SPOC NIC converts each INSZ in the list obtained in step 3.2 to the code of the insurance institutions (C1) and transfers the new list C1/RN1 to the TTP VI (KSZ).

**Step 7:** The TTP VI (KSZ) converts each C1 from the C1/RN1 list to the code C2 of the InterMutualistic Agency (IMA) and only places the C2 codes in the IMA Data Warehouse (DWH).

**Step 8:** The IMA selects all necessary data on C2 (data_IMA) and transfers the data C2/IMA_data to the TTP VI (KSZ).

**Step 9:** All OHDRES, HIS and IMA data are placed by the TTP VI (KSZ) on Cproject and transferred to the IMA Project DWH.

**Step 10:** A Small Cells Risk Analysis (SCRA) is performed prior to the provision of the data if deemed necessary by the Information Security Committee (IVC).

**Step 11:** The OHDRES, HIS and IMA data are made available to the ICE researchers in the IMA Project DWH.

Figure 5.1 illustrates the data flow used for linking the information, consisting of 11 steps.

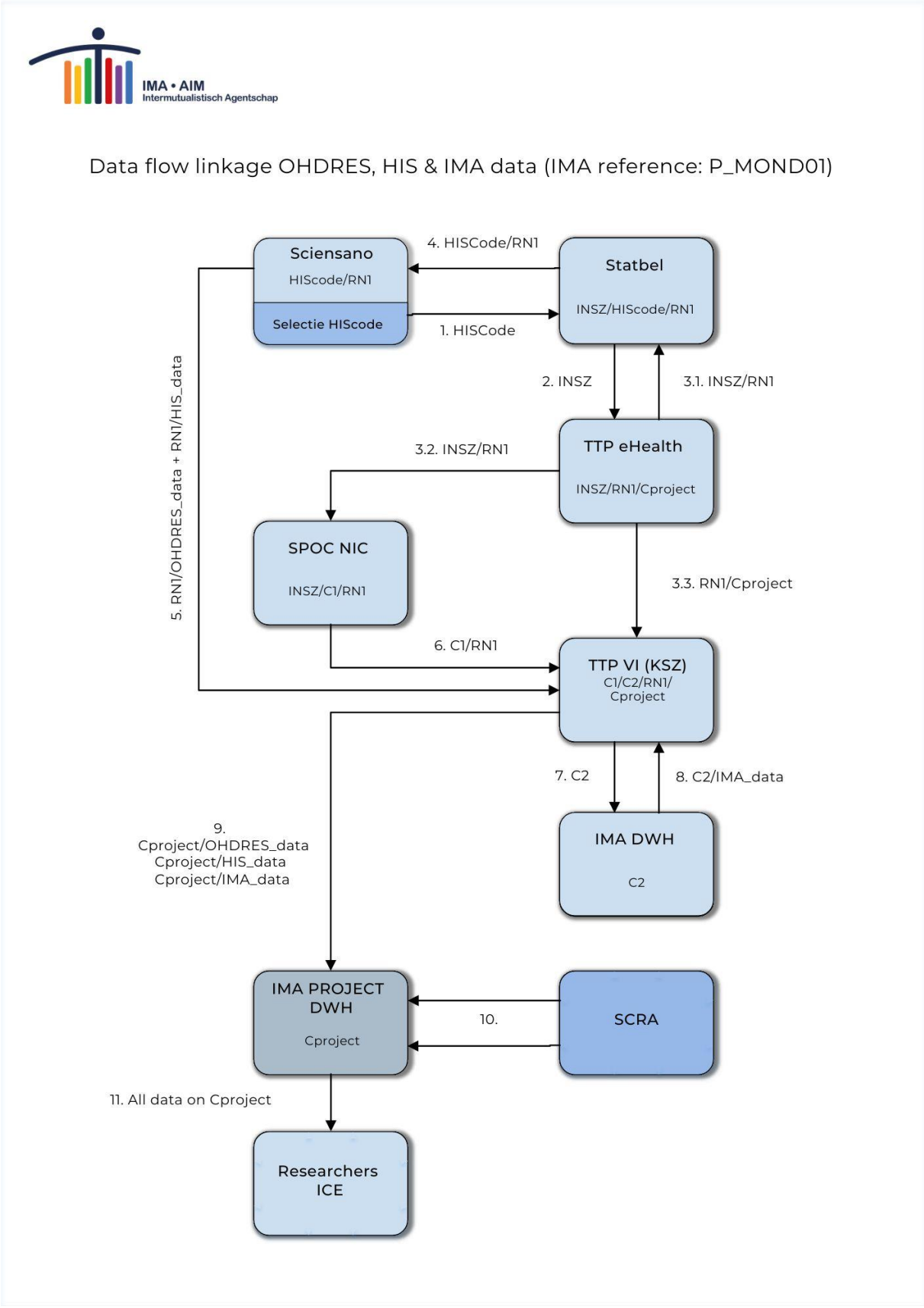


***Figure 5.1**. Data flow linkage OHDRES, HIS & IMA data*

## 5.8. Data Management and Statistics

### 5.8.1. *Data Processing and Quality Check*

Once the OHE data were entered by the dentist, the ICE verified whether the dentist had successfully completed the calibration in advance. If not, the data were excluded and the dentist was not compensated. The dentist also had the option to re-enter the data if errors were made during the initial entry. Additionally, the entered 12-digit identification codes were checked by the ICE, and any input errors were corrected.

### 5.8.2. *Development of Codebook for Statistical Analysis*

A detailed codebook was developed as guidance for the statistical analysis. This codebook was created in Excel, with a separate tab for each data source (OHE, HIS, or AIM-IMA). Each tab contained the original variables with corresponding response labels, the variables requiring aggregation along with the calculation methods, and an overview of the requested descriptive analyses. The structure of the results by gender, age, region, education level, and social status was also included.

### 5.8.3. *Data Analysis*

The results are presented using descriptive statistics in terms of numbers, percentages, means (±sd), medians, interquartile intervals, range, and chi-squared tests. In order to improve generalizability of the results at population level, weighting factors were applied to the results. The use of weighting factors accounts for differences between the survey sample and the actual population, in terms of distribution by age, gender and province. Once weighted, the results can be considered representative of the total population at national, regional and provincial level. All statistics (percentages, means, standard deviations, interquartile intervals, etc.), except absolute numbers, were weighted with the weighting factors mentioned above. Different weights for the full sample (N = 1724) and linked subsample (N = 1382) analyses were used, given their different disposition.

## 5.9. Quality Assurance

In order to ensure the quality of the assessments carried out during the OHDRES 2023-2024, different actions were taken.

**Quality of questionnaires:**

- The questions included in the ‘dental health module’ and ‘dental care module’ of the HIS 2023-2024 interview were selected by the ICE team and presented to the HIS 2023-2024 project team and scientific and academic experts (see also section 5.4.1).
- The questionnaires were translated into all 4 languages in which interviews were foreseen (Dutch, French, German and English) by native-language researchers of the HIS 2023-2024 team and the ICE team.
- A pre-test of the entire HIS 2023-2024 was conducted by the HIS 2023-2024 team, including the oral health modules. Part of this test was different evaluation criteria such as comprehension and readability of the questions, pathway and filters applied.

**Quality of clinical examination:**

- Clinical assessments were based on methods and criteria validated, applied in previous OHDRES surveys and allowing comparisons with comparable data from other countries (see also section 5.4.3).
- Each dentist-examiner was calibrated for the clinical examination through an online module that was developed for OHDRES 2023-2024. For this purpose, a training module and illustrated clinical guidelines (annex 10) were made available (see also section 5.3.2.4).

Finally, the project was included in the Sciensano quality system and subject to internal audits by the Quality, (bio)Safety and Environment (QSE) unit.

# 6. RESULTS AND DISCUSSION

The results presented in this report are based on data collected from the Health Interview Survey (HIS 2023-2024) and the oral health examination, combined with data retrieved from the Inter-Mutuality Agency (AIM-IMA 2018–2022), thereby providing a comprehensive picture of the oral health status of the Belgian population.

## 6.1. Participation

As part of the HIS 2023-2024 face-to-face interview the interviewers asked eligible participants whether they were willing to undergo an oral health examination. Those who agreed were examined between October 16th 2023 and December 30th 2024.

An initial sample size of 11,300 individuals was estimated for the HIS 2023–2024, based on a stratified multi-stage cluster sampling design. The finally achieved sample consisted of 7,001 individuals, from which a sub-sample was drawn to undergo the oral health examination. Figure 6.1 presents information on the individuals included in the HIS 2023-2024 sample and the subsequent stages of selection leading to the OHDRES 2023-2024 sample.

A total of 3,511 individuals initially agreed to participate in the oral health examination. Of these, 1,724 underwent a valid examination, forming the "**Full sample"** of the OHDRES 2023–2024. Moreover, a "**Linked sample"** of the OHDRES 2023–2024 was established by linking selected data from the HIS 2023-2024 and the AIM-IMA 2018–2022 databases. Out of 1,724 validly examined participants, 103 participants' examination data could not be linked with the HIS 2023-2024 data due to a fraudulent Statbel interviewer (invalid data). In addition, not all of the examined participants consented to linkage with both HIS and AIM-IMA data, finally resulting in a Linked sample of the OHDRES 2023-2024 consisting of 1,382 participants.

**NOTE: In all tables presenting the results, data from the Full sample are displayed on a green background while those from the Linked sample are displayed on a blue background.**

Figure 6.2 illustrates the distribution of the number of participants according to month and year of examination as carried out by participants' own dentist or by ICE-screeners. The distribution of participation over the course of the examination period peaked around six months and twelve months after the initiation of data collection.

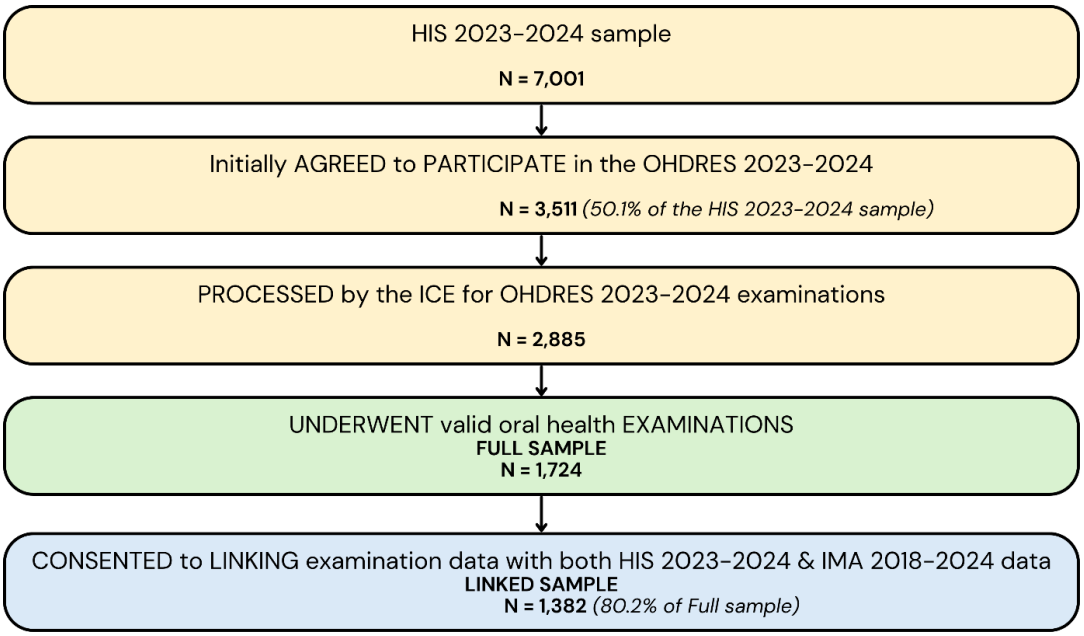


***Figure 6.1**. Overview of participation in the OHDRES 2023-2024 at subsequent stages of selection*

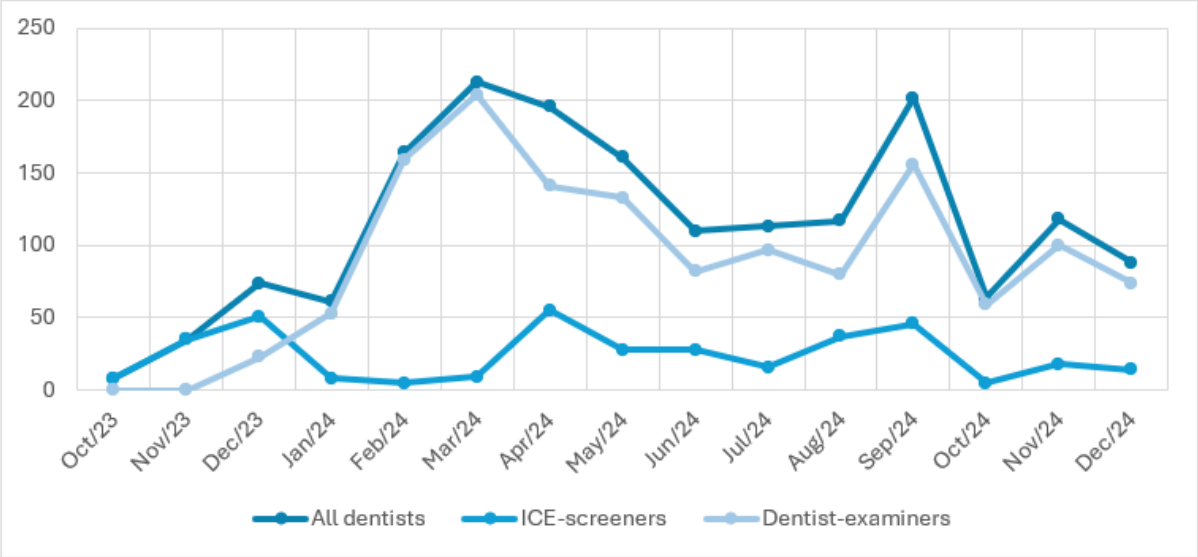


***Figure 6.2**. Distribution of the number of participants and performer of the examination according to month and year of examination, OHDRES 2023-2024, Belgium (N=1,724)*

Non-participation was essentially due to eligible participants not undergoing the oral health examination. The reasons for not undergoing this examination can be summarized as follows: 655 eligible participants' own dentists did not respond to their request to perform the oral health examination, 731 participants dropped out, 288 eligible participations were not processed by ICE, 40 appointments could not be scheduled due to time constraints within the data collection period. An additional reason for non-inclusion was the non-validity of the oral health examination (n=61, dentist-examiner not calibrated). Finally, 1,724 valid oral health examinations were obtained, referred to as the **Full sample.** Lack of consent for data linkage (n=342) was the reason for non-inclusion in the **Linked sample**, resulting in a sample size of 1,382 individuals.

For a detailed overview of non-participation in the survey we refer to the Figure in section 10.3.

## 6.2. Dentist-examiner and ICE-screener

Participants of the HIS 2023-2024 who agreed to undergo the oral health examination were given the option to be examined either by their own dentist, referred to as ***dentist-examiner***, or by an ***ICE-screener***. Based on this information, 1,080 general dentists were invited by letter to participate in the oral health data collection for the OHDRES 2023-2024.

A prerequisite for carrying out oral health examinations was the successful completion of an online calibration test, which required achieving at least 75% agreement with a benchmark established by the project team. This benchmark was based on the correct assessment of oral health conditions included in the standardized clinical examination form. A total of 614 dentists carried out valid oral health examinations, distributed as follows:

- Thirty dentists were recruited and volunteered to become ICE-screeners, and successfully completed the required calibration test. Collectively, they performed a total of 363 valid oral health examinations, with the number of examinations per examiner ranging from 1 to 71 (mean=12.1 ±SD=14.8).
- Of the remaining dentist-examiners invited, 584 successfully completed the required calibration test and performed 1,361 valid oral health examinations, with the number of examinations per examiner ranging from 1 to 28 (mean=2.3 ±SD=2.3).
- A total of 119 dentist-examiners opted out and formally notified the ICE secretariat of their decision.
- Twenty-six dentist-examiners carried out oral health examinations without having successfully completed the required calibration test. These examinations were excluded from the final database.
- The remaining 321 dentist-examiners either had participants who did not attend the oral health examination, had participants who all dropped out or did not respond to the invitation to participate in the OHDRES 2023-2024.

## 6.3. Characteristics of the sample

Information on participants' gender, age and region of residence was collected during the oral health examination. Data on nationality, education level, and employment status of participants were obtained from the HIS 2023-2024 face-to-face interview, while information on province of residence and social status was sourced from the AIM-IMA 2018-2022 database.

The majority of the HIS 2023-2024 participants, 5,698 out of 7,001 (81.4%), answered the face-to-face interview themselves. In the remaining 18.6% of cases, responses were provided by a proxy. Among these proxy responses, 70.8% were participants under the age of 15. Other reasons for proxy responses included prolonged absence (11.6%), mental disability (4.1%), illness or other limitations (9.5%) and refusal to respond personally (4.0%).

### 6.3.1. *Distribution according to nationality*

A total of 61 participants (6.8%) did not hold Belgian nationality (Table 6.1a). In the Brussels-Capital Region, 28.4% of participants were non-Belgian nationals. Of the non-Belgian nationals, 44 (5.1%) were European nationals and 17 (1.7%) were non-European nationals.

Regarding the country of birth, 134 participants (13.6%) were not born in Belgium (Table 6.1b). In the Brussels-Capital Region 46.1% of participants did not have Belgium as their country of birth. Of those not born in Belgium, 62 (6.2%) were born in a European country and 72 (7.4%) were born in a country outside Europe.

***Table 6.1a.*** *Distribution of participants according to nationality and region (N= 1,285), OHDRES 2023-2024, Belgium (N= 1,382)*

| Nationality | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **Belgian** | 923 | 95.3 | 52 | 71.6 | 249 | 96.6 | 1,224 | 93.2 |
| **Non-Belgian** | 36 | 4.7 | 13 | 28.4 | 12 | 3.4 | 61 | 6.8 |
| **TOTAL** | **959** | **100.0** | **65** | **100.0** | **261** | **100.0** | **1,285** | **100.0** |

*Source: HIS 2023-2024; N = number of individuals; % = percentage.*

***Table 6.1b.*** *Distribution of participants according to country of birth and region (N=1,285), OHDRES 2023-2024, Belgium (N= 1,382)*

| Country of birth | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **Belgium** | 874 | 89.8 | 42 | 53.9 | 235 | 90.9 | 1,151 | 86.4 |
| **Not Belgium** | 85 | 10.2 | 23 | 46.1 | 26 | 9.1 | 134 | 13.6 |
| **TOTAL** | **959** | **100.0** | **65** | **100.0** | **261** | **100.0** | **1,285** | **100.0** |

*Source: HIS 2023-2024; N = number of individuals; % = percentage.*

### 6.3.2. *Distribution according to region and province*

Table 6.2a describes the distribution of the Full sample by region and province of residence, while Table 6.2b shows the same distribution for the Linked sample. The differences between the two samples were very small in terms of both regional and provincial distribution. Almost two thirds of participants (59.5% in the Full sample and 59.1% in the Linked sample) resided in the Flemish Region, around 10.0% in the Brussels-Capital Region (10.9% and 10.1%) and approximately 30% in the Walloon Region (29.6% and 30.8%), respectively.

***Table 6.2a.*** *Distribution of participants according to region and province of residence, OHDRES 2023-2024, Belgium (N= 1,724)*

| Region | Participants | |
|---|---|---|
| | N | % |
| **Flemish Region** | 1,120 | 59.5 |
| **Brussels-Capital Region** | 128 | 10.9 |
| **Walloon Region** | 476 | 29.6 |

| Provinces | Participants | |
|---|---|---|
| | N | % |
| **Province of Antwerp** | 205 | 16.8 |
| **Flemish Brabant** | 125 | 10.4 |
| **East Flanders** | 262 | 13.7 |
| **West Flanders** | 348 | 10.7 |
| **Limburg** | 180 | 7.9 |
| **Brussels** | 128 | 10.9 |
| **Walloon Brabant** | 47 | 3.9 |
| **Hainaut** | 144 | 11.9 |
| **Liège** | 110 | 7.6 |
| **Luxembourg** | 70 | 2.6 |
| **Namur** | 105 | 4.4 |
| **TOTAL** | **1,724** | **100.0** |

*Source: OHDRES 2023-2024; N = number of individuals; % = percentage.*

***Table 6.2b.*** *Distribution of participants according to region and province of residence, OHDRES 2023-2024, Belgium (N= 1,382)*

| Region | Participants | |
|---|---|---|
| | N | % |
| **Flemish Region** | 959 | 59.1 |
| **Brussels-Capital Region** | 70 | 10.1 |
| **Walloon Region** | 353 | 30.8 |

| Provinces | Participants | |
|---|---|---|
| | N | % |
| **Province of Antwerp** | 181 | 16.7 |
| **Flemish Brabant** | 94 | 10.4 |
| **East Flanders** | 228 | 13.6 |
| **West Flanders** | 299 | 10.6 |
| **Limburg** | 157 | 7.8 |
| **Brussels** | 70 | 10.1 |
| **Walloon Brabant** | 33 | 2.6 |
| **Hainaut** | 106 | 11.8 |
| **Liège** | 81 | 9.7 |
| **Luxembourg** | 49 | 2.6 |
| **Namur** | 84 | 4.2 |
| **TOTAL** | **1,382** | **100.0** |

*Source: AIM-IMA 2018-2022; N = number of individuals; % = percentage.*

### 6.3.3. *Distribution according to age and gender*

The distribution of participants by age in the Full sample and in the Linked sample is described in Tables 6.3a and 6.3b. Regarding the distribution of participants in these two samples, the differences in the Flemish Region were negligible across all age groups. In the Brussels-Capital and Walloon Regions, the differences were small, except for the 15-24 age group in the former. The number of participants who were 14 years old and younger was limited in both samples. The percentage of female participants in both samples was 50.3%.

***Table 6.3a.*** *Distribution of participants according to age and region, OHDRES 2023-2024, Belgium (N= 1,724)*

| Age | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **5-7** | 25 | 3.7 | 4 | 4.5 | 6 | 0.9 | 35 | 2.9 |
| **8-11** | 44 | 5.2 | 8 | 11.0 | 26 | 9.2 | 78 | 7.0 |
| **12-14** | 47 | 7.0 | 3 | 2.7 | 23 | 5.3 | 73 | 6.0 |
| **15-24** | 94 | 11.1 | 6 | 12.7 | 53 | 13.1 | 153 | 11.9 |
| **25-34** | 113 | 12.3 | 10 | 17.3 | 38 | 10.8 | 161 | 12.4 |
| **35-44** | 140 | 12.8 | 19 | 15.0 | 72 | 14.0 | 231 | 13.4 |
| **45-54** | 172 | 12.8 | 20 | 13.3 | 82 | 14.3 | 274 | 13.3 |
| **55-64** | 195 | 13.7 | 21 | 10.5 | 78 | 14.5 | 294 | 13.6 |
| **65-74** | 183 | 11.0 | 18 | 6.8 | 70 | 10.1 | 271 | 10.3 |
| **≥75** | 107 | 10.4 | 19 | 6.2 | 28 | 8.0 | 154 | 9.2 |
| **TOTAL** | **1,120** | **100.0** | **128** | **100.0** | **476** | **100.0** | **1,724** | **100.0** |

*Source: OHDRES 2023-2024; N = number of individuals; % = percentage.*

***Table 6.3b.*** *Distribution of participants according to age and region, OHDRES 2023-2024, Belgium (N= 1,382)*

| Age | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **5-7** | 21 | 3.7 | 2 | 5.7 | 6 | 1.9 | 29 | 3.4 |
| **8-11** | 39 | 5.8 | 4 | 10.6 | 14 | 8.2 | 57 | 7.1 |
| **12-14** | 35 | 6.3 | 1 | 3.2 | 15 | 6.9 | 51 | 6.2 |
| **15-24** | 81 | 11.1 | 1 | 6.8 | 43 | 12.6 | 125 | 11.2 |
| **25-34** | 95 | 12.3 | 9 | 18.5 | 23 | 12.1 | 127 | 12.9 |
| **35-44** | 110 | 12.8 | 9 | 16.0 | 46 | 12.6 | 165 | 13.1 |
| **45-54** | 146 | 12.8 | 8 | 14.2 | 65 | 13.6 | 219 | 13.2 |
| **55-64** | 167 | 13.7 | 10 | 11.2 | 60 | 13.8 | 237 | 13.5 |
| **65-74** | 163 | 11.0 | 13 | 7.3 | 57 | 10.6 | 233 | 10.5 |
| **≥75** | 102 | 10.4 | 13 | 6.6 | 24 | 7.7 | 139 | 9.2 |
| **TOTAL** | **959** | **100.0** | **70** | **100.0** | **353** | **100.0** | **1,382** | **100.0** |

*Source: AIM-IMA 2018-2022; N= number of individuals; % = percentage.*

### 6.3.4. *Distribution according to socio-demographic characteristics*

The distribution of the Linked sample according to the level of education, remunerated professional activity and employment status is described below. The group of students, defined as individuals aged 6 years and older who were enrolled in daytime studies, consisted of 167 participants (22.6%). Education level was only recorded for non-student participants. Table 6.4 highlights the distribution of non-student participants by education level. Half of the non-student participants had attained a higher education qualification**.** The Brussels-Capital Region had the highest proportion of participants with higher education (63.8%), followed by the Flemish Region (49.5%) and the Walloon Region (45.8%). In contrast, only a small proportion of participants (3.8%) reported having attained no more than primary education or having no formal diploma.

***Table 6.4.*** *Distribution of non-student participants older than 6 years, according to education level and region, OHDRES 2023-2024, Belgium (N= 1,382)*

| Highest diploma | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **Primary school/no diploma** | 28 | 3.7 | 2 | 4.8 | 6 | 3.6 | 36 | 3.8 |
| **Lower secondary school** | 103 | 12.8 | 4 | 9.2 | 18 | 9.9 | 125 | 11.7 |
| **Higher secondary school** | 259 | 34.0 | 13 | 22.2 | 57 | 40.1 | 329 | 34.4 |
| **Higher education** | 333 | 49.5 | 32 | 63.8 | 86 | 45.8 | 451 | 50.1 |
| **TOTAL** | **723** | **100.0** | **51** | **100.0** | **167** | **100.0** | **941** | **100.0** |

*Source: HIS 2023-2024; N = number of individuals; % = percentage.*

Table 6.5 indicates the distribution of participants according to professional activity. More than one third of participants (38.5%) reported having no remunerated professional activity. The proportion of participants without remunerated activity was lower in the Brussels-Capital Region (30.8%) than in the Flemish Region (39.3%) and the Walloon Region (40.0%). It should be acknowledged that some of these participants were students and, therefore, not expected to be engaged in remunerated professional activity.

***Table 6.5.*** *Distribution of participants according to remunerated professional activity and region, OHDRES 2023-2024, Belgium (N =1,382)*

| Remunerated activity | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| **Yes** | 405 | 60.8 | 24 | 69.2 | 92 | 60.0 | 521 | 61.5 |
| **No** | 311 | 39.3 | 26 | 30.8 | 74 | 40.0 | 411 | 38.5 |
| **TOTAL** | **716** | **100.0** | **50** | **100.0** | **166** | **100.0** | **932** | **100.0** |

*Source: HIS 2023-2024; N = number of individuals; % = percentage.*

As shown in Table 6.6, the group without remunerated professional activity was primarily composed of pensioners (77.5%). In the Brussels-Capital Region, the proportion of pensioners was significantly lower (57.1%) than the national average (77.5%). Almost three percent (2.7%) of the non-remunerated participants were unemployed.

***Table 6.6.*** *Distribution of participants with no remunerated professional activity according to reason, OHDRES 2023-2024, Belgium (N = 1,382)*

| Reason | Flemish Region | | Brussels-Capital Region | | Walloon Region | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % |
| **Unemployment** | 5 | 1.7 | 2 | 14.2 | 1 | 1.6 | 8 | 2.7 |
| **Illness/disability** | 32 | 11.8 | 3 | 24.6 | 8 | 10.0 | 43 | 12.4 |
| **Studies** | 1 | 0.3 | 0 | 0.0 | 0 | 0.0 | 1 | 0.2 |
| **Retirement** | 251 | 78.8 | 20 | 57.1 | 60 | 80.8 | 331 | 77.5 |
| **Occupied in the household** | 15 | 4.6 | 1 | 4.2 | 3 | 4.9 | 19 | 4.6 |
| **Assisting a self-employed person** | 1 | 0.8 | 0 | 0.0 | 0 | 0.0 | 1 | 0.5 |
| **Other reason** | 6 | 2.1 | 0 | 0.0 | 2 | 2.7 | 8 | 2.1 |
| **TOTAL** | **311** | **100.0** | **26** | **100.0** | **74** | **100.0** | **411** | **100.0** |

*Source: HIS 2023-2024; N = number of persons; % = percentage.*

### 6.3.5. *Distribution according to social status VT-BIM*

The social status VT-BIM in Belgium entitles the beneficiary to increased reimbursement of health care expenses from the National Health Insurance Fund. Originally established in 1963, this status was initially granted only to widows/widowers, invalids, pensioners, and orphans whose family income fell below a certain threshold. In 1998, the scope of the social status VT-BIM was expanded through legislative changes. The Act extended eligibility to long-term unemployed individuals over the age of fifty, children entitled to an increased family allowance, persons receiving a minimum wage or guaranteed income, elderly and dependents, as well as individuals with disabilities and their dependents. Since 2007, the social status VT-BIM has been granted to families whose family income, in the year preceding the application, falls below a certain threshold. These families are entitled to a preferential rate, without the need for additional conditions (e.g. orphan, widow,…). Additionally, individuals receiving an integration income and unaccompanied foreign minors are also eligible for the social status VT-BIM. Starting in October 2024, certain categories of individuals will automatically be entitled to the increased reimbursement. These include persons who have been unemployed for at least three months, those who are incapacitated and unemployed for three months, individuals with disabilities, and self-employed persons who qualify for assimilation due to illness. For 2024, the gross annual income threshold for social status VT-BIM was €27,370.91, with an additional €5,067.11 allowed for each additional household member.

In the Linked sample, a total of 16% of the participants had social status VT-BIM (see Table 6.7). This percentage was lower in males (14.6%) than in females (17.7%). The highest percentage of participants entitled to social status VT-BIM were those aged 5-7 years (27.5%) and 75 years and older (25.1%).

In the Brussels-Capital Region, the proportion of participants with social status VT-BIM was significantly higher (39.8%) than the national average (16.2%), although caution is advised in interpreting this result due to the small sample. It is also clear that women were more frequently entitled to this status, with young children and elderly being overrepresented. The corresponding figures for the Flemish and Walloon Regions were 15.0% and 10.5%, respectively. The proportion of participants with social status VT-BIM decreased markedly with increasing educational attainment, ranging from 44.3% in participants with only primary education or no diploma to 7.1% in those with the highest educational level.

***Table 6.7.*** *Distribution of participants with social status VT-BIM, OHDRES 2023-2024, Belgium (N=1,380)*

| | | Social Status VT-BIM | |
|---|---|---|---|
| | | N | % |
| **GENDER** | Male | 81 | 14.6 |
| | Female | 112 | 17.7 |
| **AGE GROUP** | 5-7 | 6 | 27.5 |
| | 8-11 | 5 | 9.2 |
| | 12-14 | 11 | 27.7 |
| | 15-24 | 19 | 19.7 |
| | 25-34 | 17 | 15.0 |
| | 35-44 | 22 | 15.7 |
| | 45-54 | 25 | 10.8 |
| | 55-64 | 30 | 13.6 |
| | 65-74 | 26 | 11.4 |
| | ≥75 | 32 | 25.1 |
| **REGION** | Flemish Region | 128 | 15.0 |
| | Brussels-Capital Region | 21 | 39.8 |
| | Walloon Region | 44 | 10.5 |
| **EDUCATION** | Primary school/no diploma ≥15y | 16 | 44.3 |
| | Lower secondary school | 33 | 32.5 |
| | Higher secondary school | 42 | 13.5 |
| | Higher education | 26 | 7.1 |
| **TOTAL** | | **193** | **16.2** |

*Source: AIM-IMA 2018-2022 which retrieved data from the Crossroads Bank for Social Security; N = number of persons; % = percentage.*

### 6.3.6. *Representativeness of the sample*

The representativeness of the Full sample and the Linked sample compared to the Belgian population in 2024 is shown in Tables 6.8a and 6.8.b. The correlations with the total population for both samples were assessed using the Spearman's r correlation coefficient, based on weighted percentages. The distributions of participants according to gender and age group were consistent with those of the Belgian population (Full sample and Linked sample Spearman's r= 0.999 and r= 0.988, respectively; p<0.001), with no significant over- or underrepresentation.

Almost sixty percent (59.5%) of the participants were residents of the Flemish Region, 10.9% of the Brussels-Capital Region, and 29.6% of the Walloon Region, reflecting the distribution of the total population (58.0%, 10.6% and 31.4%, respectively, Statbel 2024). When analyzed by province, the correlation remained strong (Full sample and Linked sample Spearman's r= 0.991 and r= 0.970, respectively; p<0.0001).

When differences above 1.0% with respect to the population were considered meaningful, the province of Liège was underrepresented in the Full sample whereas the province of Walloon Brabant was underrepresented in the Linked sample. Using $\chi^2$ test for independence between Belgian and non-Belgian nationals in the samples and in the population, no significant difference was observed ($p>0.05$).

The proportion of participants with social status VT-BIM was higher than in the general population (source: IMA-AIM 2018-2022), especially in the oldest age group. No significant correlation could be found (Spearman's r= 0.396; $p<0.05$) with population data.

***Table 6.8a.*** *Distribution of participants in OHDRES 2023-2024 – Full sample (N= 1,724) compared to the Belgian population in 2024*

| | | Belgium 2024 | OHDRES 2023-2024 Full Sample |
|---|---|---|---|
| | | % | % |
| **GENDER** | Male | 49.3 | 49.7 |
| | Female | 50.7 | 50.3 |
| **AGE GROUP** | ≤14 | 16.3 | 15.9 |
| | 15-24 | 11.6 | 11.9 |
| | 25-34 | 12.8 | 12.4 |
| | 35-44 | 13.1 | 13.4 |
| | 45-54 | 12.9 | 13.3 |
| | 55-64 | 13.2 | 13.6 |
| | 65-74 | 10.5 | 10.3 |
| | ≥75 | 9.5 | 9.2 |
| **TOTAL** | | **100.0** | **100.0** |

*Source: Statbel 2024 and OHDRES 2023-2024; % = percentage.*

***Table 6.8b.*** *Distribution of participants in OHDRES 2023-2024 – Linked sample (N= 1,382) compared to the Belgian population in 2024*

| | | Belgium 2024 | OHDRES 2023-2024 Linked Sample |
|---|---|---|---|
| | | % | % |
| **GENDER** | Male | 49.3 | 49.7 |
| | Female | 50.7 | 50.3 |
| **AGE GROUP** | ≤14 | 16.3 | 16.4 |
| | 15-24 | 11.6 | 11.2 |
| | 25-34 | 12.8 | 12.9 |
| | 35-44 | 13.1 | 13.1 |
| | 45-54 | 12.9 | 13.2 |
| | 55-64 | 13.2 | 13.5 |
| | 65-74 | 10.5 | 10.5 |
| | ≥75 | 9.5 | 9.2 |
| **EDUCATION** | Primary school/no diploma ≥15y | 9.8 | 3.8 |
| | Lower secondary school | 17.5 | 11.7 |
| | Higher secondary school | 37.2 | 34.4 |
| | Higher education | 35.6 | 50.1 |
| **TOTAL** | | **100.0** | **100.0** |

*Source: Statbel 2024 and HIS 2023-2024; % = percentage.*

The educational distribution of the sample was also generally comparable to that of the Belgian population, although some differences were observed (Spearman's r=0.80; p=0.333). Participants with a higher education level were slightly overrepresented, while those with only a primary education or no diploma were underrepresented. The proportions of participants with lower and higher secondary education were broadly consistent with national statistics averages. These differences should be taken into account when interpreting results related to educational attainment.

## 6.4. Presentation of the results and discussion

This section outlines the presentation of the results, including the weighting applied, the health indicators considered, and the metrics used to describe the findings.

### 6.4.1. *Weighting of the results*

All results presented were weighted to ensure representativeness of the Belgian population. The weighting adjusted for differences between the survey samples and the actual population in terms of distribution by age, gender and province. Weighting was calculated separately for the Full OHDRES 2023-2024 sample and for the Linked OHDRES 2023-2024 sample given their different disposition. By applying these weights, the results became representative of the total population at the national, regional, and provincial levels. All statistics (percentages, means, standard deviations, interquartile ranges, etc.), except for absolute numbers, were weighted using the factors described above.

### 6.4.2. *Presentation of the results according to selected indicators*

**Gender and age**

The results are presented separately for males, females, and each of the different age groups, as age and gender are essential health indicators. To facilitate international comparisons, the results were categorized into specific age groups. These age groups, starting from 5 years, include those recommended by the WHO (2013); 5-7, 12-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, and ≥75 years.

**Education level**

All data were analysed according to the participants' level of education. Educational attainment was used as an indicator of socio-economic status, based on the highest level of education attained by any household member.

**Belgium and its regions**

The results are reported for the overall Belgian population, as well as separately for each of the three Belgian regions. Participants were classified by region according to their place of residence.

**Dentate and edentulous**

Since a functional dentition is essential for both nutrition and overall well-being, the presence or absence of teeth is considered a relevant oral health indicator. Consequently, some results are presented for either dentate or edentulous individuals, while others are shown separately for both groups. Participants were classified as dentate if they had at least one natural tooth present, and as edentulous if they had lost all of their natural teeth in the maxilla, in the mandible or both.

**Social status**

The results are also presented according to the social status VT-BIM which reflects eligibility to increased reimbursement of health care expenses from the National Health Insurance Fund and this according to definitions specified in section 6.3.5.

### 6.4.3. *Metrics used to describe the results obtained*

The frequency distribution of the recorded variables is presented using both absolute and relative measures. In addition, measures of central tendency such as mean, median and proportion, along with minimum, maximum, and quartile values, are used to describe the characteristics of the studied population. These measurements are supplemented by measures of variability, including the standard deviation (SD) and interquartile range (Q1-Q3). Statistical analyses were performed using SAS version 9.4 for Windows for the Full sample (SAS/STAT version 15.2) and SAS Studio version 3.82 (Enterprise Edition), SAS version 9.4 for Linux (SAS/STAT version 15.3) for the Linked sample.

## 6.5. Results: Oral health status

### 6.5.1. *Number of teeth*

Table 6.9 describes the mean number of teeth present in the permanent dentition of the participants, including wisdom teeth. When both temporary and permanent dentitions were present, the latter was recorded.

The mean number of permanent teeth among participants in the Full sample was 24.8 (±7.1), with virtually no difference between male and female participants. The number of permanent teeth decreased with age, with the highest mean observed in the 15-24 age group (28.5 ±1.6), declining to 15.3 (±9.3) among participants aged 75 and older. In the Flemish Region, the mean number of permanent teeth was slightly lower (24.2 ±7.4) compared to the Walloon Region (25.4 ±6.8) and the Brussels-Capital Region (26.9 ±5.1).

In the Linked sample, the number of teeth increased markedly with the level of educational attainment. Participants with the lowest level of education had a mean of only 15.8 (±10.4) permanent teeth, while those with the highest level had a mean of 26.0 (±5.9). Moreover, participants with social status VT-BIM had a mean of 23.0 (±9.0) teeth compared to 24.9 (±6.9) among those without this status.

Regarding the presence of wisdom teeth, 66.4% of participants had no visible wisdom teeth in the oral cavity, 9.3% had one and 9.9% had two wisdom teeth. The percentages of participants with three and four wisdom teeth were 5.8% and 8.6%, respectively.

***Table 6.9.*** *Mean number of permanent teeth in participants aged 12 years and older (N= 1,724 and N= 1,382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Mean number of permanent teeth | SD |
|---|---|---|---|
| | | % | % |
| **GENDER** | Male | 25.1 | 7.0 |
| | Female | 24.5 | 7.1 |
| **AGE GROUP** | 12-14 | 26.5 | 3.7 |
| | 15-24 | 28.5 | 1.6 |
| | 25-34 | 28.0 | 3.9 |
| | 35-44 | 27.4 | 3.8 |
| | 45-54 | 26.8 | 4.5 |
| | 55-64 | 23.4 | 7.0 |
| | 65-74 | 20.1 | 8.5 |
| | ≥75 | 15.3 | 9.3 |
| **REGION** | Flemish Region | 24.2 | 7.4 |
| | Brussels-Capital Region | 26.9 | 5.1 |
| | Walloon Region | 25.4 | 6.8 |
| **TOTAL** | | **24.8** | **7.1** |
| **EDUCATION** | Primary school/no diploma | 15.8 | 10.4 |
| | Lower secondary school | 18.9 | 10.1 |
| | Higher secondary school | 23.9 | 7.2 |
| | Higher education | 26.0 | 5.9 |
| **SOCIAL STATUS VT-BIM** | No | 24.9 | 6.9 |
| | Yes | 23.0 | 9.0 |
| **TOTAL** | | **24.6** | **7.3** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; SD = standard deviation.*

### 6.5.2. *Oral hygiene*

In table 6.10, the results are presented according to participants' oral hygiene status, measured using the Plaque Index (Löe,1967), recorded at six reference teeth, and by the mean scores at individual level. The Plaque Index scores were defined as follows: 0 = no plaque; 1 = a film of dental plaque adhering to the free gingival margin and adjacent area of the tooth detected by running a probe across the surface; 2 = moderate accumulation of soft deposits visible to the naked eye within the gingival pocket or on the tooth and gingival margin; and 3 = abundance of soft matter within the gingival pocket and/or on the tooth and gingival margin.

The mean plaque score for the total group of participants in the Full sample was 0.7 (±0.7). The data were skewed and had a highly deviated distribution. The median score was 0.5 and the interquartile range (Q1-Q3) was 0.0 to 1.1. Slightly lower scores, indicating better oral hygiene, were observed among females compared to males. Higher scores were recorded in participants aged 65 years and older, reflecting poorer oral hygiene in older age groups. Oral hygiene was found to be slightly worse in the Flemish and Walloon Regions than in the Brussels-Capital Region.

In the Linked sample, substantial differences were identified by level of education, with lower mean plaque scores and thus better oral hygiene among participants with the highest level of education (0.6 ±0.6) compared to those with only primary school or no diploma (0.9 ±0.8). A similar trend was observed for social status as participants with social status VT-BIM had poorer oral hygiene with higher mean plaque scores of 1.0 (±0.8) than their counterparts without VT-BIM (0.6 ±0.7).

***Table 6.10**. Plaque Index in dentate participants 5 years and older (N= 1,659 and N= 1,324), mean, SD, median, $Q_1$-$Q_3$, OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Plaque Index | | | |
|---|---|---|---|---|---|
| | | Mean | SD | Median | $Q_1$-$Q_3$ |
| **GENDER** | Male | 0.8 | 0.7 | 0.6 | 0.0-1.1 |
| | Female | 0.7 | 0.7 | 0.4 | 0.0-1.0 |
| **AGE GROUP** | 5-7 | 0.5 | 0.6 | 0.1 | 0.0-0.8 |
| | 8-11 | 0.8 | 0.7 | 0.5 | 0.0-1.1 |
| | 12-14 | 0.8 | 0.7 | 0.7 | 0.0-1.1 |
| | 15-24 | 0.6 | 0.7 | 0.4 | 0.0-0.9 |
| | 25-34 | 0.7 | 0.7 | 0.4 | 0.0-0.9 |
| | 35-44 | 0.6 | 0.6 | 0.3 | 0.0-0.9 |
| | 45-54 | 0.6 | 0.7 | 0.3 | 0.0-1.0 |
| | 55-64 | 0.7 | 0.7 | 0.6 | 0.0-1.1 |
| | 65-74 | 0.9 | 0.8 | 0.7 | 0.1-1.3 |
| | ≥75 | 1.2 | 0.9 | 0.9 | 0.4-1.9 |
| **REGION** | Flemish Region | 0.7 | 0.8 | 0.5 | 0.0-1.1 |
| | Brussels-Capital Region | 0.6 | 07 | 0.3 | 0.0-0.9 |
| | Walloon Region | 0.7 | 0.7 | 0.6 | 0.0-1.1 |
| **TOTAL** | Dentate* | **0.7** | **0.7** | **0.5** | **0.0-1.1** |
| **EDUCATION** | Primary school/no diploma | 0.9 | 0.8 | 0.8 | 0.1-1.1 |
| | Lower secondary school | 1.0 | 0.9 | 0.7 | 0.1-1.6 |
| | Higher secondary school | 0.8 | 0.8 | 0.5 | 0.0-1.1 |
| | Higher education | 0.6 | 0.6 | 0.3 | 0.0-0.9 |
| **SOCIAL STAUS** | No | 0.6 | 0.7 | 0.4 | 0.0-1.0 |
| **VT-BIM** | Yes | 1.0 | 0.8 | 0.8 | 0.2-1.5 |
| **TOTAL** | Dentate* | **0.7** | **0.7** | **0.4** | **0.0-1.1** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; SD = standard deviation; $Q_1$-$Q_3$ = interquartile interval; *dentate = participant with at least one natural tooth.*

### 6.5.3. *Periodontal status (DPSI)*

To assess the periodontal status of participants, the Dutch Periodontal Screening Index (DPSI) was used, as described by Van der Velden (2009). The scoring system is as follows: 0 = healthy periodontium: no bleeding on probing, no calculus, pocket depth ≤ 3 mm; 1 = bleeding on probing, no calculus or pocketing > 3 mm; 2 = calculus and/or overhangs of restorations, but pocket depth ≤ 3 mm; $3^-$ = shallow pockets: probing depth 4–5 mm; $3^+$ = same as 3–, but with recession present, gingival margin apical to CEJ and 4 = deep pockets: probing depth of 6 mm or more.

Table 6.11 shows the distribution of DPSI scores among the participants in the Full sample. More than one-third (32.3%) had a score of 2 while 21.0% had a score of 1, and 20.6% had a score of 0. The scores 3- and 3+ were recorded among 13.1% and 9.2% of participants, respectively. Score 4, indicating advanced periodontal disease, was found in only 3.9 % of participants. Among female participants, the proportion with score 0 was slightly lower than among males (19.3 % versus 22.0 %). As expected, periodontal health declined with age. Regional comparisons indicated that the highest proportion of participants with a healthy periodontium (score 0) resided in the Brussels-Capital Region (28.6%), followed by the Walloon region (23.2%) and the Flemish region (17.8%).

Differences by educational attainment were observed in the Linked sample. A score of 0 was 3 times more common among participants with high level of education compared to those with only primary school or no diploma (24.3% and 8.1%, respectively). The proportions of scores 3- and 3+ decreased with increasing educational attainment. However, an inverse relationship was identified for scores 1, 2 and 4, with participants who had only primary school or no diploma showing the lowest proportions. Among participants with social status VT-BIM, small differences in the various scores were observed in both directions, without a clear pattern.

Table 6.12 presents the distribution of the periodontal destruction in maxilla and mandible. For each sextant, the highest DPSI score was used. In the Full sample, the majority of the participants showed the most severe periodontal destruction in the anterior mandible region (68.6%). A smaller proportion exhibited the highest level of destruction in the anterior maxillary region (40.0%). In the posterior sextants, both maxilla and mandible, the levels of destruction were relatively uniform, ranging from 54.0 % to 57.7 %. Gender differences were observed, with females showing lower levels of destruction in the posterior maxillary and mandibular regions compared to males. No clear pattern was observed across age groups regarding the distribution of periodontal destruction in the maxilla and mandible. Participants from the Brussels-Capital Region presented higher levels of periodontal disease in both maxillary and mandibular sextants than those from the Flemish and Walloon Regions.

In the Linked sample, the extent of periodontal disease increased across all sextants among participants with a higher level of education compared to those less educated. This trend was not expected. However, a dissimilar trend was observed among participants with social status VT-BIM, who showed greater periodontal destruction than those without this status.

***Table 6.11.*** *Frequency of the highest DPSI score in dentate participants 15 years and older (N= 1,488 and N= 1,200), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Highest DPSI score | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | | 1 | | 2 | | 3- | | 3+ | | 4 | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 127 | 22.0 | 127 | 19.3 | 224 | 30.8 | 96 | 14.8 | 82 | 9.7 | 39 | 3.4 |
| | Female | 155 | 19.3 | 174 | 22.7 | 253 | 33.7 | 89 | 11.4 | 76 | 8.7 | 39 | 4.3 |
| **AGE GROUP** | 15-24 | 52 | 32.7 | 35 | 27.3 | 58 | 36.5 | 7 | 2.9 | 0 | 0 | 1 | 0.5 |
| | 25-34 | 29 | 21.9 | 40 | 22.7 | 70 | 40.4 | 17 | 13.2 | 3 | 1.4 | 1 | 0.5 |
| | 35-44 | 54 | 24.9 | 52 | 20.0 | 87 | 39.2 | 21 | 8.5 | 11 | 5.5 | 5 | 1.8 |
| | 45-54 | 43 | 19.8 | 60 | 21.9 | 88 | 30.0 | 37 | 13.5 | 32 | 10.5 | 11 | 4.2 |
| | 55-64 | 56 | 16.8 | 45 | 16.9 | 85 | 29.8 | 42 | 18.3 | 37 | 12.6 | 21 | 5.6 |
| | 65-74 | 31 | 11.3 | 45 | 18.4 | 64 | 26.6 | 48 | 21.6 | 36 | 13.8 | 27 | 8.4 |
| | ≥75 | 17 | 11.8 | 24 | 19.3 | 25 | 16.0 | 13 | 16.0 | 39 | 28.2 | 12 | 8.7 |
| **REGION** | Flemish Region | 169 | 17.8 | 199 | 21.2 | 306 | 32.5 | 124 | 12.6 | 102 | 10.1 | 64 | 5.8 |
| | Brussels-Capital Region | 26 | 28.6 | 18 | 19.7 | 34 | 27.9 | 12 | 11.0 | 19 | 10.4 | 4 | 2.4 |
| | Walloon Region | 87 | 23.2 | 84 | 21.2 | 137 | 33.4 | 49 | 14.8 | 37 | 7.0 | 10 | 0.5 |
| **TOTAL** | Dentate* | **282** | **20.6** | **301** | **21.0** | **477** | **32.3** | **185** | **13.1** | **158** | **9.2** | **78** | **3.9** |
| **EDUCATION** | Primary school/no diploma | 3 | 8.1 | 6 | 23.4 | 6 | 21.7 | 6 | 21.0 | 5 | 21.1 | 3 | 4.7 |
| | Lower secondary school | 16 | 14.6 | 23 | 19.1 | 24 | 24.7 | 17 | 14.4 | 20 | 20.4 | 9 | 6.8 |
| | Higher secondary school | 46 | 11.3 | 60 | 18.0 | 104 | 35.9 | 41 | 15.8 | 46 | 13.9 | 22 | 5.2 |
| | Higher education | 91 | 24.3 | 91 | 19.0 | 136 | 30.7 | 66 | 14.2 | 38 | 7.9 | 21 | 3.9 |
| **SOCIAL STATUS** | No | 204 | 19.8 | 208 | 20.2 | 325 | 33.4 | 139 | 13.1 | 101 | 9.2 | 57 | 4.3 |
| **VT-BIM** | Yes | 22 | 20.3 | 35 | 20.2 | 48 | 31.7 | 21 | 11.0 | 25 | 13.9 | 7 | 2.9 |
| **TOTAL** | Dentate* | **226** | **19.8** | **244** | **20.3** | **374** | **33.2** | **160** | **12.8** | **126** | **9.9** | **64** | **4.0** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *dentate = participant with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.12.*** *Distribution of highest DPSI scores among maxillary and mandibular sextants in dentate participants 15 years and older (N=1,488 and N= 1,194), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Highest DPSI score | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Maxilla right sextant | | Maxilla central sextant | | Maxilla left sextant | | Mandible right sextant | | Mandible central sextant | | Mandible left sextant | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 371 | 56.3 | 237 | 41.0 | 379 | 59.1 | 356 | 56.3 | 455 | 68.0 | 352 | 56.8 |
| | Female | 387 | 51.7 | 268 | 39.0 | 398 | 56.4 | 394 | 52.4 | 539 | 69.2 | 388 | 50.7 |
| **AGE GROUP** | 15-24 | 90 | 55.4 | 85 | 56.1 | 93 | 58.6 | 83 | 53.1 | 131 | 81.0 | 89 | 54.8 |
| | 25-34 | 83 | 52.9 | 54 | 38.4 | 89 | 62.5 | 82 | 53.0 | 129 | 79.8 | 80 | 52.9 |
| | 35-44 | 115 | 55.9 | 86 | 43.2 | 118 | 57.5 | 110 | 53.4 | 172 | 75.1 | 114 | 55.1 |
| | 45-54 | 144 | 54.4 | 88 | 36.8 | 151 | 58.0 | 146 | 57.3 | 178 | 66.1 | 145 | 58.1 |
| | 55-64 | 152 | 50.6 | 90 | 32.5 | 143 | 51.5 | 144 | 51.0 | 168 | 58.0 | 143 | 50.0 |
| | 65-74 | 115 | 55.9 | 64 | 29.3 | 120 | 58.9 | 115 | 51.9 | 144 | 59.0 | 109 | 49.5 |
| | ≥75 | 59 | 52.7 | 38 | 41.4 | 63 | 57.1 | 70 | 65.0 | 72 | 54.3 | 60 | 55.1 |
| **REGION** | Flemish Region | 487 | 53.7 | 306 | 36.5 | 495 | 56.0 | 478 | 52.2 | 635 | 68.0 | 473 | 51.9 |
| | Brussels-Capital Region | 65 | 60.9 | 50 | 50.8 | 67 | 64.5 | 61 | 58.6 | 71 | 67.7 | 60 | 57.9 |
| | Walloon Region | 206 | 52.0 | 149 | 42.8 | 215 | 58.6 | 211 | 57.0 | 288 | 70.3 | 207 | 55.7 |
| **TOTAL** | Dentate* | **758** | **54.0** | **505** | **40.0** | **777** | **57.7** | **750** | **54.3** | **994** | **68.6** | **740** | **53.7** |
| **EDUCATION** | Primary school/no diploma | 11 | 43.8 | 3 | 9.6 | 13 | 52.6 | 12 | 38.2 | 14 | 47.0 | 12 | 45.1 |
| | Lower secondary school | 42 | 49.6 | 31 | 35.3 | 46 | 54.0 | 55 | 52.3 | 66 | 60.4 | 48 | 48.5 |
| | Higher secondary school | 152 | 49.5 | 93 | 33.2 | 157 | 54.3 | 150 | 48.8 | 207 | 69.0 | 151 | 46.3 |
| | Higher education | 232 | 55.4 | 151 | 39.0 | 237 | 57.0 | 218 | 52.8 | 286 | 68.2 | 217 | 53.7 |
| **SOCIAL STATUS VT/BIM** | No | 521 | 52.2 | 342 | 36.8 | 541 | 55.2 | 525 | 52.9 | 681 | 68.1 | 513 | 51.3 |
| | Yes | 79 | 62.3 | 57 | 47.8 | 80 | 64.8 | 74 | 54.1 | 109 | 72.0 | 72 | 52.6 |
| **TOTAL** | Dentate* | **601** | **53.6** | **399** | **38.3** | **622** | **56.5** | **599** | **52.9** | **791** | **68.6** | **585** | **51.3** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.5.4. *Dental status*

#### *6.5.4.1. Caries experience*

Caries experience was recorded using the dmft/DMFT index, for temporary and permanent dentitions, respectively (WHO, 2013). Dental status was recorded using letters for deciduous teeth and numbers for permanent teeth. The criteria were as follows: A/0 = sound; B/1 = decayed; C/2 = filled with decay; D/3 = filled without decay; E/4 = missing due to caries; N/5 = missing for other reason than caries; F/6 = sealant; G/7 = bridge, abutment, crown or veneer; N/8 = unerupted tooth; T/9 = trauma; X/X = not recorded.

Table 6.13a presents the results for the permanent dentition. The mean DMFT score for the Full sample was 8.6 (±7.2). The most significant component of this index was the "F" (filled teeth), with a mean of 6.4 (±5.8). On average, 1.3 (±4.0) teeth were missing, and 0.9 (±2.4) teeth were decayed. The distribution of the scores showed a highly skewed distribution. The mean DMFT score was higher in females (8.2 ±7.4) than in male participants (7.5 ±7.1).

The highest DMFT scores were observed in the 65-74 years and older age groups. The number of decayed and extracted teeth reached the highest levels in participants aged 75 years and older. Particularly, the number of teeth extracted increased markedly from the age of 65 years and above, while the number of filled teeth increased significantly between the age of 25 years and 64 years. There was a small difference between the mean DMFT score in the Flemish and Walloon Regions (8.9 ±7.2 and 8.3 ±7.2, respectively), while residents of the Brussels-Capital Region had an even lower mean DMFT score (7.4 ±6.7).

In the Linked sample, it was observed that the mean DMFT score decreased with level of education, from the lowest level (12.7 ±7.0) to the highest level (9.2 ±6.5). This pattern was also identified in its component missing teeth.

Participants with status VT-BIM had slightly lower mean scores (8.4 ±7.2) compared to those without this status (8.8 ±7.2). Furthermore, they had higher mean values for the decayed (1.2 ±2.4) and missing teeth components (2.1 ±5.4), with corresponding values of 0.9 (±2.5) and 1.4 (±4.1) in their counterparts without status VT-BIM. In contrast, participants with status VT-BIM had a lower mean for the filled teeth component (5.1 ±5.5) compared to 6.6 ±5.7 in those without this status.

The mean DMFT score in the 12-year-old group (N = 22; not shown separately in the table) was 0.7 (±1.8) with a median of 0, an interquartile range (Q1–Q3) of 0-0, and a range of 0-7. Since the number of participants in this subgroup was particularly small, it is not possible to draw meaningful conclusions.

***Table 6.13a.*** *DMFT index and its components D (Decayed), M (Missing), F (Filled) T (Tooth), mean and standard deviation in dentate participants 12 years and older (N= 1,573/1,561 and N= 1,262/1,251; permanent dentition), OHDRES 2023-2024, Belgium (N=1,724 and N=1,382)*

| | | DMFT (N=1,573) | | D (N=1,561) | | M (N=1,573) | | F (N=1,561) | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **GENDER** | Male | 7.5 | 7.1 | 0.9 | 2.5 | 1.3 | 3.8 | 6.1 | 5.7 |
| | Female | 8.2 | 7.4 | 0.9 | 2.3 | 1.3 | 4.2 | 6.6 | 6.0 |
| **AGE GROUP** | 12-14 | 1.5 | 2.9 | 0.5 | 1.4 | 0.0 | 0.1 | 1.0 | 2.6 |
| | 15-24 | 2.4 | 3.6 | 0.9 | 2.7 | 0.0 | 0.1 | 1.5 | 2.3 |
| | 25-34 | 5.4 | 5.1 | 1.0 | 2.3 | 0.5 | 2.7 | 4.1 | 4.1 |
| | 35-44 | 8.0 | 5.8 | 1.0 | 2.2 | 0.6 | 2.0 | 6.4 | 4.8 |
| | 45-54 | 10.1 | 6.1 | 0.9 | 2.6 | 0.8 | 2.1 | 8.5 | 5.5 |
| | 55-64 | 12.8 | 6.5 | 1.0 | 2.7 | 1.9 | 4.5 | 10.0 | 5.8 |
| | 65-74 | 13.7 | 7.1 | 0.7 | 1.8 | 3.6 | 6.4 | 9.6 | 5.9 |
| | ≥75 | 12.9 | 7.7 | 1.2 | 2.4 | 3.7 | 6.8 | 8.1 | 6.1 |
| **REGION** | Flemish Region | 8.9 | 7.2 | 0.9 | 2.5 | 1.4 | 4.1 | 6.6 | 5.9 |
| | Brussels-Capital Region | 7.4 | 6.7 | 0.7 | 1.7 | 0.7 | 2.7 | 6.0 | 5.5 |
| | Walloon Region | 8.3 | 7.2 | 1.0 | 2.4 | 1.2 | 4.1 | 6.1 | 5.8 |
| **TOTAL** | Dentate* | **8.6** | **7.2** | **0.9** | **2.4** | **1.3** | **4.0** | **6.4** | **5.8** |
| | | (N= 1,262) | | (N= 1,251) | | (N= 1,262) | | (N= 1,251) | |
| **EDUCATION** | Primary school/no diploma | 12.7 | 7.0 | 1.1 | 2.4 | 4.2 | 6.3 | 7.5 | 5.0 |
| | Lower secondary school | 10.9 | 7.2 | 1.0 | 2.3 | 3.6 | 6.5 | 6.5 | 5.4 |
| | Higher secondary school | 10.7 | 6.9 | 1.4 | 3.2 | 1.7 | 4.4 | 7.6 | 5.5 |
| | Higher education | 9.2 | 6.5 | 0.8 | 2.3 | 0.9 | 2.7 | 7.6 | 5.6 |
| **SOCIAL STAUS VT-BIM** | No | 8.8 | 7.2 | 0.9 | 2.5 | 1.4 | 4.1 | 6.6 | 5.7 |
| | Yes | 8.4 | 7.5 | 1.2 | 2.4 | 2.1 | 5.4 | 5.1 | 5.5 |
| **TOTAL** | Dentate* | **8.7** | **7.2** | **1.0** | **2.4** | **1.5** | **4.3** | **6.3** | **5.7** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N= number; SD = standard deviation;*
**dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.13b presents the results for the primary dentition. The mean dmft score for children aged 5-11 years was 1.8 (±2.5). The majority of the scores were accounted for by the "d" component (decayed teeth), with a mean of 1.1 (±1.9). However, it is important to underline that the sample size was too small to allow meaningful comparisons between subgroups.

***Table 6.13b.*** *dmft index and its components d (decayed), m (missing), f (filled) t (tooth), mean and standard deviation in dentate participants 5-11 years old (N= 72; deciduous dentition), OHDRES 2023-2024, Belgium (N= 1,724)*

| | | dmft (N=72) | | d (N=72) | | m (N=72 | | f (N=72) | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** | **Mean** | **SD** |
| **GENDER** | Male | 2.0 | 2.6 | 1.3 | 2.0 | 0.0 | 0.1 | 0.6 | 1.5 |
| | Female | 1.6 | 2.3 | 0.7 | 1.8 | 0.0 | 0.0 | 0.6 | 1.3 |
| **AGE GROUP** | 5-7 | 2.0 | 3.0 | 1.0 | 2.1 | 0.0 | 0.2 | 1.0 | 2.0 |
| | 8-11 | 1.7 | 2.2 | 1.3 | 2.1 | 0.0 | 0.0 | 0.4 | 1.2 |
| **TOTAL** | | **1.8** | **2.5** | **1.1** | **1.9** | **0.0** | **0.1** | **0.6** | **1.4** |

*Source: OHDRES 2023-2024; N = number; SD = standard deviation;*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.14 provides an overview of the number of participants who were free from cavitated caries lesions, missing teeth and fillings (dmft/DMFT score of 0). This was the case for 18.1% of those examined in the Full sample. There was a difference between males and females (19.6% versus 16.6%, in this order). The proportion of participants without caries experience decreased sharply from the age of 25 years onwards. Among children aged 5-7 years, 43.4% were caries-free; among those between 12-14 years old, 61.3% and among those between 15-24 years old, only 45.8%. However, we emphasize that the sample sizes in these age groups were too small to allow meaningful subgroup comparisons.

The proportion of caries-free participants in the Linked sample increased from the lowest level of education to the highest level of educational attainment. No difference in caries-free status was observed between participants with and without social status VT-BIM.

***Table 6.14.*** *Frequency of dentate caries-free participants 5 years and older, i.e. free from cavitated caries lesions, missing and filled teeth (dmft/DMFT score = 0), (N= 1,686 and N= 1,348), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Caries-free | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 130 | 19.6 |
| | Female | 113 | 16.6 |
| **AGE GROUP** | 5-7 | 19 | 43.4 |
| | 8-11 | 46 | 50.7 |
| | 12-14 | 45 | 61.3 |
| | 15-24 | 68 | 45.8 |
| | 25-34 | 27 | 12.0 |
| | 35-44 | 11 | 6.1 |
| | 45-54 | 11 | 6.0 |
| | 55-64 | 4 | 1.1 |
| | 65-74 | 6 | 2.1 |
| | ≥75 | 6 | 3.9 |
| **REGION** | Flemish Region | 148 | 16.7 |
| | Brussels-Capital Region | 18 | 20.1 |
| | Walloon Region | 77 | 20.2 |
| **TOTAL** | Dentate* | **243** | **18.1** |
| **EDUCATION** | Primary school/no diploma | 1 | 4.7 |
| | Lower secondary school | 6 | 5.1 |
| | Higher secondary school | 12 | 4.8 |
| | Higher education | 29 | 7.2 |
| **SOCIAL STAUS** | No | 178 | 20.1 |
| **VT-BIM** | Yes | 16 | 20.4 |
| **TOTAL** | Dentate* | **194** | **20.1** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number; % = percentage, *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

#### *6.5.4.2. Restorative Index and Care Index*

Table 6.15 provides an overview of the Restorative Index and the Care Index among participants who underwent an oral health examination. The Restorative Index assesses the proportion of decayed teeth that have been treated with restorations while the Care Index also includes extractions as a form of treatment (Gupta et al., 2017). Both indices range from 0 to 100.

The Full sample shows that for the permanent dentition, the mean Restorative Index was 85.8 (±28.0). Among those examined, 6.4% had a score of 0 and 66.9% had a score of 100. The Care Index showed a higher mean of 87.5 (±25.9), with 4.8% of participants scoring 0 and 67.3% scoring 100.

For the primary dentition, participants aged 5-7 years, the mean Restorative Index was 49.7 (±34.6). Among those examined, 28.6% had a Restorative Index of 0, while 7.6% had a score of 100.

Concerning the comparison between females and males, the latter had higher scores for both indices. The Restorative Index and the Care Index increased with age, although a small decline was observed in the 75 years and older age group. There were virtually no differences in scores between the Flemish Region and Brussels-Capital Region, while both regions reported higher values than the Walloon Region.

The Restorative and Care Indices in the Linked sample showed fluctuations across the level of educational attainment, with no clear trend. Participants with status VT-BIM had lower mean scores on both indices compared to their counterparts: 75.1 (±34.5) versus 87.3 (±26.4) for the Restorative Index, and 78.9 (±31.9) versus 89.0 (±24.0) for the Care Index.

***Table 6.15.*** *Restorative Index (N= 1,372 and N= 1,100) and Care Index (N=1,392 and N= 1,119 in the permanent dentition of participants 12 years and older, OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Restorative Index (N=1,372) | | | Care Index (N= 1,392) | | |
|---|---|---|---|---|---|---|---|
| | | **Mean (SD)** | **=0 N (%)** | **=100 N (%)** | **Mean (SD)** | **=0 N (%)** | **=100 N (%)** |
| **GENDER** | Male | 85.0 (28.2) | 35 (5.8) | 397 (63.9) | 86.7 (26.3) | 26 (4.6) | 409 (64.4) |
| | Female | 86.5 (27.8) | 38 (6.9) | 531 (69.7) | 88.2 (25.5) | 28 (5.0) | 539 (70.0) |
| **AGE GROUP** | 12-14 | 57.3 (46.6) | 10 (38.1) | 12 (49.1) | 59.0 (45.8) | 9 (35.1) | 13 (50.3) |
| | 15-24 | 73.6 (38.9) | 16 (18.6) | 52 (59.0) | 73.8 (38.7) | 15 (18.4) | 52 (59.0) |
| | 25-34 | 80.1 (33.5) | 12 (9.9) | 81 (63.7) | 81.1 (32.3) | 11 (8.2) | 84 (64.5) |
| | 35-44 | 87.1 (23.5) | 10 (3.3) | 152 (64.8) | 88.4 (21.5) | 6 (1.8) | 153 (64.9) |
| | 45-54 | 91.4 (21.2) | 7 (2.9) | 181 (71.4) | 92.9 (17.3) | 3 (1.0) | 182 (71.4) |
| | 55-64 | 91.1 (21.1) | 6 (2.5) | 201 (73.5) | 93.5 (15.7) | 1 (0.1) | 203 (73.6) |
| | 65-74 | 91.6 (19.7) | 6 (2.2) | 172 (72.6) | 93.4 (16.7) | 4 (1.4) | 182 (73.5) |
| | ≥75 | 84.4 (27.5) | 6 (4.6) | 77 (61.1) | 87.7 (24.5) | 5 (3.2) | 79 (61.7) |
| **REGION** | Flemish Region | 86.5 (27.3) | 39 (5.5) | 623 (67.7) | 88.1 (25.2) | 26 (4.0) | 632 (68.0) |
| | Brussels-Capital Region | 86.7 (25.6) | 4 (5.7) | 72 (66.0) | 88.1 (22.6) | 2 (2.7) | 73 (66.3) |
| | Walloon Region | 83.9 (30.2) | 30 (8.4) | 233 (65.7) | 85.9 (28.1) | 26 (7.1) | 243 (66.4) |
| **TOTAL** | Dentate* | **85.8 (28.0)** | **73 (6.4)** | **628 (66.9)** | **87.5 (25.9)** | **54 (4.8)** | **948 (67.3)** |
| | | | (N= 1,100) | | | (N= 1,119) | |
| **EDUCATION** | Primary school/no diploma | 89.1 (22.8) | 1 (3.0) | 20 (65.9) | 91.9 (16.4) | 0 (0.0) | 21 (66.4) |
| | Lower secondary school | 83.6 (29.6) | 6 (6.9) | 66 (62.9) | 88.5 (23.4) | 2 (1.0) | 69 (64.8) |
| | Higher secondary school | 84.9 (28.3) | 13 (4.7) | 204 (65.8) | 86.7 (26.4) | 9 (3.4) | 209 (66.2) |
| | Higher education | 89.8 (23.2) | 11 (3.1) | 304 (72.2) | 90.9 (20.9) | 7 (1.9) | 306 (72.3) |
| **SOCIAL STATUS VT-BIM** | No | 87.3 (26.4) | 40 (4.8) | 666 (69.2) | 89.0 (24.0) | 29 (3.4) | 682 (69.7) |
| | Yes | 75.1 (34.5) | 16 (12.3) | 72 (47.7) | 78.9 (31.9) | 12 (8.4) | 75 (49.2) |
| **TOTAL** | Dentate* | **85.4 (28.0)** | **56 (5.9)** | **738 (65.8)** | **87.5 (25.5)** | **41 (4.1)** | **757 (66.5)** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; SD = standard deviation; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.5.4.3. Root surface status*

Table 6.16 describes the percentage of participants with teeth showing exposed root surfaces as well as those with decayed and/or filled exposed root surfaces. In the Full sample, the corresponding data were 56.3% and 14.7%, respectively. A small difference was found between males and females in the proportion of exposed root surfaces while no difference was observed in the proportion of decayed and/or filled root surfaces.

Both conditions increased steadily with age, however, a decline was registered in participants aged 75 years and older, particularly in the proportion of exposed root surfaces. The proportions of teeth with exposed root surfaces together with decayed and/or filled exposed root surfaces were highest in the Flemish Region (63.3% and 15.3%, respectively), followed by the Walloon Region (44.8% and 14.7%) and the Brussels-Capital region (44.8% and 11.9%).

In the Linked sample, the proportion of participants with decayed and/or filled exposed root surfaces was significantly lower among those participants with the highest level of education (16.2%) compared to participants with only primary education or no diploma (38.4%). Participants with VT-BIM status had a slightly higher proportion of teeth with decayed and/or filled exposed root surfaces (17.7%) compared to their counterparts without this status (16.9%).

***Table 6.16.*** *Frequency of dentate participants aged 15 years and older with exposed root surfaces and exposed decayed and/or filled root surfaces(N=1,538 and N= 1,245), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Exposed root surfaces | | Exposed root surfaces decayed and/or filled | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **GENDER** | Male | 472 | 58.0 | 150 | 14.6 |
| | Female | 505 | 54.6 | 141 | 14.9 |
| **AGE GROUP.** | 15-24 | 13 | 5.3 | 0 | 0.0 |
| | 25-34 | 56 | 32.5 | 5 | 2.2 |
| | 35-44 | 134 | 55.7 | 18 | 6.1 |
| | 45-54 | 191 | 69.6 | 43 | 13.5 |
| | 55-64 | 241 | 80.8 | 84 | 27.4 |
| | 65-74 | 226 | 82.2 | 93 | 30.7 |
| | ≥75 | 116 | 70.5 | 48 | 28.8 |
| **REGION** | Flemish Region | 680 | 63.3 | 178 | 15.3 |
| | Brussels-Capital Region | 74 | 48.8 | 23 | 11.9 |
| | Walloon Region | 223 | 44.8 | 90 | 14.7 |
| **TOTAL** | Dentate* | **977** | **56.3** | **291** | **14.7** |
| **EDUCATION** | Primary school/no diploma | 24 | 68.5 | 11 | 38.4 |
| | Lower secondary school | 88 | 68.8 | 23 | 15.2 |
| | Higher secondary school | 239 | 70.1 | 76 | 22.1 |
| | Higher education | 323 | 65.9 | 82 | 16.2 |
| **SOCIAL STAUS** | No | 698 | 59.8 | 199 | 16.9 |
| **VT-BIM** | Yes | 104 | 52.9 | 40 | 17.7 |
| **TOTAL** | Dentate* | **803** | **58.7** | **239** | **17.0** |

*Source: OHDRES 2023-2024, HI 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.17 presents the mean number of teeth per participant with exposed root surfaces, as well as the number of teeth with exposed root surfaces on which signs of dental caries, whether treated or untreated, were identified. In the Full sample, participants had a mean of 3.5 (±4.7) teeth with exposed root surfaces and 0.5 (±1.5) teeth with decayed or filled exposed root surfaces. The means were similar between males and females, increasing consistently with age, ranging from 0.2 (±0.9) in the 15-24 years age group to 5.0 (±5.3) in those aged 75 years and above.

There were few differences between regions. The mean number of teeth with exposed root surfaces was highest in the Flemish Region, followed by the Brussels-Capital Region and the Walloon Region. In contrast, the mean number of teeth with decayed and/or filled root surfaces was highest in the Brussels-capital region, followed by the Flemish Region and the Walloon Region.

The mean number of teeth with decayed and/or filled exposed root surfaces in the Linked sample decreased with increasing educational attainment, ranging from 1.5 (±2.5) in participants with only primary education or no diploma to 0.6 (±1.8) in those with high educational level. The social status of participants was not associated with the mean number of teeth with decayed and /or filled exposed root surfaces.

***Table 6.17.*** *Mean number of teeth with exposed root surfaces and decayed and/or filled exposed root surfaces in dentate participants aged 15 years and older (N= 1,538 and N= 1,245), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Exposed root surfaces | | Exposed root surfaces decayed and/or filled | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| **GENDER** | Male | 3.5 | 4.6 | 0.4 | 1.5 |
| | Female | 3.6 | 4.7 | 0.5 | 1.6 |
| **AGE GROUP** | 15-24 | 0.2 | 0.9 | 0.0 | 0.0 |
| | 25-34 | 1.3 | 2.8 | 0.1 | 0.7 |
| | 35-44 | 3.0 | 4.0 | 0.2 | 1.3 |
| | 45-54 | 4.4 | 4.9 | 0.3 | 1.0 |
| | 55-64 | 5.3 | 4.9 | 0.8 | 2.1 |
| | 65-74 | 5.8 | 5.2 | 1.0 | 1.9 |
| | ≥75 | 5.0 | 5.3 | 1.0 | 2.3 |
| **REGION** | Flemish Region | 4.1 | 4.9 | 0.5 | 1.5 |
| | Brussels-Capital Region | 3.2 | 4.7 | 0.5 | 1.7 |
| | Walloon Region | 2.4 | 4.0 | 0.4 | 1.5 |
| **TOTAL** | Dentate* | **3.5** | **4.7** | **0.5** | **1.5** |
| **EDUCATION** | Primary school/no diploma | 4.1 | 3.8 | 1.5 | 2.5 |
| | Lower secondary school | 4.6 | 5.0 | 0.4 | 1.0 |
| | Higher secondary school | 4.5 | 5.1 | 0.8 | 2.1 |
| | Higher education | 4.4 | 5.1 | 0.6 | 1.8 |
| **SOCIAL STAUS VT-BIM** | No | 3.9 | 4.9 | 0.6 | 2.0 |
| | Yes | 3.4 | 4.7 | 0.4 | 1.2 |
| **TOTAL** | Dentate* | **3.8** | **4.8** | **0.6** | **1.7** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*SD = standard deviation; *dentate = participant with at least one natural tooth.*

### *6.5.4.4. Tooth wear*

Tooth wear, the cumulative surface loss of mineralized tooth substance due to physical or chemo-physical processes such as dental attrition, dental erosion and dental abrasion was recorded using the Basic Erosive Wear Examination (BEWE) Index (Bartlett et al., 2008). This is a simple method to diagnose tooth wear and provide a guide to clinicians for its management. The criteria were: 0 = no erosive tooth wear; 1 = initial loss of surface texture; 2 = distinct defect, hard tissue loss < 50% of the area surface, dentine is often involved; 3 = distinct defect, hard tissue loss > 50% of the area surface, dentine is often involved. In the present survey, index teeth were used, incisors and first molars, and only participants presenting scores 2 and 3 with distinct defect and dentine involvement were recorded as having tooth wear (Martignon et al*.,* 2019). The final BEWE score of each participant was established by the sum of the highest scores recorded per sextant.

Table 6.18 describes the frequency distribution of participants aged 6 years and older with distinct signs of tooth wear involving dentine exposure. Overall in the Full sample, 41.1% of those examined showed signs of tooth wear with dentine involvement. The prevalence was higher in males (44.9%) than in females (37.2%). Sample sizes in the age groups up to 34 years were too small for meaningful comparisons. However, the proportion of participants with tooth wear increased from 45.9% in 35-44 age group to 62.9% in those aged 75 years and older. The prevalence of tooth wear was similar across regions. In the Linked sample, it was observed that the prevalence of tooth wear decreased with educational attainment. A markedly higher prevalence of tooth wear was registered among participants with only primary education or no diploma (69.3%) compared to those with the highest education level (48.4%). No difference in dental tissue loss was found between participants with social status VT-BIM and their counterparts.

***Table 6.18.*** *Frequency of dentate participants aged 6 years and older with tooth wear (N= 1,665 and N=1,329), Oral Health Survey, Belgium, 2023-2024 (N= 1,724 and N= 1,382)*

| | | Tooth wear | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 396 | 44.9 |
| | Female | 347 | 37.2 |
| **AGE GROUP** | 6-7 | 5 | 21.3 |
| | 8-11 | 9 | 12.6 |
| | 12-14 | 10 | 12.9 |
| | 15-24 | 13 | 9.9 |
| | 25-34 | 52 | 36.2 |
| | 35-44 | 105 | 45.9 |
| | 45-54 | 140 | 53.2 |
| | 55-64 | 168 | 60.8 |
| | 65-74 | 155 | 59.4 |
| | ≥75 | 86 | 62.9 |
| **REGION** | Flemish Region | 486 | 41.8 |
| | Brussels-Capital Region | 62 | 40.3 |
| | Walloon Region | 195 | 39.8 |
| **TOTAL** | Dentate* ≥ 6 | **743** | **41.1** |
| | Dentate* ≥ 12 | **729** | **43.8** |
| **EDUCATION** | Primary school/no diploma | 21 | 69.3 |
| | Lower secondary school | 69 | 58.6 |
| | Higher secondary school | 162 | 50.3 |
| | Higher education | 219 | 48.4 |
| **SOCIAL STAUS VT-BIM** | No | 512 | 42.0 |
| | Yes | 87 | 41.6 |
| **TOTAL** | Dentate* ≥ 6 | **600** | **42.0** |
| | Dentate* ≥ 12 | **589** | **44.2** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.5.4.5. Molar-Incisor Hypomineralisation (MIH)*

MIH is a systemic developmental defect of the enamel affecting one or more permanent first molars and it is frequently associated with lesions on the permanent incisors. MIH is characterised by well-demarcated opacities caused by reduced inorganic enamel components resulting in a whitish, creamy or brownish discoloration (Ghanim et al., 2017). It is a qualitative defect of the enamel and the hypomineralisation may lead to a partial or complete absence of enamel in the case of post-eruptive breakdown.

Table 6.19 shows the prevalence of MIH among participants aged 6 years and older. The prevalence of MIH in the Full sample was low (6.9%) with no difference between males and females. The difference in the observed prevalence of MIH between the age group 12-14 years and older groups may be partially explained by restorative treatments on affected molars, which can hinder subsequent clinical identification of the condition. Furthermore, severe cases may have led to tooth extractions, further reducing the number of identifiable cases.

However, due to the small number of cases, it is not possible to draw meaningful conclusions across the different age groups. No significant differences in MIH prevalence were observed between regions. However, the prevalence of MIH among individuals with social status VT-BIM was lower (4.1%) compared to those without this status (6.1%).

***Table 6.19.*** *Frequency of dentate participants aged 6 years and older with Molar-Incisor Hypomineralisation (N= 1,715 and N= 1,374), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Molar-Incisor Hypomineralisation (MIH) | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 34 | 6.8 |
| | Female | 53 | 7.0 |
| **AGE GROUP** | 6-7 | 3 | 11.6 |
| | 8-11 | 12 | 22.3 |
| | 12-14 | 11 | 17.5 |
| | 15-24 | 13 | 7.9 |
| | 25-34 | 11 | 6.6 |
| | 35-44 | 9 | 6.1 |
| | 45-54 | 10 | 3.5 |
| | 55-64 | 9 | 3.3 |
| | 65-74 | 7 | 3.1 |
| | ≥75 | 2 | 1.8 |
| **REGION** | Flemish Region | 53 | 6.1 |
| | Brussels-Capital Region | 9 | 10.3 |
| | Walloon Region | 25 | 7.1 |
| **TOTAL** | Dentate* ≥6y | **87** | **6.9** |
| **EDUCATION** | Primary school/no diploma | 2 | 7.3 |
| | Lower secondary school | 3 | 2.4 |
| | Higher secondary school | 7 | 2.1 |
| | Higher education | 12 | 3.6 |
| **SOCIAL STAUS** | No | 51 | 6.1 |
| **VT/BIM** | Yes | 6 | 4.1 |
| **TOTAL** | Dentate* ≥6y | **58** | **5.9** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.5.4.6. Dental trauma*

Table 6.20 presents the number of participants with teeth showing signs of dental trauma. In the Full sample, 2.4% of the participants had at least one tooth with sign(s) of dental trauma. Due to the small number of cases in the different subgroups, it is not possible to draw valid inferences about observed differences. The most commonly affected teeth are the upper central incisors, in both permanent and temporary dentitions.

***Table 6.20.*** *Frequency of dentate participants aged 5 years and older with at least one tooth with dental trauma (N=1,674 and N=1,337), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | At least one tooth with sign(s) of dental trauma | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 25 | 3.2 |
| | Female | 17 | 1.5 |
| **AGE GROUP** | 5-7 | 0 | 0.0 |
| | 8-11 | 0 | 0.0 |
| | 12-14 | 0 | 0.0 |
| | 15-24 | 4 | 2.4 |
| | 25-34 | 4 | 3.5 |
| | 35-44 | 6 | 2.9 |
| | 45-54 | 10 | 3.1 |
| | 55-64 | 10 | 3.5 |
| | 65-74 | 5 | 2.3 |
| | ≥75 | 3 | 1.2 |
| **REGION** | Flemish Region | 26 | 2.6 |
| | Brussels-Capital Region | 4 | 2.6 |
| | Walloon Region | 12 | 1.7 |
| **TOTAL** | Dentate* | **42** | **2.4** |
| **EDUCATION** | Primary school/no diploma | 0 | 0.0 |
| | Lower secondary school | 2 | 2.1 |
| | Higher secondary school | 12 | 3.6 |
| | Higher education | 14 | 4.8 |
| **SOCIAL STAUS VT-BIM** | No | 35 | 3.2 |
| | Yes | 3 | 1.4 |
| **TOTAL** | Dentate* | **38** | **2.9** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.5.5. *Anterior dento-facial anomalies*

Table 6.21 describes the prevalence of anterior dentofacial anomalies in participants 12 years and older (Mohlin et al., 2017). In the Full sample, one-third of participants (36.3%) had one or more anomalies in the anterior segment, with virtually no difference between males and females. Anterior dento-facial anomalies were most prevalent, approximately 40%, in participants aged 35 to 74 years. Other age groups had sample sizes that were too small to support reliable interpretation. The Brussels-Capital Region reported a higher prevalence of anterior dento-facial anomalies (40.7%) in comparison with the Flemish Region (35.6%) and the Walloon Region (36.0%).

In the Linked sample, the prevalence of these anomalies increased markedly with the level of education, ranging from 26.5% in participants with primary school or no diploma to 42.9% in those with higher education. However, the prevalence of these anomalies only slightly differs in relation to social status, 36.2% in participants with VT-BIM status and 34.6% in their counterparts.

***Table 6.21.*** *Frequency of dentate participants aged 12 years and older with at least one anterior dento-facial anomaly (N= 1,561 and N= 1251), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Anterior dento-facial anomaly | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 289 | 36.0 |
| | Female | 313 | 36.5 |
| **AGE GROUP** | 12-14 | 29 | 34.4 |
| | 15-24 | 40 | 26.0 |
| | 25-34 | 52 | 31.7 |
| | 35-44 | 93 | 40.2 |
| | 45-54 | 120 | 41.2 |
| | 55-64 | 129 | 42.1 |
| | 65-74 | 98 | 40.1 |
| | ≥75 | 41 | 31.1 |
| **REGION** | Flemish Region | 390 | 35.6 |
| | Brussels-Capital Region | 53 | 40.7 |
| | Walloon Region | 159 | 36.0 |
| **TOTAL** | Dentate* | **602** | **36.3** |
| **EDUCATION** | Primary school/no diploma | 11 | 26.5 |
| | Lower secondary school | 33 | 26.8 |
| | Higher secondary school | 121 | 38.0 |
| | Higher education | 198 | 42.9 |
| **SOCIAL STAUS** | No | 419 | 36.2 |
| **VT-BIM** | Yes | 57 | 34.6 |
| **TOTAL** | Dentate* | **477** | **36.0** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022;*
*N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.22 shows the distribution of the most prevalent space conditions and types of anterior dentofacial anomalies. Crowding was defined as a condition in which the available space between the right and left canine was insufficient to accommodate all four incisors in normal alignment. Only cases with more than 2 mm of crowding were recorded. Horizontal malocclusion was defined as either maxillary overjet of ≥ 6 mm or mandibular overjet of > 0 mm. Vertical malocclusion was defined as either an overbite of ≥ 5 mm or an open bite > 0 mm.

In the Full sample, the presence of crowding was observed in 24.7% of all participants. Vertical malocclusion was recorded in 13,4% of cases while horizontal malocclusion in 10.2%. There were minor differences between males and females in relation to these conditions. Crowding was slightly more common in males than in females (25.3% vs 24.0%), as was horizontal malocclusion (10.9% vs 9.4%). However, the opposite trend was recorded for vertical malocclusion, with a prevalence of 12.5% in males and 14.4% in females.

***Table 6.22.*** *Frequency of dentate participants aged 12 years and older with at least one anterior dento-facial anomaly: crowding (N=1,499 and N= 1,195), vertical malocclusion (N= 1,474 and N= 1,177), and horizontal malocclusion (N= 1,472 and N= 1,176), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Anterior dento-facial anomaly | | | | | |
|---|---|---|---|---|---|---|---|
| | | Crowding | | Vertical malocclusion | | Horizontal malocclusion | |
| | | N | % | N | % | N | % |
| **GENDER** | Male | 205 | 25.3 | 118 | 12.5 | 90 | 10.9 |
| | Female | 183 | 24.0 | 111 | 14.4 | 75 | 9.4 |
| **AGE GROUP** | 12-14 | 21 | 26.1 | 13 | 16.5 | 9 | 12.2 |
| | 15-24 | 22 | 14.0 | 19 | 13.4 | 11 | 4.9 |
| | 25-34 | 24 | 13.6 | 27 | 12.4 | 18 | 13.6 |
| | 35-44 | 72 | 32.1 | 31 | 13.7 | 10 | 3.8 |
| | 45-54 | 83 | 30.0 | 44 | 14.3 | 35 | 12.6 |
| | 55-64 | 86 | 30.2 | 43 | 13.5 | 41 | 14.6 |
| | 65-74 | 61 | 28.7 | 35 | 12.1 | 26 | 9.6 |
| | ≥75 | 19 | 21.2 | 17 | 11.8 | 15 | 12.3 |
| **REGION** | Flemish Region | 250 | 24.5 | 149 | 14.3 | 119 | 11.6 |
| | Brussels-Capital Region | 32 | 24.7 | 21 | 16.0 | 16 | 10.7 |
| | Walloon Region | 106 | 25.0 | 59 | 10.6 | 30 | 7.1 |
| **TOTAL** | Dentate* | **388** | **24.7** | **229** | **13.4** | **165** | **10.2** |
| **EDUCATION** | Primary school/no diploma | 4 | 10.9 | 3 | 11.1 | 4 | 11.3 |
| | Lower secondary school | 15 | 14.8 | 16 | 12.1 | 10 | 11.3 |
| | Higher secondary school | 77 | 26.8 | 48 | 14.3 | 40 | 11.9 |
| | Higher education | 136 | 30.7 | 69 | 14.7 | 50 | 10.4 |
| **SOCIAL STATUS VT-BIM** | No | 268 | 25.3 | 159 | 13.6 | 117 | 9.9 |
| | Yes | 32 | 17.8 | 24 | 18.6 | 19 | 10.5 |
| **TOTAL** | Dentate* | **300** | **24.1** | **184** | **14.5** | **136** | **10.0** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

No clear pattern was detected across age groups. The prevalence of crowding ranged from 13.6% to 32.1%, vertical malocclusion from 11.8% to 16.5% and horizontal malocclusion from 3.8% to 14.6%. It is important to underline that the small sample sizes in many age groups limit the reliability of further reliable interpretation. Regarding the regions, there were virtually no differences in the prevalence of crowding. However, vertical malocclusion was most common in the Brussels-Capital Region (16.0%) compared to 14.3% in the Flemish Region and 10.6% in the Walloon Region. Horizontal malocclusion was also more frequent in the Flemish Region (11.6%), than the Brussels-Capital Region (10.7%) and Walloon region (7.1%).

In the Linked sample we observed that the prevalence of crowding and vertical malocclusion increased with educational attainment, ranging from 10.9% to 30.7% and from 11.1% to 14.7%, respectively. In contrast, horizontal malocclusion decreased slightly from 11.3% to 10.4%. Regarding social status VT-BIM, all types of malocclusions were more prevalent in participants with status VT-BIM.

### 6.5.6. *Dental prosthesis*

#### *6.5.6.1. Fixed prosthesis and partial removable prosthesis*

Dental prosthetic status was recorded in all participants (Table 6.23.). In the Full sample, 8.7% had a crown or bridge while 7.6% wore partial removable prostheses. Fixed prosthetic works were more often recorded in females than in males (10.2 % versus 7.2%) as were partial removable prostheses, which were present in 8.7% of females compared to 6.6% of males. The presence of both fixed prostheses and partial removable prostheses increased from the age of 25 years onwards. In participants aged 25-34 years, only one partial removable prosthesis was recorded.

Fixed prosthetic reconstructions were more frequently observed among participants in the Flemish Region compared to those examined in the Walloon and Brussels-Capital Regions (9.2% vs 8.4% vs 7.4%, respectively). A similar pattern was identified for use of partial removable prostheses with prevalence rates of 8.6% in the Flemish Region, 7.2% in the Walloon Region, and 4.0% in the Brussels-Capital Region.

In the Linked sample, participants with a high level of education had a significantly lower prevalence of fixed prostheses (11.0%) and partial removable prostheses (5.5%) compared to those with only a primary education or no diploma (18.2% and 17.1%, respectively). Participants with social status VT-BIM wore removable prostheses more frequently (12.0%) than their counterparts (7.2%).

The majority of partial removable prosthesis wearers used resin-based prostheses (46.2%). Among those examined, 40.9% wore metal-based partial removable prostheses while 12.9% wore a combination of both types.

#### *6.5.6.2. Complete removable prosthesis*

The overall percentage of participants in the Full sample who wore complete removable prostheses was 5.8% as shown in Table 6.23. The presence of complete removal prostheses was significantly higher among females than males (6.6% vs 5.0%). The number of wearers increased from the age of 25 years. For participants aged 25-34 years, 0.8% (n=1) had a complete removable prosthesis, increasing to 30.5% for those aged 75 years and older.

Complete removable prosthesis wearers were observed significantly more frequently in participants from the Flemish Region (7.3%) compared to those from Walloon (4.5%) and Brussels-Capital Regions (1.6%).

In the Linked sample, the prevalence of complete removable prosthesis use was significantly lower in participants with a high level of education (2.6%) compared to those with only primary school education or no diploma (37.6%). Furthermore, participants with social status VT-BIM presented a more than twofold higher use of removable prostheses (11.5%) than their counterparts (5.5%). These findings highlight the influence of social indicators on participants' oral health status.

***Table 6.23.*** *Frequency of participants with at least one bridge (N= 1724 and N= 1382), partial removable prosthesis (N= 1724 and N= 1382), or complete removable prosthesis (( N= 1724 and N= 1382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Bridge | | Partial removable prosthesis | | Complete removable prosthesis | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % |
| **GENDER** | Male | 88 | 7.2 | 78 | 6.6 | 60 | 5.0 |
| | Female | 108 | 10.2 | 88 | 8.7 | 64 | 6.6 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 12-14 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 25-34 | 4 | 1.9 | 1 | 0.8 | 1 | 0.8 |
| | 35-44 | 12 | 5.4 | 10 | 4.1 | 2 | 0.6 |
| | 45-54 | 31 | 10.8 | 11 | 3.5 | 5 | 1.1 |
| | 55-64 | 52 | 15.1 | 32 | 11.0 | 22 | 7.6 |
| | 65-74 | 67 | 21.6 | 56 | 19.6 | 44 | 15.5 |
| | ≥75 | 30 | 22.4 | 56 | 32.6 | 50 | 30.5 |
| **REGION** | Flemish Region | 132 | 9.2 | 108 | 8.6 | 93 | 7.3 |
| | Brussels-Capital Region | 17 | 7.4 | 11 | 4.0 | 3 | 1.6 |
| | Walloon Region | 47 | 8.4 | 47 | 7.2 | 28 | 4.5 |
| **TOTAL** | | **196** | **8.7** | **166** | **7.6** | **124** | **5.8** |
| **EDUCATION** | Primary school/no diploma | 5 | 18.2 | 7 | 17.1 | 13 | 37.6 |
| | Lower secondary school | 14 | 9.1 | 27 | 20.3 | 29 | 22.3 |
| | Higher secondary school | 52 | 12.3 | 47 | 12.4 | 38 | 9.4 |
| | Higher education | 64 | 11.0 | 32 | 5.5 | 14 | 2.6 |
| **SOCIAL STATUS** | No | 142 | 8.7 | 111 | 7.2 | 84 | 5.5 |
| **VT-BIM** | Yes | 17 | 6.4 | 31 | 12.0 | 27 | 11.5 |
| **TOTAL** | | **159** | **8.3** | **142** | **8.0** | **111** | **6.5** |

*Source: OHDRES 2023-2024; HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.24.*** *Number of participants 35 years and older wearing removable complete prosthesis in one or two jaw(s) (N= 1,224 and N= 993), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Edentulous maxilla | | Edentulous mandible | | Edentulous maxilla and mandible | | Removable complete prosthesis maxilla | | Removable complete prosthesis mandible | | Removable complete prosthesis maxilla and mandible | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 58 | 4.9 | 31 | 2.7 | 27 | 2.4 | 56 | 7.7 | 29 | 4.2 | 26 | 3.8 |
| | Female | 69 | 7.2 | 23 | 2.5 | 23 | 2.5 | 64 | 10.9 | 23 | 3.9 | 23 | 3.9 |
| **AGE GROUP** | 35-44 | 1 | 0.3 | 1 | 0.3 | 1 | 0.3 | 2 | 0.6 | 0 | 0.0 | 0 | 0.0 |
| | 45-54 | 6 | 1.6 | 3 | 0.9 | 3 | 0.9 | 5 | 1.1 | 3 | 0.9 | 3 | 0.9 |
| | 55-64 | 24 | 8.5 | 8 | 2.4 | 8 | 2.4 | 22 | 7.9 | 7 | 2.1 | 7 | 2.1 |
| | 65-74 | 46 | 16.4 | 21 | 7.2 | 18 | 6.2 | 42 | 14.6 | 18 | 6.0 | 16 | 5.1 |
| | ≥75 | 49 | 30.5 | 20 | 13.8 | 19 | 13.5 | 49 | 30.2 | 24 | 15.2 | 23 | 14.8 |
| **REGION** | Flemish Region | 93 | 7.3 | 37 | 3.0 | 33 | 2.7 | 90 | 11.6 | 39 | 5.2 | 36 | 4.9 |
| | Brussels-Capital Region | 3 | 1.6 | 0 | 0.0 | 0 | 0.0 | 3 | 3.0 | 1 | 0.8 | 1 | 0.8 |
| | Walloon Region | 31 | 5.0 | 17 | 2.8 | 17 | 2.8 | 27 | 6.8 | 12 | 2.7 | 12 | 2.7 |
| **TOTAL** | | **126** | **9.9** | **53** | **4.2** | **49** | **3.9** | **120** | **9.4** | **52** | **4.0** | **49** | **3.8** |
| **EDUCATION** | Primary school/no diploma | 13 | 37.6 | 7 | 17.6 | 7 | 17.6 | 13 | 42.1 | 8 | 23.2 | 8 | 23.2 |
| | Lower secondary school | 30 | 23.6 | 13 | 11.6 | 12 | 11.3 | 29 | 24.6 | 13 | 12.4 | 13 | 12.4 |
| | Higher secondary school | 39 | 9.7 | 9 | 1.7 | 9 | 1.7 | 38 | 11.8 | 10 | 2.4 | 10 | 2.4 |
| | Higher education | 13 | 2.4 | 11 | 2.1 | 8 | 1.6 | 11 | 2.7 | 9 | 2.3 | 6 | 1.7 |
| **SOCIAL STATUS** | No | 83 | 5.5 | 37 | 2.6 | 33 | 2.4 | 80 | 8.5 | 33 | 3.4 | 30 | 3.1 |
| **VT-BIM** | Yes | 28 | 12.2 | 12 | 5.0 | 12 | 5.0 | 27 | 21.2 | 13 | 9.7 | 13 | 9.7 |
| **TOTAL** | | **110** | **10.7** | **48** | **4.7** | **44** | **4.5** | **107** | **10.3** | **46** | **4.3** | **43** | **4.1** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; Results to be interpreted with caution if the number of participants is lower than 100.*

As shown in Table 6.24, a distinction was made between participants who used complete removable prosthesis in the maxilla, in the mandible and in both jaws. Of all participants in the Full sample, 9.4% wore a complete removable prosthesis in the maxilla, 4.0% in the mandible and 3.8% in both jaws. The use of a complete removable prosthesis in the maxilla increased from 0.6% in the 35-44 age group to 30.2% in participants aged 75 years and older. The corresponding values for the mandible were markedly less than half those observed in the maxilla, ranging from 0.0% to 15.2%. Furthermore, the percentage of participants wearing complete removable prostheses in both jaws rose from 0.0% in the 35-44 age group to 14.8% in those aged 75 years and older. When compared with the percentage of completely edentulous participants in the sample (3.9%), it can be concluded that almost all edentulous individuals wore a complete removable denture (3.8%).

In the Linked sample, the use of complete removable prostheses in both jaws was significantly lower in participants with a high level of education (1.7%) compared to those with only primary school education or no diploma (23.2%). Likewise, only 3.1% of participants without social status VT-BIM used complete removable prostheses in both jaws, compared to 9.7% of those with this status. These findings further highlight the influence of social indicators on participants' oral health status.

#### *6.5.6.3. Implants*

The overall proportion of participants with at least one dental implant in the Full sample was 8.2%, with no difference whatsoever between males and females (8.2% versus 8.1%). The mean number of implants among participants aged 15 years and older was 0.2 (±0.9). The number of participants with implants increased from the age of 25 onwards. Among participants aged 25-34 years, only four implants were recorded. The proportion of implants in the Flemish Region (9.0%) was similar to that in the Brussels-Capital Region (9.8%), and both were higher than in the Walloon Region (5.8%).

In the Linked sample, we observed that the prevalence of implants was higher among highly educated participants (12.6%) compared to those with the lowest education level (8.0%). Among participants with social status VT-BIM, 6.1% had implants whereas the prevalence was higher (9.1%) among those without this status.

A total of nine edentulous participants (11.4%) aged 15 years and older had implants.

#### *6.5.6.4. Edentulousness without prosthetic replacement*

Only participants aged 35 years and older were considered for the assessment of complete edentulism. Among them, the number of edentulous participants without prosthetic replacement was limited to 2 out of 49 (4.1%).

### 6.5.7. *Functional occlusal contacts and functional occlusion*

Occlusal functional contacts were assessed by counting the total number of occlusal contacts between occluding natural teeth or fixed prostheses (premolars and molars) in each hemi-arch (right and left). If a tooth had contact with two opposing teeth, only one contact was recorded. For participants wearing a removable prosthesis, occlusal contacts were first assessed without the removable prosthesis in place, and then again with the prosthesis in the mouth. The total number of functional contacts per participant could range from 0 to 10.

Table 6.25 presents the number of functional occlusal contacts measured both without and while wearing any removable prosthesis, in participants aged 15 years and older. In the Full sample, for participants not wearing a removal prosthesis, regardless of whether they had one, the mean number of occlusal contacts between natural teeth or fixed prostheses was 6.6 (±3.0). Males had a slightly higher mean number of functional occlusal contacts (7.1 ±2.9) than females (6.7 ±3.0). The mean number of occlusal contacts decreased considerably with age, from 8.4 (±1.5) in the 15-24 age group to 3.3 (±3.3) in participants aged 75 years and older. The Flemish Region recorded the lowest mean number of occlusal functional contacts (6.6 ±3.0), followed by the Walloon Region (7.1 ±3.0) and the Brussels-Capital Region (7.8 ±2.6).

In the Linked sample, participants with the highest level of education had a significantly higher mean number of occlusal functional contacts (7.5 ±2.4) compared to those with the lowest level of education (4.8 ±4.1). Moreover, the mean number of occlusal contacts was higher in participants without social status VT-BIM (6.9 ±2.9) than in participants benefiting from this status (5.9 ±3.5).

For participants wearing a removable prosthesis, the mean number of occlusal contacts between natural teeth or fixed prostheses and the removable prosthesis was 7.5 (±2.3) (Full sample). No difference was identified in the mean number of occlusal contacts between males and females, while the number declined markedly with age from 8.4 (±1.5) in the 15-24 age group to 5.9 (±2.9) among participants aged 75 years and older. Small differences were registered between the regions, with the Flemish Region recording the lowest mean number of functional occlusal contacts (7.3 ±2.3), followed by the Walloon Region (7.6 ±2.3) and the Brussels-Capital Region (8.1 ±2.2).

In the Linked sample, educational attainment was associated with an increased number of occlusal contacts. Participants with the highest level of education had a higher mean number of functional occlusal contacts (7.8 ±2.0) compared to those with the lowest level of education (6.8 ±3.2). The mean number of occlusal contacts was somewhat lower in participants with social status VT-BIM than those without this status (7.1 ±2.6 versus 7.5 ±2.3).

***Table 6.25.*** *Number of occlusal functional contacts in participants 15 years and older (N= 1,488 and N= 1,230), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382).*

| | | Occlusal functional contacts | | | |
|---|---|---|---|---|---|
| | | Between natural occluding tooth pairs, including fixed prosthodontics, without any removable prosthesis (N= 1,488) | | Between occluding tooth pairs, including fixed prosthodontics, with any removable prosthesis (N= 1,531) | |
| | | **Mean** | **SD** | **Mean** | **SD** |
| **GENDER** | Male | 7.1 | 2.9 | 7.6 | 2.2 |
| | Female | 6.7 | 3.0 | 7.4 | 2.4 |
| **AGE GROUP** | 15-24 | 8.4 | 1.5 | 8.4 | 1.5 |
| | 25-34 | 8.5 | 1.5 | 8.5 | 1.5 |
| | 35-44 | 7.9 | 1.9 | 8.0 | 1.9 |
| | 45-54 | 7.6 | 2.2 | 7.9 | 2.0 |
| | 55-64 | 6.1 | 3.0 | 6.8 | 2.4 |
| | 65-74 | 4.9 | 3.3 | 6.3 | 2.5 |
| | ≥75 | 3.3 | 3.3 | 5.9 | 2.9 |
| **REGION** | Flemish Region | 6.6 | 3.0 | 7.3 | 2.3 |
| | Brussels-Capital Region | 7.8 | 2.6 | 8.1 | 2.2 |
| | Walloon Region | 7.1 | 3.0 | 7.6 | 2.3 |
| **TOTAL** | | **6.6** | **3.0** | **7.5** | **2.3** |
| | | (N=1,230) | | (N=1,238) | |
| **EDUCATION** | Primary school/no diploma | 4.8 | 4.1 | 6.8 | 3.2 |
| | Lower secondary school | 4.5 | 3.4 | 6.2 | 2.6 |
| | Higher secondary school | 6.4 | 3.2 | 7.3 | 2.4 |
| | Higher education | 7.5 | 2.4 | 7.8 | 2.0 |
| **SOCIAL STATUS** | No | 6.9 | 2.9 | 7.5 | 2.3 |
| **VT-BIM** | Yes | 5.9 | 3.5 | 7.1 | 2.6 |
| **TOTAL** | | **6.8** | **3.0** | **7.4** | **3.2** |

*Source: OHDRES 2023-2024; HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; SD = standard deviation. Results to be interpreted with caution if the number of participants is lower than 100.*

In this report, functional occlusion was defined as the presence of at least 20 natural teeth, including a minimum of 10 teeth in the maxilla and 10 teeth in the mandible, along with the presence of at least 2 functional occlusal contacts on both right and left sides, as described by Reissmann et al. (2019).

Table 6.26 shows the occurrence of a functional occlusion, both with and without the use of a removable prosthesis. In the Full sample, 79.4% of the participants aged 15 and older, had a functional occlusion, irrespective of the use of a removable prosthesis. This proportion increased to 89.6% when removable prostheses were taken into account. Males showed a higher occurrence of a functional occlusion than females, both without and with the use of a removable prosthesis.

The percentage of participants with functional occlusion declined markedly with age. Among participants aged 15-24 years, 99.6% had a functional occlusion irrespective of the use of a removable prosthesis, whereas this figure dropped to just 32.4% in those aged 75 years and older. When including the wear of removable prostheses, the corresponding figures were 99.6% and 73.1%, respectively. The Flemish Region had the lowest proportion of participants with functional occlusion, both without and with the use of removable prostheses, compared to the Walloon Region and Brussels-Capital Region.

***Table 6.26.*** *Number of participants 15 years and older with functional occlusion (N= 1,488 and N= 1,245), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Functional occlusion without wearing removable prosthesis | | Functional occlusion wearing removable prosthesis | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **GENDER** | Male | 541 | 81.7 | 625 | 90.5 |
| | Female | 611 | 77.3 | 710 | 88.7 |
| **AGE GROUP** | 15-24 | 152 | 99.6 | 152 | 99.6 |
| | 25-34 | 157 | 97.5 | 158 | 98.3 |
| | 35-44 | 210 | 92.6 | 214 | 93.8 |
| | 45-54 | 238 | 89.7 | 250 | 92.8 |
| | 55-64 | 209 | 72.2 | 243 | 85.2 |
| | 65-74 | 143 | 55.7 | 208 | 78.5 |
| | ≥75 | 43 | 32.4 | 110 | 73.1 |
| **REGION** | Flemish Region | 746 | 76.8 | 873 | 88.6 |
| | Brussels-Capital Region | 92 | 88.9 | 103 | 94.0 |
| | Walloon Region | 314 | 81.3 | 359 | 89.9 |
| **TOTAL** | | **1152** | **79.4** | **1335** | **89.6** |
| **EDUCATION** | Primary school/no diploma | 12 | 39.3 | 25 | 78.9 |
| | Lower secondary school | 55 | 48.6 | 91 | 76.2 |
| | Higher secondary school | 231 | 75.3 | 284 | 88.2 |
| | Higher education | 383 | 87.0 | 413 | 92.9 |
| **SOCIAL STATUS VT-BIM** | No | 813 | 79.9 | 935 | 89.3 |
| | Yes | 97 | 64.9 | 132 | 83.5 |
| **TOTAL** | | **912** | **77.7** | **1069** | **88.4** |

*Source: OHDRES 2023-2024; HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage. Results to be interpreted with caution if the number of participants is lower than 100.*

In the Linked sample, we observed that educational level was an important determinant of a functional occlusion. Without considering the use of a removable prosthesis, only 39.3% of participants with primary school education or no diploma had a functional occlusion, compared to 87.0% among those with the highest level of education. When removable prostheses were taken into account, the corresponding figures increased to 78.9% and 92.9%, respectively. A similar trend was recorded for participants with social status VT-BIM who showed a functional occlusion in 64.9% compared to 79.9% among those without this status, without the use of removal prostheses. When the use of removable prostheses was considered, this difference narrowed, with 83.5% and 89.3% presenting a functional occlusion, respectively.

## 6.6. Results: Reported oral health related behavior

### 6.6.1. *Oral hygiene habits*

In this section, we present an overview of the combined data collected during the HIS 2023-2024 face-to-face interview carried out by Sciensano, along with data retrieved from the AIM-IMA 2018-2022 database. Combined, these data represent the Linked sample. Moreover, this section focuses on the daily oral hygiene habits of participants aged 5 years and older. The data cover toothbrushing of natural teeth and fixed prosthesis, use of fluoride toothpaste, inter-dental cleaning, and brushing of removable partial and/or complete prostheses.

#### *6.6.1.1. Toothbrushing frequency*

Table 6.27 describes data on the frequency of toothbrushing among dentate participants, defined as participants with at least one natural tooth. Largely more than half of dentate participants (60.2%) reported brushing their teeth at least twice a day. A considerable proportion of them (36.5%) brushed once daily, while 3.1% indicated that they did not brush their teeth every day. Four (0.2%) participants reported never brushing their teeth.

Females reported brushing their teeth twice or more per day more frequently than males (67.2% versus 52.9%). Participants aged 25-34 years showed the highest frequency of twice daily toothbrushing (70.3%), while those aged 55-64 years had the lowest frequency (54.7%). Furthermore, twice daily toothbrushing was most common in the Brussels-Capital Region (81.1%), followed by the Flemish Region (58.1%) and the Walloon Region (56.4%). It increased with educational attainment, from 48.3% among participants with lower secondary education to 66.6% among those with the highest level of education (the group with primary school education or no diploma did not follow this trend, but this was only a very small group) . No significant difference was observed in relation to participants' social status.

***Table 6.27.*** *Frequency of toothbrushing reported by dentate participants 5 years and older (N= 1,079), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Toothbrushing | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Twice daily or more | | Once daily | | Less than once daily | | Never | |
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 246 | 52.9 | 226 | 41.1 | 36 | 5.6 | 4 | 0.4 |
| | Female | 374 | 67.2 | 188 | 32.1 | 5 | 0.7 | 0 | 0.0 |
| **AGE GROUP*** | 5-7 | 13 | 55.4 | 9 | 44.6 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 25 | 60.0 | 17 | 37.2 | 2 | 1.7 | 1 | 1.2 |
| | 12-14 | 21 | 52.2 | 14 | 46.6 | 1 | 1.2 | 0 | 0.0 |
| | 15-24 | 61 | 60.4 | 35 | 37.3 | 2 | 2.3 | 0 | 0.0 |
| | 25-34 | 68 | 70.3 | 34 | 25.0 | 5 | 4.7 | 0 | 0.0 |
| | 35-44 | 84 | 62.6 | 47 | 34.8 | 5 | 2.7 | 0 | 0.0 |
| | 45-54 | 105 | 62.5 | 65 | 33.0 | 8 | 4.5 | 0 | 0.0 |
| | 55-64 | 101 | 54.7 | 83 | 42.9 | 5 | 2.2 | 1 | 0.3 |
| | 65-74 | 93 | 54.8 | 77 | 41.3 | 6 | 3.1 | 2 | 0.8 |
| | ≥75 | 49 | 58.1 | 33 | 35.5 | 7 | 6.4 | 0 | 0.0 |
| **REGION** | Flemish Region | 465 | 58.1 | 314 | 37.5 | 35 | 4.1 | 4 | 0.3 |
| | Brussels-Capital Region | 43 | 81.0 | 14 | 18.2 | 2 | 0.8 | 0 | 0.0 |
| | Walloon Region | 112 | 56.4 | 86 | 41.8 | 4 | 1.8 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 14 | 63.4 | 11 | 31.3 | 1 | 4.2 | 1 | 1.2 |
| | Lower secondary school | 52 | 48.3 | 46 | 45.6 | 7 | 5.6 | 1 | 0.5 |
| | Higher secondary school | 161 | 55.0 | 131 | 39.5 | 18 | 5.5 | 0 | 0.0 |
| | Higher education | 272 | 66.6 | 154 | 31.2 | 10 | 2.1 | 1 | 0.1 |
| **SOCIAL STATUS** | No | 538 | 60.1 | 368 | 36.9 | 35 | 2.9 | 2 | 0.1 |
| **VT-BIM** | Yes | 80 | 60.0 | 46 | 34.7 | 6 | 4.7 | 2 | 0.7 |
| **TOTAL** | Dentate* | **620** | **60.2** | **414** | **36.5** | **41** | **3.1** | **4** | **0.2** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *dentate = participant with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.1.2. Use of fluoride toothpaste*

Table 6.28 illustrates the daily use of fluoride toothpaste to control caries progression. Toothbrushing with fluoride toothpaste is considered an important public health measure for caries control, as it simultaneously removes dental plaque and applies topical fluoride.

Most of the dentate participants (81.6%) reported using a fluoride containing toothpaste. There was no difference between males and females. The highest reported usage of fluoride toothpaste was registered among participants aged 45-54 years (88.9%), while all other age groups reported usage proportions of at least 77.0%. Reported regular use of fluoride toothpaste was highest in the Flemish Region (84.1%) followed by the Brussels-Capital Region (80.3%) and Walloon Region (75.9%). Interestingly, participants with only primary school education or no diploma reported more often the use of fluoride toothpaste (90.3%) compared to those with the highest education level (82.1%). A very small difference was detected according participants' social status.

***Table 6.28.*** *Reported use of fluoride toothpaste by dentate participants 5 years and older ((N= 935), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Use of fluoride toothpaste | |
|---|---|---|---|
| | | N | % |
| **GENDER** | Male | 361 | 81.9 |
| | Female | 410 | 81.3 |
| **AGE GROUP** | 5-7 | 15 | 86.4 |
| | 8-11 | 29 | 77.6 |
| | 12-14 | 29 | 85.6 |
| | 15-24 | 67 | 77.0 |
| | 25-34 | 74 | 77.4 |
| | 35-44 | 101 | 81.7 |
| | 45-54 | 145 | 88.9 |
| | 55-64 | 143 | 84.8 |
| | 65-74 | 119 | 78.4 |
| | ≥75 | 49 | 76.4 |
| **REGION** | Flemish Region | 608 | 84.1 |
| | Brussels-Capital Region | 34 | 80.3 |
| | Walloon Region | 129 | 75.9 |
| **EDUCATION** | Primary school/no diploma | 16 | 90.3 |
| | Lower secondary school | 75 | 81.2 |
| | Higher secondary school | 221 | 81.9 |
| | Higher education | 318 | 82.1 |
| **SOCIAL STATUS** | No | 681 | 81.6 |
| **VT-BIM** | Yes | 90 | 82.4 |
| **TOTAL** | Dentate* | **771** | **81.6** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**dentate = participant with at least one natural tooth in the mouth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.1.3. Interdental cleaning*

Only 8.2% of the participants reported performing twice a day interdental cleaning, while 17.5% reported it once daily. In contrast, 48.2% reported never performing interdental cleaning.

Females reported daily interdental cleaning more frequently than males (32.0% versus 19.1%). The frequency of daily interdental cleaning increased with age, peaking in participants aged 75 years and older (37.0%). Daily interdental cleaning was significantly more common in the Brussels-Capital Region (34.3%) than in the Flemish Region (26.5%) and the Walloon Region (19.9%). Interestingly, participants with a lower level of education and those with social status VT-BIM reported more frequent daily interdental cleaning, 46.3% and 38.5%, respectively compared to their counterparts, reporting 31.8% and 23.4%

***Table 6.29.*** *Frequency of interdental cleaning reported by dentate participants 5 years and older (N= 1,074), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Interdental cleaning | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Twice daily or more | | Once daily | | Less than once daily | | Never | |
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 36 | 6.0 | 76 | 13.1 | 123 | 23.7 | 272 | 57.3 |
| | Female | 64 | 10.3 | 133 | 21.7 | 178 | 28.6 | 192 | 39.4 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 1 | 6.4 | 0 | 0.0 | 21 | 93.6 |
| | 8-11 | 0 | 0.0 | 2 | 5.5 | 4 | 8.1 | 38 | 86.5 |
| | 12-14 | 2 | 9.7 | 1 | 9.5 | 4 | 10.4 | 29 | 70.4 |
| | 15-24 | 2 | 2.0 | 12 | 9.0 | 21 | 22.0 | 62 | 67.0 |
| | 25-34 | 9 | 6.5 | 12 | 11.5 | 40 | 33.6 | 46 | 48.5 |
| | 35-44 | 5 | 2.3 | 24 | 16.5 | 54 | 40.2 | 53 | 41.0 |
| | 45-54 | 21 | 14.0 | 40 | 22.7 | 57 | 29.7 | 60 | 33.6 |
| | 55-64 | 22 | 10.5 | 50 | 28.7 | 66 | 33.8 | 51 | 27.1 |
| | 65-74 | 28 | 17.9 | 44 | 26.6 | 45 | 27.0 | 59 | 28.6 |
| | ≥75 | 11 | 14.0 | 23 | 23.0 | 10 | 11.4 | 45 | 51.7 |
| **REGION** | Flemish Region | 77 | 8.1 | 161 | 18.4 | 230 | 28.3 | 346 | 45.2 |
| | Brussels-Capital Region | 8 | 13.5 | 14 | 20.8 | 16 | 23.7 | 21 | 42.0 |
| | Walloon Region | 15 | 6.2 | 34 | 13.7 | 55 | 21.7 | 97 | 58.4 |
| **EDUCATION** | Primary school/no diploma | 4 | 22.3 | 6 | 24.0 | 2 | 3.5 | 14 | 50.3 |
| | Lower secondary school | 14 | 11.9 | 17 | 15.6 | 28 | 27.2 | 46 | 45.3 |
| | Higher secondary school | 29 | 7.9 | 74 | 20.7 | 104 | 32.8 | 103 | 38.6 |
| | Higher education | 48 | 10.1 | 93 | 21.7 | 142 | 33.2 | 153 | 35.0 |
| **SOCIAL STATUS** | No | 78 | 7.2 | 181 | 16.2 | 275 | 28.0 | 406 | 48.6 |
| **VT-BIM** | Yes | 22 | 14.0 | 27 | 24.5 | 26 | 16.0 | 57 | 45.6 |
| **TOTAL** | Dentate* | **100** | **8.2** | **209** | **17.5** | **301** | **26.2** | **464** | **48.2** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

#### *6.6.1.4. Brushing of removable prosthesis*

Table 6.30 provides an overview of the frequency of brushing of removable prostheses. Over one-third (36.4%) of the participants reported brushing their removable prosthesis twice daily, while more than half (57.9%) reported brushing them once daily. Only 5.7% indicated that they did not brush their removable prosthesis daily.

All females (100.0%) reported brushing their prosthesis once or twice daily, compared to 88.1% of males. Brushing removal prostheses twice daily was more frequent in the Flemish Region (33.8%) than in the Walloon Region (29.1%) and more frequent in dentate participants (36.4%) compared to edentulous (13.3%).

This increased slightly with educational attainment, from 30.9% among participants with only primary school education or no diploma to 33.8% in those with the highest level of education. Participants with VT-BIM status reported brushing their prosthesis twice daily less frequently (25.0%) compared to those without this status (33.3%).

***Table 6.30.*** *Frequency of brushing of removable prosthesis reported by participants 15 years and older wearing a prosthesis (N= 176), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Brushing of removable prosthesis | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Twice daily or more | | Once daily | | Less than once daily | | Never | |
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 16 | 19.3 | 58 | 68.8 | 11 | 11.9 | 0 | 0.0 |
| | Female | 38 | 41.2 | 53 | 58.8 | 0 | 0.0 | 0 | 0.0 |
| **AGE** | 15-24 | - | - | - | - | - | - | - | - |
| | 25-34 | 0 | 0.0 | 1 | 100.0 | 0 | 0.0 | 0 | 0.0 |
| | 35-44 | 0 | 0.0 | 2 | 100.0 | 0 | 0.0 | 0 | 0.0 |
| | 45-54 | 3 | 26.6 | 6 | 73.4 | 0 | 0.0 | 0 | 0.0 |
| | 55-64 | 7 | 17.6 | 23 | 73.2 | 2 | 9.2 | 0 | 0.0 |
| | 65-74 | 21 | 33.5 | 42 | 63.3 | 3 | 3.2 | 0 | 0.0 |
| | ≥75 | 23 | 38.6 | 37 | 55.3 | 6 | 6.2 | 0 | 0.0 |
| **REGION** | Flemish Region | 46 | 33.8 | 88 | 61.6 | 7 | 4.6 | 0 | 0.0 |
| | Brussels-Capital Region | 0 | 0.0 | 4 | 91.1 | 1 | 8.9 | 0 | 0.0 |
| | Walloon Region | 8 | 29.1 | 19 | 63.8 | 3 | 7.2 | 0 | 0.0 |
| **DENTITION** | Dentate* ≥ 35 | 49 | 36.4 | 85 | 57.9 | 9 | 5.7 | 0 | 0.0 |
| | Edentulous ≥ 35 | 5 | 13.3 | 25 | 82.1 | 2 | 4.7 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 5 | 30.9 | 12 | 65.3 | 1 | 3.8 | 0 | 0.0 |
| | Lower secondary school | 14 | 29.5 | 32 | 68.0 | 2 | 2.6 | 0 | 0.0 |
| | Higher secondary school | 21 | 33.3 | 41 | 60.3 | 4 | 6.4 | 0 | 0.0 |
| | Higher education | 14 | 33.8 | 24 | 57.8 | 4 | 8.4 | 0 | 0.0 |
| **SOCIAL STATUS** | No | 44 | 33.3 | 86 | 61.5 | 9 | 5.3 | 0 | 0.0 |
| **VT/BIM** | Yes | 10 | 25.0 | 25 | 69.1 | 2 | 5.9 | 0 | 0.0 |
| **TOTAL** | | **54** | **31.3** | **111** | **63.3** | **11** | **5.4** | **0** | **0.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *dentate = participant with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

#### *6.6.1.5. Basic daily oral hygiene as advised by the Flemish Institute for Oral Health 'Gezonde Mond'.*

The basic daily oral hygiene advice for natural teeth and fixed prostheses, including crowns, bridges, implants and abutments with (semi-) precision attachments for removable prostheses, consists of at least twice daily toothbrushing with fluoride toothpaste along with at least once daily interdental cleaning. The use of a tongue scraper once daily is also recommended, but it was not considered in this section of the results (Vlaams Instituut Mondgezondheid 'Gezonde Mond', 2025).

The basic daily oral hygiene procedure recommended for participants wearing removable prostheses, both partial and complete, consists of brushing of the prosthesis twice a day with a neutral soap as well as the cleaning of the gums beneath the prostheses using gauze or a soft toothbrush. The latter was not considered in this section of our results (Vlaams Instituut Mondgezondheid 'Gezonde Mond', 2025).

As shown in Table 6.31, overall compliance with the basic oral hygiene advice in the sample of participants 15 years and older was low (18.3%). While only 21.2% of dentate participants reported compliance, the corresponding figure for edentulous was 82.3%, although this was based on only 4 edentulous participants. The other 13 edentulous participants in the sample needed to be excluded from the calculation due to being edentulous without prosthetic replacement.

In general, females reported compliance more frequently than males (23.1% versus 13.1%). Compliance increased from 8.7% in participants aged 15-24 years to 26.3% in those aged 45-54 years, declining and then increasing again in participants aged ≥ 75 years, who showed the highest compliance (28.9%). The higher level of compliance in this latter age group is likely to be associated with edentulousness and the twice daily brushing of prostheses. Besides, compliance was highest in the Brussels-Capital Region (25.7%), followed by the Flemish Region (19.1%) and the Walloon Region (13.3%).

Compliance increased with educational attainment, from 9.6% in those with lower secondary education to 21.1% in those with high level of education; the high compliance among those with only primary school education or no diploma (47.9%) needs to be interpreted with caution because of the very low numbers in that category. Participants with social status VT-BIM reported higher compliance (25.4%) compared to those without this status (17.2%).

***Table 6.31.*** *Compliance with basic daily oral hygiene recommendation from the Flemish Institute for Oral Health 'Gezonde Mond' by participants 15 years and older (N= 856), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Compliance | |
|---|---|---|---|
| | | N | % |
| **GENDER** | Male | 49 | 13.1 |
| | Female | 106 | 23.1 |
| **AGE** | 15-24 | 8 | 8.7 |
| | 25-34 | 12 | 10.5 |
| | 35-44 | 18 | 14.2 |
| | 45-54 | 38 | 26.3 |
| | 55-64 | 29 | 18.7 |
| | 65-74 | 32 | 24.7 |
| | ≥75 | 18 | 28.9 |
| **REGION** | Flemish Region | 125 | 19.1 |
| | Brussels-Capital Region | 8 | 25.7 |
| | Walloon Region | 22 | 13.3 |
| **DENTITION** | Dentate* ≥ 35 | 131 | 21.2 |
| | Edentulous ≥ 35 | 4 | 82.3 |
| **EDUCATION** | Primary school/no diploma | 7 | 47.9 |
| | Lower secondary school | 10 | 9.6 |
| | Higher secondary school | 53 | 16.5 |
| | Higher education | 76 | 21.3 |
| **SOCIAL STATUS** | No | 128 | 17.2 |
| **VT-BIM** | Yes | 27 | 25.4 |
| **TOTAL** | | **155** | **18.3** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022. N = number of participants; % = percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.1.6. Twice daily brushing of natural teeth and fixed prosthesis with fluoride toothpaste*

Information about twice daily brushing with fluoride toothpaste is a frequently registered measure of oral hygiene in international surveys, allowing comparison between countries. Table 6.32 describes twice daily brushing with fluoride toothpaste in participants aged 15 years and older. A total of 63 participants was excluded from the analyses due to being edentulous. Almost half of the participants (49.4%) reported brushing their teeth at least twice a day with fluoride toothpaste. Female participants reported a significantly higher frequency of twice daily brushing (56.0%) compared to male participants (42.4%). Participants in the age groups 25-34, 35-44 and 45-54 years reported the highest percentage of twice a day toothbrushing with fluoride toothpaste (51.4%, 51.6% and 55.2%, respectively).

Twice daily toothbrushing was most frequent in the Brussels-Capital Region (57.4%), followed by the Flemish Region (49.9%) and the Walloon Region (44.9%). Interestingly, the reported frequency of twice daily toothbrushing was higher in participants with only primary school education or no diploma (69.2%) than in those with the highest level of education (53.9%); again the low numbers in this age group need to be considered. Also, participants with social status VT-BIM reported a slightly higher frequency of twice a day brushing (54.2%) compared to those without this status (48.7%).

It is possible that the low frequency of reported use of fluoride toothpaste may be explained by the fact that participants were not aware or not caring about the presence or absence of fluoride in their toothpaste.

***Table 6.32.*** *Twice daily brushing of natural teeth and fixed prosthesis with fluoride toothpaste reported by participants 15 years and older (N= 836), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Twice daily brushing with fluoride toothpaste | |
|---|---|---|---|
| | | N | % |
| **GENDER** | Male | 156 | 42.4 |
| | Female | 247 | 56.0 |
| **AGE GROUPS** | 15-24 | 37 | 44.2 |
| | 25-34 | 46 | 51.4 |
| | 35-44 | 65 | 51.6 |
| | 45-54 | 85 | 55.2 |
| | 55-64 | 76 | 46.3 |
| | 65-74 | 67 | 46.1 |
| | ≥75 | 27 | 45.4 |
| **REGION** | Flemish Region | 316 | 49.9 |
| | Brussels-Capital Region | 20 | 57.4 |
| | Walloon Region | 67 | 44.9 |
| **EDUCATION** | Primary school/no diploma | 10 | 69.2 |
| | Lower secondary school | 38 | 39.2 |
| | Higher secondary school | 115 | 44.5 |
| | Higher education | 200 | 53.9 |
| **SOCIAL STATUS** | No | 350 | 48.7 |
| **VT-BIM** | Yes | 53 | 54.2 |
| **TOTAL** | Dentate* | **403** | **49.4** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022.*
*N = number of participants; %= percentage; *dentate = participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.6.2. *Dietary habits*

#### *6.6.2.1. Consumption of soft drinks*

Some dietary habits are considered detrimental to oral health and are particularly associated with the development of dental caries and erosive tooth wear. In this context, participants' consumption of soft drinks was investigated, as these beverages have both cariogenic as well as erosive potential. The consumption of soft drinks is of particular concern among children and young adults.

Table 6.33 shows that 18.5% of participants reported consuming soft drinks daily, either once or multiple times per day, whereas 37.3% reported never consuming sugary drinks.

A total of 21.9% of participants reported consuming soft drinks at least 4 times per week. Regarding frequency of consumption, males reported higher consumption than females (29.4% versus 14.8%). Furthermore, the proportion of females who reported never consuming soft drinks was markedly higher than the proportion of males (42.5% versus 31.9%).

Younger age groups reported more frequent consumption of soft drinks compared to older age groups. In the Walloon Region, consumption of soft drinks at least 4 times per week (24.4%) was more frequent than in the Flemish Region (21.5%) and the Brussels-Capital Region (18.5%). Regarding level of consumption, dentate participants reported a higher frequency (16.5%) than edentulous participants (13.6%).

Consumption of soft drinks at least four times per week was particularly frequent in participants with lower secondary (26.5%) and higher secondary education (28.8%). Compared to the sample mean (21.9%), a substantial difference was observed for participants with social status VT-BIM and those without it, with consumptions of 33.7% and 19.9%, respectively.

In 2018, daily consumption of sugar-sweetened beverages among Belgians was 20.4%, with 4.1% consuming one litre or more per day (Sciensano, 2020a). Furthermore, Eurostat data from 2019 indicated that Belgians aged 15 years and older were the highest consumers of sugar-sweetened soft drinks within the European Union, with 20% reporting daily consumption (https://ec.europa.eu/eurostat/databrowser/view/hlth_ehis_fv7e/default/table?lang=en).
These findings closely match our results.

#### 6.6.2.2. *Consumption of food*

Table 6.34a presents data on fruit consumption. More than half of participants (56.6%) reported eating fruits once per day or more, while 2.1% stated that they never consumed fruits.
Female participants were more likely to eat fruits once per day or more compared to male participants (61.2% versus 51.8%). The age groups with the highest daily consumption of fruit were children aged 5-7 yeas (100.0%) and adults 75 years or older (71.3%). In the Brussels-Capital Region, daily fruit consumption was more frequent (62.1%) than in the Flemish Region (58.8%) and the Walloon Region (48.8%). In addition, dentate participants reported higher daily fruit consumption (58.9%) compared to edentulous participants (42.9%).

No clear pattern in the daily consumption of fruits was observed in relation to level of education or social status.

The consumption of vegetables and salads is described in Table 6.34b. Overall, 82.0% of participants consumed vegetables and salads once per day or more, while 0.6% reported that they never consumed these. Females were more likely to eat vegetables and salads once per day or more compared to male participants, 85.2% and 78.8%, respectively. All age groups reported high daily consumption of vegetables and salads, particularly from the 35-44 age group onwards, with daily consumption at 82.5%, increasing to 91.0% among those aged 75 years and older. In the Brussels-Capital Region, daily consumption of vegetables and salads was higher (91.6%) than in the Flemish Region (84.1%) and the Walloon Region (73.1%). Edentulous participants also reported a higher daily consumption of vegetables and salads (96.4%) compared to dentate participants (85.4%).

Daily consumption of vegetables and salads was reported by 91.8% of participants with only primary school or no diploma compared to 86.8% among those with a higher level of education. A slightly higher reported frequency of daily consumption of vegetables and salads was observed in participants with social status VT-BIM (84.7%) compared to their counterparts without this status (81.7%).

Table 6.34c presents data on the consumption of sugary or salty snacks. Less than half of participants (48.9%) reported consuming these snacks daily, either once or multiple times per day, whereas 3.2% stated never consuming them. Males reported a similar frequency of consuming sugary or salty snacks once per day or more compared to females, with percentages of 48.6% and 49.2, respectively. Younger age groups, particularly those aged 24 years and younger, reported more frequent consumption of snacks compared to older age groups, with the highest frequency observed among children aged 5-7 years (85.1%). In the Brussels-Capital Region, consumption of sugary or salty snacks once per day or more (27.0%) was less frequent than in the Walloon Region (47.3%) and in the Flemish Region (53.1%). Regarding level of consumption, an important difference was observed between dentate (44.5%) and edentulous participants (57.0%).

Consumption of sugary or salty snacks once per day or more was similar across educational levels. However, a difference was observed between participants with social status VT-BIM (42.6%) and those without this status (50.1%).

It has been shown in the Belgian population that healthier eating habits were more common in females, older adults, individuals with higher education levels, and residents of the Brussels-Capital Region (Sciensano, 2020a). Our findings related to the consumption of soft drinks and foods are in agreement with these previous observations.

***Table 6.33.*** *Frequency of soft drinks consumption by participants 5 years and older (N= 1,141), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Soft drinks consumption | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ≥ 1 time per day | | 4-6 times per week | | 1-3 times per week | | < 1 time per week | | Never | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 108 | 23.7 | 26 | 5.7 | 105 | 20.2 | 99 | 18.5 | 210 | 31.9 |
| | Female | 66 | 13.6 | 10 | 1.2 | 108 | 20.7 | 125 | 22.0 | 284 | 42.5 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 | 9 | 38.9 | 4 | 24.0 | 9 | 37.1 |
| | 8-11 | 10 | 20.1 | 3 | 8.5 | 13 | 32.9 | 9 | 21.8 | 10 | 16.8 |
| | 12-14 | 8 | 31.4 | 1 | 1.2 | 17 | 42.8 | 5 | 13.3 | 5 | 11.4 |
| | 15-24 | 30 | 28.3 | 7 | 6.0 | 31 | 31.6 | 12 | 10.3 | 19 | 23.8 |
| | 25-34 | 27 | 32.2 | 3 | 3.1 | 29 | 21.2 | 24 | 22.1 | 24 | 21.4 |
| | 35-44 | 21 | 19.8 | 8 | 6.5 | 27 | 17.5 | 35 | 25.3 | 46 | 30.9 |
| | 45-54 | 33 | 19.1 | 4 | 2.5 | 32 | 16.9 | 41 | 25.1 | 71 | 36.4 |
| | 55-64 | 22 | 12.5 | 4 | 1.6 | 28 | 13.6 | 42 | 23.3 | 102 | 49.1 |
| | 65-74 | 15 | 6.2 | 6 | 2.7 | 20 | 10.9 | 36 | 18.5 | 124 | 61.6 |
| | ≥75 | 8 | 6.3 | 0 | 0.0 | 7 | 7.1 | 16 | 13.8 | 84 | 72.8 |
| **REGION** | Flemish Region | 134 | 17.9 | 29 | 3.6 | 157 | 20.2 | 171 | 19.7 | 378 | 38.5 |
| | Brussels-Capital Region | 6 | 11.0 | 3 | 7.5 | 6 | 13.8 | 15 | 29.3 | 29 | 38.4 |
| | Walloon Region | 34 | 23.0 | 4 | 1.4 | 50 | 23.6 | 38 | 18.1 | 87 | 33.8 |
| **DENTITION** | Dentate* ≥35 | 96 | 13.7 | 21 | 2.8 | 112 | 14.1 | 166 | 22.4 | 401 | 47.0 |
| | Edentulous ≥35 | 3 | 9.8 | 1 | 3.8 | 2 | 5.0 | 4 | 10.1 | 26 | 71.3 |
| **EDUCATION** | Primary school/no diploma | 4 | 11.8 | 0 | 0.0 | 4 | 8.6 | 11 | 21.7 | 17 | 57.9 |
| | Lower secondary school | 26 | 19.8 | 5 | 6.7 | 15 | 9.9 | 22 | 17.8 | 57 | 45.8 |
| | Higher secondary school | 61 | 25.9 | 10 | 2.9 | 38 | 10.2 | 56 | 18.4 | 164 | 42.7 |
| | Higher education | 38 | 10.6 | 12 | 2.6 | 89 | 21.0 | 104 | 25.2 | 207 | 40.5 |
| **SOCIAL STATUS VT-BIM** | No | 141 | 17.0 | 29 | 2.9 | 198 | 22.1 | 199 | 20.9 | 424 | 37.2 |
| | Yes | 32 | 26.9 | 7 | 6.8 | 15 | 11.4 | 25 | 16.9 | 69 | 37.9 |
| **TOTAL** | | **174** | **18.5** | **36** | **3.4** | **213** | **20.4** | **224** | **20.3** | **494** | **37.3** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*The results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.34a.*** *Frequency of fruit consumption by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Fruit consumption | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ≥ 1 time per day | | 4-6 times per week | | 1-3 times per week | | < 1 time per week | | Never | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 293 | 51.8 | 74 | 13.8 | 113 | 21.5 | 57 | 10.9 | 12 | 2.0 |
| | Female | 361 | 61.2 | 74 | 13.4 | 107 | 15.9 | 41 | 7.3 | 10 | 2.3 |
| **AGE GROUP** | 5-7 | 22 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 31 | 64.0 | 6 | 19.1 | 6 | 10.8 | 1 | 0.8 | 1 | 5.4 |
| | 12-14 | 19 | 55.9 | 6 | 12.9 | 9 | 28.7 | 1 | 1.5 | 1 | 1.0 |
| | 15-24 | 34 | 40.5 | 15 | 17.2 | 33 | 27.6 | 15 | 13.3 | 2 | 1.4 |
| | 25-34 | 53 | 47.2 | 16 | 15.4 | 26 | 23.6 | 12 | 13.3 | 1 | 0.5 |
| | 35-44 | 80 | 55.3 | 16 | 14.0 | 28 | 17.5 | 11 | 11.7 | 2 | 1.5 |
| | 45-54 | 89 | 47.3 | 24 | 12.6 | 35 | 18.9 | 28 | 17.8 | 5 | 3.5 |
| | 55-64 | 116 | 59.2 | 24 | 11.4 | 43 | 23.0 | 12 | 5.1 | 3 | 1.3 |
| | 65-74 | 129 | 63.4 | 24 | 12.7 | 29 | 13.3 | 14 | 7.7 | 5 | 3.0 |
| | ≥75 | 81 | 71.3 | 17 | 13.6 | 11 | 8.1 | 4 | 3.3 | 2 | 3.7 |
| **REGION** | Flemish Region | 509 | 58.8 | 101 | 12.0 | 167 | 19.0 | 77 | 8.5 | 15 | 1.7 |
| | Brussels-Capital Region | 36 | 62.1 | 10 | 15.4 | 10 | 13.6 | 4 | 8.9 | 0 | 0.0 |
| | Walloon Region | 109 | 48.8 | 37 | 16.9 | 43 | 19.7 | 17 | 10.6 | 7 | 4.1 |
| **DENTITION** | Dentate* ≥35 | 478 | 58.9 | 100 | 12.7 | 136 | 16.7 | 68 | 9.9 | 14 | 1.8 |
| | Edentulous ≥35 | 17 | 42.9 | 5 | 15.2 | 10 | 23.6 | 1 | 0.9 | 3 | 17.3 |
| **EDUCATION** | Primary school/no diploma | 27 | 66.2 | 1 | 3.8 | 5 | 12.2 | 2 | 11.4 | 1 | 6.4 |
| | Lower secondary school | 69 | 51.5 | 17 | 13.1 | 20 | 17.5 | 15 | 14.0 | 4 | 4.0 |
| | Higher secondary school | 172 | 49.2 | 45 | 12.8 | 67 | 20.9 | 39 | 15.6 | 6 | 1.5 |
| | Higher education | 277 | 61.0 | 56 | 13.2 | 83 | 17.5 | 27 | 6.3 | 8 | 2.0 |
| **SOCIAL STATUS** | No | 567 | 56.5 | 130 | 13.9 | 194 | 18.5 | 83 | 9.1 | 18 | 2.0 |
| **VT-BIM** | Yes | 86 | 57.4 | 18 | 12.3 | 26 | 19.5 | 15 | 8.8 | 3 | 2.1 |
| **TOTAL** | | **654** | **56.6** | **148** | **13.6** | **220** | **18.6** | **98** | **9.1** | **22** | **2.1** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*The results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.34b.*** *Frequency of vegetables and salad consumption by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Vegetables and salad consumption | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ≥ 1 time per day | | 4-6 times per week | | 1-3 times per week | | < 1 time per week | | Never | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 449 | 78.8 | 63 | 14.3 | 32 | 5.9 | 2 | 0.6 | 3 | 0.5 |
| | Female | 512 | 85.2 | 49 | 9.3 | 22 | 3.7 | 9 | 1.0 | 1 | 0.8 |
| **AGE GROUP** | 5-7 | 18 | 77.3 | 3 | 19.7 | 0 | 0.0 | 0 | 0.0 | 1 | 3.1 |
| | 8-11 | 37 | 82.0 | 4 | 7.7 | 3 | 4.9 | 0 | 0.0 | 1 | 5.4 |
| | 12-14 | 30 | 73.4 | 4 | 20.3 | 2 | 6.3 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 75 | 78.8 | 13 | 12.1 | 7 | 6.5 | 4 | 2.7 | 0 | 0.0 |
| | 25-34 | 84 | 72.1 | 15 | 20.9 | 5 | 3.8 | 4 | 3.3 | 0 | 0.0 |
| | 35-44 | 117 | 82.5 | 10 | 11.3 | 8 | 5.4 | 0 | 0.0 | 2 | 0.9 |
| | 45-54 | 148 | 82.9 | 20 | 9.9 | 12 | 6.9 | 1 | 0.2 | 0 | 0.0 |
| | 55-64 | 168 | 85.5 | 24 | 10.6 | 5 | 3.7 | 1 | 0.2 | 0 | 0.0 |
| | 65-74 | 181 | 90.1 | 12 | 5.9 | 7 | 3.7 | 1 | 0.3 | 0 | 0.0 |
| | ≥75 | 103 | 91.0 | 7 | 4.9 | 5 | 4.1 | 0 | 0.0 | 0 | 0.0 |
| **REGION** | Flemish Region | 745 | 84.1 | 84 | 11.8 | 30 | 3.1 | 7 | 0.7 | 3 | 0.4 |
| | Brussels-Capital Region | 51 | 91.6 | 5 | 3.6 | 4 | 4.8 | 0 | 0.0 | 0 | 0.0 |
| | Walloon Region | 165 | 73.1 | 23 | 15.0 | 20 | 8.9 | 4 | 1.5 | 1 | 1.5 |
| **DENTITION** | Dentate* ≥35 | 683 | 85.4 | 72 | 9.3 | 36 | 5.0 | 3 | 0.2 | 2 | 0.2 |
| | Edentulous ≥35 | 34 | 96.4 | 1 | 1.4 | 1 | 2.1 | 0 | 0.0 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 32 | 91.8 | 0 | 0.0 | 3 | 7.1 | 1 | 1.1 | 0 | 0.0 |
| | Lower secondary school | 106 | 87.0 | 15 | 9.8 | 3 | 2.5 | 1 | 0.8 | 0 | 0.0 |
| | Higher secondary school | 268 | 77.1 | 37 | 16.0 | 19 | 5.6 | 3 | 0.8 | 2 | 0.5 |
| | Higher education | 396 | 86.8 | 35 | 8.5 | 18 | 4.5 | 2 | 0.2 | 0 | 0.0 |
| **SOCIAL STATUS VT-BIM** | No | 832 | 81.7 | 100 | 11.9 | 45 | 4.7 | 11 | 1.0 | 4 | 0.7 |
| | Yes | 128 | 84.7 | 11 | 10.1 | 9 | 5.1 | 0 | 0.0 | 0 | 0.0 |
| **TOTAL** | | **961** | **82.0** | **112** | **11.8** | **54** | **4.8** | **11** | **0.8** | **4** | **0.6** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*The results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.34c.*** *Frequency of sugary or salty snacks consumption by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,389)*

| | | Sugary or salty snacks consumption | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ≥ 1 time per day | | 4-6 times per week | | 1-3 times per week | | < 1 time per week | | Never | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 284 | 48.6 | 75 | 15.6 | 128 | 24.8 | 43 | 7.0 | 19 | 4.0 |
| | Female | 306 | 49.2 | 80 | 15.8 | 138 | 24.5 | 52 | 8.1 | 17 | 2.3 |
| **AGE GROUP** | 5-7 | 17 | 85.1 | 4 | 12.5 | 1 | 2.5 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 33 | 72.2 | 5 | 11.0 | 6 | 12.6 | 1 | 4.3 | 0 | 0.0 |
| | 12-14 | 20 | 55.2 | 8 | 19.1 | 8 | 25.7 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 62 | 50.2 | 16 | 26.3 | 15 | 18.1 | 5 | 4.1 | 1 | 1.4 |
| | 25-34 | 53 | 41.1 | 16 | 16.9 | 29 | 34.5 | 7 | 4.5 | 3 | 3.0 |
| | 35-44 | 63 | 42.1 | 25 | 18.9 | 36 | 27.5 | 11 | 10.8 | 2 | 0.7 |
| | 45-54 | 82 | 41.6 | 32 | 18.9 | 42 | 26.8 | 16 | 8.9 | 5 | 3.8 |
| | 55-64 | 95 | 43.8 | 21 | 12.4 | 53 | 26.5 | 19 | 9.7 | 10 | 7.6 |
| | 65-74 | 102 | 49.2 | 15 | 7.9 | 48 | 23.9 | 26 | 14.2 | 10 | 4.8 |
| | ≥75 | 63 | 51.6 | 9 | 9.2 | 28 | 25.8 | 10 | 8.5 | 5 | 4.9 |
| **REGION** | Flemish Region | 473 | 53.1 | 110 | 14.7 | 204 | 24.1 | 63 | 6.6 | 19 | 1.5 |
| | Brussels-Capital Region | 18 | 27.0 | 10 | 20.3 | 15 | 25.1 | 10 | 15.2 | 7 | 12.4 |
| | Walloon Region | 99 | 47.3 | 35 | 16.3 | 47 | 26.0 | 22 | 6.9 | 10 | 3.5 |
| **DENTITION** | Dentate* ≥35 | 383 | 44.5 | 105 | 14.4 | 201 | 26.6 | 79 | 10.4 | 28 | 4.1 |
| | Edentulous ≥35 | 22 | 57.0 | 1 | 3.8 | 6 | 18.0 | 3 | 10.4 | 4 | 10.7 |
| **EDUCATION** | Primary school/no diploma | 21 | 48.2 | 2 | 4.7 | 10 | 37.4 | 2 | 7.7 | 1 | 2.1 |
| | Lower secondary school | 60 | 40.8 | 10 | 7.3 | 30 | 28.9 | 21 | 16.6 | 4 | 6.5 |
| | Higher secondary school | 172 | 48.8 | 38 | 11.9 | 80 | 27.5 | 29 | 9.5 | 10 | 2.4 |
| | Higher education | 214 | 43.8 | 70 | 17.9 | 113 | 26.5 | 37 | 7.6 | 17 | 4.2 |
| **SOCIAL STATUS VT-BIM** | No | 524 | 50.1 | 132 | 15.2 | 230 | 25.1 | 77 | 6.7 | 29 | 2.9 |
| | Yes | 66 | 42.6 | 22 | 18.2 | 35 | 21.7 | 18 | 12.9 | 7 | 4.7 |
| **TOTAL** | | **590** | **48.9** | **155** | **15.7** | **266** | **24.7** | **95** | **7.6** | **36** | **3.2** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*The results to be interpreted with caution if the number of participants is lower than 100.*

### 6.6.3. *Dental attendance*

Dental attendance was assessed and presented according to participants' unmet needs for dental consultation and treatment, the timing of their last visit to a dentist, reasons for not visiting a dentist in the past 12 months, and reasons for postponing a dental visit.

#### *6.6.3.1. Unmet dental needs*

Table 6.35 shows data on participants' unmet dental needs for dental consultation and treatment in the past 12 months. A total of 59 participants (6.0%) reported having unmet needs, with a higher proportion in males (7.4%) compared to females (4.7%). The age groups reporting the highest percentage of unmet dental needs were participants aged 25-34 years (11.2%), followed by those aged 75 years and older (10.3%).

In the Brussels-Capital Region, unmet dental needs were more frequently reported (8.5%) than in the Walloon Region (7.8%) and in the Flemish Region (4.9%). Moreover, edentulous participants reported unmet dental needs at a proportion three times lower than dentate participants (2.1% versus 6.3%). These unmet needs decreased gradually with increasing educational attainment, from 12.3% in participants with the lowest level of education to 5.9% in those with the highest level. Participants with social status VT-BIM reported a percentage of unmet dental needs (10.6%) that was approximately twice as high as in those without this status (5.1%). The main reported reasons for not having a dental consultation or treatment when needed were long waiting lists (19.9%), lack of time (19.3%), financial constraints (14.1%), and fear of the dentist (13.2%).

***Table 6.35.*** *Number of participants 5 years and older with unmet dental needs for dental consultation or treatment in the past twelve months (N= 1,140), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Unmet dental needs | |
|---|---|---|---|
| | | **N** | **%** |
| **GENDER** | Male | 34 | 7.4 |
| | Female | 25 | 4.7 |
| **AGE GROUP** | 5-7 | 0 | 0.0 |
| | 8-11 | 1 | 4.3 |
| | 12-14 | 0 | 0.0 |
| | 15-24 | 6 | 5.4 |
| | 25-34 | 9 | 11.2 |
| | 35-44 | 7 | 5.6 |
| | 45-54 | 6 | 4.2 |
| | 55-64 | 11 | 7.2 |
| | 65-74 | 9 | 4.2 |
| | ≥75 | 10 | 10.3 |
| **REGION** | Flemish Region | 34 | 4.9 |
| | Brussels-Capital Region | 7 | 8.5 |
| | Walloon Region | 18 | 7.8 |
| **DENTITION** | Dentate* ≥35 | 42 | 6.3 |
| | Edentulous ≥35 | 1 | 2.1 |
| **EDUCATION** | Primary school/ no diploma | 3 | 12.3 |
| | Lower secondary school | 11 | 10.8 |
| | Higher secondary school | 18 | 7.3 |
| | Higher education | 21 | 5.9 |
| **SOCIAL STATUS VT-BIM** | No | 42 | 5.1 |
| | Yes | 16 | 10.6 |
| **TOTAL** | | **59** | **6.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants;*
*% = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.3.2. Last visit to a dentist*

Table 6.36 describes the time elapsed since participants' last visit to a dentist. The majority of participants (81.5%) reported having visited a dentist less than one year ago, while 7 participants (1.3%) indicated that they had never been to a dentist. A higher proportion of females (84.9%) had visited a dentist within the past year compared to males (78.0%). Within the same time frame, participants 14 years and younger reported a much higher frequency of dental visits within the past year compared to older age groups.

In the Brussels-Capital Region, 75.6% of participants visited a dentist less than one year ago, which was slightly lower than in the Walloon Region (78.5%) and the Flemish Region (83.6%). Moreover, this frequency was more than twice as high in dentate participants (80.6%) than in edentulous participants (31.9%).

The proportion of participants whose last dental visit took place less than one year ago increased with educational attainment, rising from 67.8% in participants with primary school education or no diploma to 81.8% in participants with high level of education. A difference was also observed based on social status, with 71.6% of participants with VT-BIM status reporting a dental visit within the past year, compared to 83.3% of those without this status.

***Table 6.36.*** *Last visit to a dentist reported by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Last visit to a dentist | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Less than 6 months | | More than 6 months but less than 12 months | | ≥ 12 months | | Never | |
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 276 | 48.9 | 161 | 29.1 | 106 | 19.7 | 6 | 2.3 |
| | Female | 323 | 53.8 | 181 | 31.1 | 88 | 15.0 | 1 | 0.2 |
| **AGE GROUP** | 5-7 | 14 | 73.3 | 6 | 23.4 | 2 | 3.2 | 0 | 0.0 |
| | 8-11 | 23 | 57.7 | 18 | 32.5 | 3 | 6.8 | 1 | 3.0 |
| | 12-14 | 25 | 69.7 | 11 | 30.3 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 47 | 49.1 | 37 | 37.7 | 14 | 12.5 | 1 | 0.7 |
| | 25-34 | 51 | 40.4 | 36 | 33.9 | 20 | 22.4 | 1 | 3.2 |
| | 35-44 | 74 | 52.7 | 39 | 29.1 | 23 | 15.9 | 1 | 2.4 |
| | 45-54 | 108 | 57.6 | 52 | 26.0 | 21 | 16.4 | 0 | 0.0 |
| | 55-64 | 107 | 50.2 | 53 | 24.9 | 37 | 24.2 | 1 | 0.7 |
| | 65-74 | 104 | 51.2 | 55 | 27.5 | 41 | 20.8 | 1 | 0.5 |
| | ≥75 | 46 | 37.0 | 35 | 34.6 | 33 | 27.8 | 1 | 0.6 |
| **REGION** | Flemish Region | 478 | 56.7 | 255 | 26.9 | 132 | 15.2 | 4 | 1.2 |
| | Brussels-Capital Region | 25 | 42.8 | 18 | 32.8 | 15 | 20.3 | 2 | 4.1 |
| | Walloon Region | 96 | 41.6 | 69 | 36.9 | 47 | 21.2 | 1 | 0.3 |
| **DENTITION** | Dentate* ≥35 | 433 | 52.3 | 228 | 28.3 | 131 | 18.5 | 4 | 0.9 |
| | Edentulous ≥35 | 6 | 12.1 | 6 | 19.8 | 24 | 68.1 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 11 | 30.6 | 10 | 37.2 | 15 | 32.2 | 0 | 0.0 |
| | Lower secondary school | 58 | 42.6 | 35 | 26.4 | 31 | 30.4 | 1 | 0.6 |
| | Higher secondary school | 166 | 45.2 | 100 | 32.1 | 62 | 22.2 | 1 | 0.4 |
| | Higher education | 255 | 54.1 | 127 | 27.7 | 67 | 16.9 | 2 | 1.3 |
| **SOCIAL STATUS VT-BIM** | No | 535 | 51.9 | 301 | 31.4 | 152 | 15.8 | 4 | 0.9 |
| | Yes | 64 | 49.2 | 40 | 22.4 | 41 | 25.2 | 3 | 3.6 |
| **TOTAL** | | **599** | **51.4** | **342** | **30.1** | **194** | **17.3** | **7** | **1.3** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022.*
*N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

#### *6.6.3.3. Reasons for not visiting a dentist in the last 12 months*

Tables 6.37a and 6.37b summarize the reasons participants reported for postponing a dental visit in the last 12 months. The most frequently cited reason for not visiting a dentist was the absence of symptoms, reported by 54.3% of participants. Difficulty in obtaining an appointment was identified as the primary reason by 10.2% of participants, followed by financial concerns (9.0%) and lack of time (8.6%). Furthermore, 7.5% reported not knowing a suitable dentist, while 5.4% cited fear of dentists as the reason. A total of 2.9% of participants reported that they were waiting for symptoms to resolve on their own, while 1.5% cited a previous negative experience with a dentist. Limited access to dental care, such as the dental office being too far or lack of transportation, was mentioned by only 0.6% of participants.

The absence of symptoms was more frequently reported by males (56.1%) than females (51.8%) as the main reason for postponing a dental visit. In fact, this was the sole reason given by proxies of all children aged 5-7 years (100.0%). In the Walloon Region, 55.9% of participants cited the absence of symptoms as the main reason for postponing a dental visit, comparable to the proportion in the Brussels-Capital Region (55.3%) and slightly higher than in the Flemish Region (53.2%). This reason was also reported significantly more frequently by edentulous participants (85.4%) compared to dentate participants (49.2%).

As level of education increased, the percentage of participants citing the absence of symptoms as the main reason for postponing a dental visit decreased, from 71.2% in those with the lowest level of education to 51.4% in those with the highest. This reason was also reported more frequently by participants with VT-BIM social status (59.2%) than by those without this status (53.4%).

Finally, cost was more often reported as the main reason for not visiting a dentist in participants with social status VT-BIM (11.4%) than in those without this status (7.5%). Lack of time was particularly reported as a barrier among participants aged 15 to 44 years.

***Table 6.37a.*** *Reasons for postponing a visit to a dentist reported by participants 5 years and older (N= 197), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Reasons for postponing a visit to a dentist (part 1) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Costs | | Distance/Transport | | Difficult to get appointment | | Lack of time | | Fear of dentists | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 7 | 9.5 | 2 | 1.0 | 11 | 11.8 | 10 | 9.6 | 4 | 1.8 |
| | Female | 5 | 8.4 | 0 | 0.0 | 10 | 8.0 | 7 | 7.2 | 8 | 10.3 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 2 | 61.5 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 12-14 | - | - | - | - | - | - | - | - | - | - |
| | 15-24 | 0 | 0.0 | 1 | 4.8 | 0 | 0.0 | 2 | 13.4 | 0 | 0.0 |
| | 25-34 | 1 | 4.2 | 0 | 0.0 | 3 | 16.4 | 4 | 15.0 | 2 | 5.4 |
| | 35-44 | 3 | 24.1 | 0 | 0.0 | 4 | 17.3 | 2 | 12.1 | 4 | 11.1 |
| | 45-54 | 0 | 0.0 | 0 | 0.0 | 3 | 5.2 | 2 | 9.1 | 0 | 0.0 |
| | 55-64 | 4 | 11.5 | 0 | 0.0 | 6 | 14.3 | 2 | 4.8 | 1 | 6.9 |
| | 65-74 | 2 | 3.9 | 0 | 0.0 | 5 | 12.1 | 5 | 9.5 | 2 | 4.1 |
| | ≥75 | 0 | 0.0 | 1 | 1.9 | 0 | 0.0 | 0 | 0.0 | 3 | 8.4 |
| **REGION** | Flemish Region | 6 | 6.9 | 0 | 0.0 | 14 | 12.7 | 13 | 9.6 | 7 | 3.4 |
| | Brussels-Capital Region | 1 | 13.1 | 1 | 1.7 | 0 | 0.0 | 1 | 6.6 | 1 | 2.8 |
| | Walloon Region | 5 | 11.3 | 1 | 1.2 | 7 | 10.2 | 3 | 7.7 | 4 | 10.3 |
| **DENTITION** | Dentate* ≥35 | 9 | 9.8 | 1 | 0.4 | 17 | 11.0 | 11 | 7.9 | 10 | 7.3 |
| | Edentulous ≥35 | 0 | 0.0 | 0 | 0.0 | 1 | 5.7 | 0 | 0.0 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 0 | 0.0 | 0 | 0.0 | 1 | 4.7 | 0 | 0.0 | 2 | 7.4 |
| | Lower secondary school | 1 | 1.3 | 0 | 0.0 | 5 | 14.7 | 2 | 4.7 | 1 | 4.4 |
| | Higher secondary school | 5 | 12.4 | 2 | 2.0 | 6 | 7.2 | 5 | 8.6 | 5 | 8.9 |
| | Higher education | 3 | 2.5 | 0 | 0.0 | 9 | 15.7 | 8 | 11.8 | 4 | 4.6 |
| **SOCIAL STATUS** | No | 7 | 7.5 | 2 | 0.8 | 18 | 12.1 | 15 | 8.9 | 10 | 5.7 |
| **VT-BIM** | Yes | 4 | 11.4 | 0 | 0.0 | 3 | 4.2 | 2 | 7.8 | 2 | 4.5 |
| **TOTAL** | | **12** | **9.0** | **2** | **0.6** | **21** | **10.2** | **17** | **8.6** | **12** | **5.4** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.37b.*** *Reasons for postponing a visit to a dentist reported by participants 5 years and older (N= 197), OHDRES 2023-2024, Belgium, (N= 1,724 and N= 1,382)*

| | | Reasons for postponing a visit to a dentist (part 2) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Waiting for resolution | | Do not know a suitable dentist | | Absence of symptoms | | Bad experience with dentist | | Ashamed of his/her mouth | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 4 | 2.2 | 7 | 5.3 | 61 | 56.1 | 2 | 2.6 | 0 | 0.0 |
| | Female | 4 | 3.9 | 8 | 10.5 | 47 | 51.8 | 0 | 0.0 | 0 | 0.0 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 | 2 | 100.0 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 0 | 0.0 | 0 | 0.0 | 2 | 38.5 | 0 | 0.0 | 0 | 0.0 |
| | 12-14 | - | - | - | - | - | - | - | - | - | - |
| | 15-24 | 0 | 0.0 | 2 | 15.1 | 10 | 66.8 | 0 | 0.0 | 0 | 0.0 |
| | 25-34 | 1 | 2.5 | 2 | 4.1 | 8 | 52.4 | 0 | 0.0 | 0 | 0.0 |
| | 35-44 | 0 | 0.0 | 0 | 0.0 | 11 | 35.4 | 0 | 0.0 | 0 | 0.0 |
| | 45-54 | 0 | 0.0 | 2 | 17.8 | 13 | 61.5 | 1 | 6.4 | 0 | 0.0 |
| | 55-64 | 3 | 6.2 | 1 | 2.8 | 19 | 49.5 | 1 | 4.0 | 0 | 0.0 |
| | 65-74 | 1 | 2.3 | 3 | 7.6 | 24 | 60.6 | 0 | 0.0 | 0 | 0.0 |
| | ≥75 | 3 | 7.7 | 5 | 15.5 | 19 | 66.5 | 0 | 0.0 | 0 | 0.0 |
| **REGION** | Flemish Region | 5 | 3.3 | 13 | 9.7 | 74 | 53.2 | 1 | 1.4 | 0 | 0.0 |
| | Brussels-Capital Region | 2 | 5.7 | 2 | 14.7 | 8 | 55.3 | 0 | 0.0 | 0 | 0.0 |
| | Walloon Region | 1 | 0.9 | 0 | 0.0 | 26 | 55.9 | 1 | 2.5 | 0 | 0.0 |
| **DENTITION** | Dentate* ≥35 | 6 | 3.6 | 9 | 8.3 | 67 | 49.2 | 2 | 2.5 | 0 | 0.0 |
| | Edentulous ≥35 | 1 | 3.1 | 2 | 5.8 | 19 | 85.4 | 0 | 0.0 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 1 | 10.0 | 1 | 6.8 | 9 | 71.2 | 0 | 0.0 | 0 | 0.0 |
| | Lower secondary school | 0 | 0.0 | 3 | 5.5 | 19 | 69.4 | 0 | 0.0 | 0 | 0.0 |
| | Higher secondary school | 3 | 4.1 | 2 | 3.2 | 32 | 48.8 | 2 | 4.9 | 0 | 0.0 |
| | Higher education | 3 | 2.5 | 7 | 11.6 | 34 | 51.4 | 0 | 0.0 | 0 | 0.0 |
| **SOCIAL STATUS** | No | 7 | 3.2 | 9 | 6.5 | 84 | 53.4 | 2 | 2.0 | 0 | 0.0 |
| **VT/BIM** | Yes | 1 | 2.1 | 6 | 10.9 | 24 | 59.2 | 0 | 0.0 | 0 | 0.0 |
| **TOTAL** | | **8** | **2.9** | **15** | **7.5** | **108** | **54.3** | **2** | **1.5** | **0** | **0.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.6.4. *Use of stimulants*

The use of stimulants was assessed based on participants' reported consumption of tobacco, exposure to passive smoking, use of e-cigarettes, illicit drugs, and alcohol. These results were drawn from the HIS 2023-2024 and included participants aged 15 years and older.

#### *6.6.4.1. Tobacco consumption and passive smoking*

Table 6.38 summarizes the findings related to tobacco exposure. Nearly ten percent (9.7%) of participants indicated daily tobacco use, with a higher frequency in males (11.9%) than females (7.5%). The highest proportions of daily smoking were observed in the 25-34 age group (14.1%) and 35-44 age group (15.7%). Regional differences were evident, with a higher proportion of daily smokers in the Walloon Region (18.2%) compared to the Brussels-Capital Region (9.7%) and the Flemish Region (6.3%). In addition, dentate participants reported lower tobacco use (9.3%) than edentulous participants (14.0%). No clear relationship could be established between daily tobacco use and either level of education or social status. Ex-smokers accounted for 26.1% of the studied population, while passive smoking was reported by 9.0% of participants (150 out of 1,389), who indicated exposure to tobacco smoke inside their home. Our results showed that 9.7% of participants reported daily tobacco use, which is lower than the 15.0% reported in previous data from 2018 in Belgium (Sciensano, 2020b). Whether this finding reflects a genuine reduction in tobacco use driven by increased public health campaigns, stricter regulations on tobacco sales, and greater awareness of the health risks associated with smoking remains to be confirmed. Further studies are needed to confirm this finding.

E-cigarettes were originally introduced as a tool to help tobacco smokers reduce or quit their addiction. However, their use has become increasingly widespread among younger individuals, many of whom have become regular users. The health effects of e-cigarette use are not yet fully understood, and potential risks cannot be ruled out. Furthermore, the quality of e-cigarette devices varies considerably, and the market remains insufficiently regulated. Some e-cigarette products contain nicotine, while others do not. Table 6.39 presents data on e-cigarette use by participants aged 15 years and older. In this survey 96.0% reported not using e-cigarettes, while 1.7% reported daily use. This percentage was higher in males (2.0%) than in females (1.5%). The age-group with the highest frequency of daily consumption was the 34-45 years group (3.6%) followed by the 45-54 age group (3.1%). Regional differences were observed, with a higher proportion of daily e-cigarette users in the Brussels-Capital Region (3.6%) than in the Flemish Region (1.6%) and the Walloon Region (1.3%). None of the edentulous participants reported daily e-cigarette use. Participants with the lowest level of education reported a significantly more often daily use of e-cigarettes. Moreover, fewer participants with social status VT-BIM (0.3%) reported daily e-cigarette use than those without this status (2.0%).

***Table 6.38.*** *Exposure to tobacco by participants 15 years and older (N= 949), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Tobacco consumption | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Daily | | Occasionally | | Ex-smoker | | No | |
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 36 | 11.9 | 14 | 4.3 | 161 | 31.1 | 394 | 83.8 |
| | Female | 41 | 7.5 | 23 | 4.3 | 108 | 21.3 | 441 | 88.3 |
| **AGE GROUP** | 15-24 | 3 | 4.1 | 3 | 4.1 | 4 | 3.8 | 69 | 91.8 |
| | 25-34 | 12 | 14.1 | 5 | 6.3 | 18 | 17.3 | 88 | 79.7 |
| | 35-44 | 12 | 15.7 | 6 | 3.7 | 40 | 27.9 | 107 | 80.6 |
| | 45-54 | 18 | 9.3 | 14 | 8.4 | 39 | 28.0 | 136 | 82.3 |
| | 55-64 | 11 | 6.6 | 4 | 1.8 | 58 | 33.0 | 172 | 91.6 |
| | 65-74 | 19 | 10.8 | 2 | 1.1 | 74 | 37.0 | 170 | 88.1 |
| | ≥75 | 2 | 2.0 | 3 | 4.8 | 36 | 33.2 | 93 | 93.2 |
| **REGION** | Flemish Region | 49 | 6.3 | 30 | 5.2 | 211 | 26.9 | 644 | 88.5 |
| | Brussels-Capital Region | 5 | 9.7 | 0 | 0.0 | 20 | 39.1 | 46 | 90.3 |
| | Walloon Region | 23 | 18.2 | 7 | 3.7 | 38 | 18.7 | 145 | 78.0 |
| **DENTITION** | Dentate* ≥35 | 58 | 9.3 | 28 | 3.7 | 235 | 31.3 | 652 | 87.1 |
| | Edentulous ≥35 | 4 | 14.0 | 1 | 8.5 | 12 | 38.3 | 26 | 77.6 |
| **EDUCATION** | Primary school/no diploma | 3 | 11.9 | 1 | 10.1 | 5 | 12.9 | 23 | 78.0 |
| | Lower secondary school | 15 | 16.4 | 1 | 0.7 | 38 | 35.4 | 92 | 82.9 |
| | Higher secondary school | 37 | 16.7 | 13 | 3.2 | 90 | 24.9 | 258 | 80.2 |
| | Higher education | 18 | 4.7 | 19 | 5.6 | 128 | 29.4 | 393 | 89.6 |
| **SOCIAL STATUS VT-BIM** | No | 62 | 9.5 | 31 | 4.2 | 240 | 26.3 | 745 | 86.3 |
| | Yes | 14 | 9.5 | 6 | 5.4 | 29 | 25.3 | 90 | 85.1 |
| **TOTAL** | | **77** | **9.7** | **37** | **4.3** | **269** | **26.1** | **835** | **86.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.39.*** *Current use of e-cigarettes by participants 15 years and older (N= 1,245)*
*OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,389)*

| | | Use of e-cigarettes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Daily | | ≥ 1 per week but not daily | | ≥ 1 per month but not weekly | | < 1 per month | | No use | |
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 7 | 2.0 | 2 | 0.6 | 3 | 0.7 | 2 | 0.5 | 430 | 96.3 |
| | Female | 5 | 1.5 | 6 | 1.0 | 3 | 0.9 | 3 | 0.9 | 479 | 95.8 |
| **AGE GROUP** | 15-24 | 2 | 1.6 | 1 | 0.8 | 6 | 7.0 | 4 | 4.9 | 66 | 85.7 |
| | 25-34 | 2 | 2.5 | 2 | 1.3 | 0 | 0.0 | 0 | 0.0 | 101 | 96.2 |
| | 35-44 | 5 | 3.6 | 2 | 1.3 | 0 | 0.0 | 0 | 0.0 | 122 | 95.1 |
| | 45-54 | 3 | 3.1 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 167 | 96.9 |
| | 55-64 | 3 | 1.4 | 0 | 0.0 | 0 | 0.0 | 1 | 0.7 | 179 | 97.9 |
| | 65-74 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 183 | 100.0 |
| | ≥75 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 91 | 100.0 |
| **REGION** | Flemish Region | 9 | 1.6 | 6 | 0.8 | 5 | 0.9 | 4 | 0.9 | 693 | 95.8 |
| | Brussels-Capital Region | 1 | 3.6 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 49 | 96.4 |
| | Walloon Region | 2 | 1.3 | 2 | 1.1 | 1 | 0.8 | 1 | 0.4 | 167 | 96.5 |
| **DENTITION** | Dentate* ≥35 | 8 | 1.6 | 5 | 0.7 | 0 | 0.0 | 1 | 0.2 | 709 | 97.5 |
| | Edentulous ≥35 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 33 | 100.0 |
| **EDUCATION** | Primary school/no diploma | 1 | 13.0 | 1 | 3.7 | 0 | 0.0 | 0 | 0.0 | 27 | 83.4 |
| | Lower secondary school | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 104 | 100.0 |
| | Higher secondary school | 5 | 1.8 | 3 | 1.0 | 1 | 0.3 | 0 | 0.0 | 291 | 96.9 |
| | Higher education | 3 | 0.7 | 3 | 0.6 | 0 | 0.0 | 2 | 0.8 | 421 | 97.9 |
| **SOCIAL STATUS** | No | 11 | 2.0 | 7 | 0.7 | 4 | 0.6 | 5 | 0.8 | 799 | 96.0 |
| **VT-BIM** | Yes | 1 | 0.3 | 0 | 0.0 | 2 | 2.2 | 0 | 0.0 | 110 | 97.5 |
| **TOTAL** | | **12** | **1.7** | **8** | **0.8** | **6** | **0.8** | **5** | **0.7** | **909** | **96.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.4.2. Consumption of illicit drugs*

Table 6.40 describes the use of illicit drugs reported by participants aged 15 years and older. Overall, 5.6% indicated the use of cannabis, while 5.5% reported using other drugs in the past twelve months. The reported frequency was markedly higher in males than females for both cannabis (7.1% and 4.2%, respectively) and other drugs (7.4% and 3.8%, respectively). Cannabis use was particularly high among participants aged 15-24 and 25-34 years, whereas the use of other drugs peaked in the 25-34 years age group.

Regional differences in cannabis use were observed, with a higher proportion of participants in the Walloon Region (8.1%), compared to the Brussels-Capital Region (4.2%) and the Flemish Region (4.8%). For the use of other drugs, residents in the Brussels-Capital Region reported the highest frequency (14.9%), followed by the Walloon Region (7.1%) and the Flemish Region (3.4%). The use of cannabis and other drugs was reported exclusively by dentate participants, with frequencies of 2.8% and 4.0%, respectively.

The use of cannabis was highest in participants with the highest level of education (6.7%), while the use of other drugs was highest in participants with lower secondary education (9.8%), followed by those with higher education (7.0%). Participants with social status VT-BIM reported a slightly higher cannabis use (6.0%) compared to those without this status (5.3%). In contrast, participants with social status VT-BIM reported a significantly higher use of other drugs (8.9%) compared to their counterparts without this status (4.8%).

***Table 6.40.*** *Reported use of illicit drugs in the past 12 months by participants 15 years and older (N= 943) OHDRES 2023-2024 (N=1,724 and N= 1,382)*

| | | Cannabis | | Other drugs | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **GENDER** | Male | 24 | 7.1 | 21 | 7.4 |
| | Female | 19 | 4.2 | 15 | 3.8 |
| **AGE GROUP** | 15-24 | 11 | 13.6 | 6 | 6.4 |
| | 25-34 | 13 | 12.3 | 10 | 12.1 |
| | 35-44 | 11 | 7.4 | 12 | 8.0 |
| | 45-54 | 6 | 2.8 | 5 | 4.4 |
| | 55-64 | 2 | 1.5 | 2 | 3.6 |
| | 65-74 | 0 | 0.0 | 1 | 0.7 |
| | ≥75 | 0 | 0.0 | 0 | 0.0 |
| **REGION** | Flemish Region | 26 | 4.8 | 19 | 3.4 |
| | Brussels-Capital Region | 2 | 4.2 | 6 | 14.9 |
| | Walloon Region | 15 | 8.1 | 11 | 7.1 |
| **DENTITION** | Dentate* ≥35 | 19 | 2.8 | 20 | 4.0 |
| | Edentulous ≥35 | 0 | 0.0 | 0 | 0.0 |
| **EDUCATION** | Primary school/ no diploma | 0 | 0.0 | 0 | 0.0 |
| | Lower secondary school | 3 | 3.2 | 6 | 9.8 |
| | Higher secondary school | 9 | 2.9 | 5 | 2.5 |
| | Higher education | 21 | 6.7 | 19 | 7.0 |
| **SOCIAL STATUS VT-BIM** | No | 35 | 5.3 | 28 | 4.8 |
| | Yes | 7 | 6.0 | 7 | 8.9 |
| **TOTAL** | | **43** | **5.6** | **36** | **5.5** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### *6.6.4.3. Consumption of alcohol*

In both international and national literature, there is no universally standardized definition of excessive alcohol consumption, with proposed thresholds varying between countries. Sciensano classifies excessive consumption as more than 21 standard drinks per week for men and more than 14 standard drinks per week for women (Sciensano, 2020c). This classification aligns with the recommendations from "Reducing Alcohol Related Harm" (RARHA), a European Joint Action conducted between 2014 and 2016 and co-funded by the European Commission (https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/national-low-risk-drinking-recommendations-drinking-guidelines_en?utm_source=chatgpt.com).

The results indicate that 5.5% of the participants reported excessive consumption of alcohol in the past 12 months, while 18.4% reported not to have used alcohol at all (Table 6.41). Excessive alcohol consumption was more frequent in males (6.1%) than females (5.0%). The highest proportions were observed in participants aged 15-24 years (8.2%) and 45-years (8.0%). In the Walloon Region, excessive alcohol consumption was highest (7.3%), followed by the Brussels-Capital Region (5.7%) and the Flemish Region (4.8%). The frequency was marginally higher among dentate participants (5.4%), compared with edentulous participants (5.1%).

Participants with the lowest level of education reported the highest frequency of excessive alcohol consumption (12.3%), whereas those with the highest level of education reported a significant lower proportion (5.4%). Regarding social status, participants with VT-BIM status reported a lower frequency of excessive alcohol consumption (3.3%) compared to those without this status (5.9%).

***Table 6.41.*** *Reported alcohol consumption in the past 12 months by participants 15 years and older (N= 953), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Excessive alcohol consumption | | No alcohol consumption | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **GENDER** | Male | 23 | 6.1 | 59 | 15.4 |
| | Female | 26 | 5.0 | 101 | 21.2 |
| **AGE GROUP** | 15-24 | 5 | 8.2 | 19 | 27.9 |
| | 25-34 | 4 | 4.5 | 24 | 21.6 |
| | 35-44 | 5 | 4.3 | 19 | 17.7 |
| | 45-54 | 12 | 8.0 | 22 | 12.7 |
| | 55-64 | 9 | 4.6 | 28 | 17.2 |
| | 65-74 | 11 | 6.4 | 25 | 12.5 |
| | ≥75 | 3 | 2.9 | 23 | 23.5 |
| **REGION** | Flemish Region | 30 | 4.8 | 122 | 16.2 |
| | Brussels-Capital Region | 3 | 5.7 | 12 | 26.6 |
| | Walloon Region | 16 | 7.3 | 26 | 20.7 |
| **DENTITION** | Dentate* ≥35 | 39 | 5.4 | 109 | 15.8 |
| | Edentulous ≥35 | 1 | 5.1 | 8 | 28.5 |
| **EDUCATION** | Primary school/ no diploma | 1 | 12.3 | 6 | 14.3 |
| | Lower secondary school | 6 | 7.8 | 33 | 34.5 |
| | Higher secondary school | 13 | 3.4 | 55 | 20.8 |
| | Higher education | 23 | 5.4 | 45 | 9.7 |
| **SOCIAL STATUS VT-BIM** | No | 45 | 5.9 | 119 | 15.2 |
| | Yes | 4 | 3.3 | 41 | 40.7 |
| **TOTAL** | | **49** | **5.5** | **160** | **18.4** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022.*
*N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

## 6.7. Results: Subjective oral health

Subjective oral health was assessed in participants aged 15 years and older as a global indicator encompassing the physical, psychological and social dimensions of health. It was measured based on participants' assessments of their own oral health condition and the presence of any complaints related to the oral cavity. These data formed part of the HIS 2023-2024.

### 6.7.1. *Self-perceived oral health condition*

Participants were asked to assess their own oral health condition, with specific reference to their dentition and gingival tissues and using a global self-assessment scale. The criteria were: 1 (very good), 2 (good), 3 (mediocre), 4 (poor) and 5 (very poor). Responses "very good" and "good" were grouped as "good oral health" while responses "mediocre", "poor" and "very poor" were grouped as "no good oral health". The results of these self-assessments are summarized in Table 6.42.

Overall, 78.1% of participants assessed their own oral health as very good or good, categorizing them within the group defined as having subjective good oral health, with percentages of 78.3% in females and 77.9% in males. Subjective good oral health was reported more frequently by younger age groups (44 years or younger) than by the older groups, with an important decline from 94.6% in children aged 5-7 years to 63.4% in those aged 75 years and older.

Subjective good oral health was reported more frequently by residents of the Flemish Region (81.3%) than those of the Walloon Region (73.3%) and the Brussels-Capital Region (70.8%). For edentulous participants, subjective good oral health was rated much lower (59.7%) than for dentate participants (72.5%).

The subjective oral health assessment increased gradually with the level of education. Participants with a higher level of education (78.6%) reported subjective good oral health more often than those with only primary school education or no diploma (54.4%). Furthermore, participants with social status VT-BIM were less likely to report subjective good oral health (69.6%) than their counterparts without this status (79.7%).

***Table 6.42.*** *Perception of own oral health condition by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Very good | | Good | | Mediocre | | Poor | | Very poor | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 149 | 30.7 | 268 | 47.2 | 104 | 17.5 | 25 | 4.4 | 3 | 0.2 |
| | Female | 194 | 33.3 | 272 | 45.0 | 92 | 14.8 | 32 | 5.9 | 3 | 1.1 |
| **AGE GROUP** | 5-7 | 17 | 67.8 | 4 | 26.8 | 0 | 0.0 | 0 | 0.0 | 1 | 5.4 |
| | 8-11 | 20 | 33.7 | 17 | 46.4 | 6 | 14.5 | 2 | 5.4 | 0 | 0.0 |
| | 12-14 | 20 | 40.5 | 15 | 58.0 | 1 | 1.5 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 48 | 46.7 | 40 | 44.1 | 9 | 7.9 | 1 | 0.9 | 1 | 0.4 |
| | 25-34 | 45 | 41.8 | 45 | 40.2 | 15 | 16.5 | 3 | 1.5 | 0 | 0.0 |
| | 35-44 | 45 | 36.0 | 67 | 45.0 | 20 | 15.5 | 5 | 3.6 | 0 | 0.0 |
| | 45-54 | 50 | 25.3 | 89 | 48.5 | 30 | 16.0 | 11 | 8.0 | 1 | 2.2 |
| | 55-64 | 43 | 24.1 | 108 | 49.7 | 35 | 17.6 | 10 | 8.1 | 2 | 0.5 |
| | 65-74 | 37 | 16.8 | 96 | 46.5 | 51 | 27.2 | 16 | 8.9 | 1 | 0.6 |
| | ≥75 | 18 | 14.3 | 59 | 49.1 | 29 | 27.2 | 9 | 9.4 | 0 | 0.0 |
| **REGION** | Flemish Region | 284 | 33.9 | 410 | 47.4 | 138 | 15.0 | 33 | 3.3 | 4 | 0.5 |
| | Brussels-Capital Region | 15 | 34.4 | 24 | 36.4 | 13 | 16.2 | 6 | 9.6 | 2 | 3.4 |
| | Walloon Region | 44 | 26.5 | 106 | 46.8 | 45 | 18.9 | 18 | 7.8 | 0 | 0.0 |
| **DENTITION** | Dentate* ≥35 | 187 | 24.8 | 401 | 47.7 | 158 | 19.7 | 46 | 7.0 | 4 | 0.7 |
| | Edentulous ≥35 | 6 | 12.2 | 18 | 47.5 | 7 | 25.1 | 5 | 15.2 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 5 | 9.8 | 16 | 44.6 | 6 | 12.2 | 9 | 33.6 | 0 | 0.0 |
| | Lower secondary school | 27 | 19.3 | 62 | 51.1 | 23 | 17.0 | 10 | 11.1 | 3 | 1.6 |
| | Higher secondary school | 73 | 26.4 | 170 | 45.8 | 66 | 20.4 | 20 | 7.4 | 0 | 0.0 |
| | Higher education | 135 | 32.1 | 217 | 46.5 | 82 | 18.0 | 16 | 2.7 | 1 | 0.8 |
| **SOCIAL STATUS** | No | 312 | 33.1 | 470 | 46.6 | 166 | 15.7 | 41 | 4.0 | 3 | 0.6 |
| **VT-BIM** | Yes | 30 | 25.7 | 70 | 43.9 | 30 | 18.8 | 15 | 10.6 | 3 | 1.0 |
| **TOTAL** | | **343** | **32.0** | **540** | **46.1** | **196** | **16.1** | **57** | **5.1** | **6** | **0.6** |

*Source: OHDRES 2023-2024, HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participants with at least one natural tooth. Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.7.2. *Complaints related to the face and oral cavity*

Reported complaints and discomfort related to the face and oral cavity are summarized in Table 6.43. Overall, 34.3% of participants reported experiencing at least one oral health related complaint. The most frequently mentioned complaint was bleeding gums (19.4%), followed by toothache (12.8%) and other pain or discomfort in the mouth or face (7.8%). Moreover, pain in the jaw joint (temporomandibular joint) was mentioned by 6.2 % of participants.

Females reported jaw joint pain more than twice as frequently (8.8%) as males (3.6%). In general, complaints were less common among participants aged 55 years and older. Toothache and jaw joint pain were more frequently reported by residents of the Brussels-Capital Region (23.6% and 10.0% respectively) and those of the Walloon Region (18.0% and 9.3%) than by residents of the Flemish Region (8.9% and 4.4%). Edentulous participants (10.0%) reported fewer complaints than dentate participants (35.9%).

Complaints about bleeding gums were nearly twice as frequent in participants with high level of education (22.7%) compared to those with only primary school education or no diploma 12.2%). Participants with status VT-BIM were less likely to complain about bleeding gums (15.2%).

***Table 6.43.*** *Complaints related to the face and oral cavity in the last four weeks reported by participants 5 years and older (N= 1,142), OHDRES 2023-2024, Belgium, (N=1,724 and N= 1,382)*

| | | Toothache | | Jaw joint pain | | Other pain or discomfort | | Bleeding gums | | At least one complaint | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 57 | 13.4 | 20 | 3.6 | 35 | 7.4 | 107 | 19.2 | 171 | 33.8 |
| | Female | 70 | 12.2 | 53 | 8.8 | 49 | 8.1 | 117 | 19.6 | 212 | 34.8 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 2.7 | 1 | 2.7 |
| | 8-11 | 4 | 11.7 | 2 | 1.9 | 4 | 6.7 | 6 | 13.9 | 11 | 21.8 |
| | 12-14 | 3 | 9.9 | 1 | 1.9 | 5 | 19.5 | 5 | 15.7 | 12 | 39.3 |
| | 15-24 | 11 | 10.2 | 5 | 4.1 | 5 | 2.7 | 24 | 21.5 | 33 | 28.6 |
| | 25-34 | 15 | 21.7 | 11 | 8.4 | 11 | 10.4 | 32 | 29.4 | 48 | 49.0 |
| | 35-44 | 24 | 18.9 | 11 | 8.4 | 14 | 10.2 | 29 | 21.5 | 61 | 45.0 |
| | 45-54 | 24 | 15.2 | 17 | 10.6 | 15 | 7.8 | 48 | 25.4 | 73 | 40.0 |
| | 55-64 | 22 | 9.8 | 9 | 7.3 | 8 | 5.4 | 36 | 17.8 | 65 | 32.6 |
| | 65-74 | 18 | 9.4 | 14 | 6.8 | 14 | 7.5 | 30 | 14.6 | 52 | 27.7 |
| | ≥75 | 6 | 5.7 | 3 | 1.7 | 8 | 7.1 | 13 | 10.9 | 27 | 23.7 |
| **REGION** | Flemish Region | 80 | 8.9 | 47 | 4.4 | 65 | 8.0 | 160 | 17.6 | 267 | 29.9 |
| | Brussels-Capital Region | 10 | 23.6 | 6 | 10.0 | 5 | 9.7 | 14 | 21.7 | 22 | 39.3 |
| | Walloon Region | 37 | 18.0 | 20 | 9.3 | 14 | 6.4 | 50 | 22.9 | 94 | 43.1 |
| **DENTITION** | Dentate* ≥35 | 94 | 12.9 | 53 | 7.6 | 57 | 7.7 | 154 | 19.3 | 274 | 35.9 |
| | Edentulous ≥35 | - | - | 1 | 1.2 | 2 | 5.4 | 2 | 5.0 | 4 | 10.0 |
| **EDUCATION** | Primary school/no diploma | 5 | 13.2 | 4 | 8.8 | 3 | 13.4 | 5 | 12.2 | 12 | 33.3 |
| | Lower secondary school | 16 | 17.0 | 7 | 7.1 | 6 | 5.5 | 19 | 14.6 | 37 | 33.7 |
| | Higher secondary school | 42 | 15.9 | 16 | 5.9 | 21 | 6.0 | 70 | 21.8 | 114 | 36.6 |
| | Higher education | 43 | 11.1 | 35 | 7.3 | 40 | 9.8 | 97 | 22.7 | 163 | 38.5 |
| **SOCIAL STATUS VT-BIM** | No | 102 | 11.7 | 55 | 5.4 | 68 | 7.1 | 197 | 20.2 | 327 | 33.8 |
| | Yes | 24 | 18.1 | 18 | 11.4 | 16 | 11.8 | 27 | 15.2 | 55 | 36.6 |
| **TOTAL** | | **127** | **12.8** | **73** | **6.2** | **84** | **7.8** | **224** | **19.4** | **383** | **34.3** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participants with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

## 6.8. Results: General health

### 6.8.1. *Subjective health*

This section provides an overview of the general health condition reported by the participants. The data were drawn from the HIS 2023–2024 and included only participants aged 15 years and older.

The concept of "subjective health" is based on individuals' self-assessment of their own health status. It is a global criterion that encompasses physical, psychological and social dimensions of health. This perception may vary depending on the presence of symptoms or specific complaints, as well as medical diagnoses.

Since this measure relies solely on individuals' own judgment of their health status, it is not evaluated by an external observer. Although this assessment may be influenced by attitudes and expressions of those around them, the final assessment is made by the individual. Moreover, the focus is specifically on general health rather than current or temporary or acute health conditions, to reduce the influence of short-term health fluctuations on the assessment.

The response categories "very good" and "good" were grouped under "subjective good health", while "mediocre", "poor" and "very poor" were grouped under subjective "no good health". The results are presented in Table 6.44.

Overall, 81.1% of participants rated their subjective health as very good or good. This was more often the case for males (83.0 %) than for females (79.3%). In the age groups 15-24 years and 25-34 years more than 90% of participants reported subjective good health. In contrast, only 66.9% of participants 75 years and older reported subjective good health. Differences between regions were limited with 83.3% in the Walloon Region, followed by 81.1% in the Flemish Region and 75.8% in Brussels-Capital Region reporting subjective good health. The proportion of edentulous participants reporting subjective good health (62.4%) was lower than in dentate participants (77.3%).

Differences in subjective health according to the level of education were particularly important. In the group of participants with primary school education or no diploma, only 45.3% reported subjective good health in contrast to 87.1% of those with high level of education. Likewise, participants with social status VT-BIM reported subjective good health far less frequently than their counterparts without this status, 59.5% and 84.5%, respectively.

***Table 6.44.*** *Perceived own health condition by participants 15 years and older (N= 961), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Very good | | Good | | Mediocre | | Poor | | Very poor | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 125 | 32.8 | 241 | 50.2 | 69 | 13.7 | 10 | 2.5 | 3 | 0.8 |
| | Female | 102 | 24.2 | 301 | 55.1 | 94 | 17.1 | 14 | 2.9 | 2 | 0.6 |
| **AGE GROUP** | 15-24 | 24 | 38.5 | 47 | 54.0 | 7 | 7.6 | 0 | 0.0 | 0 | 0.0 |
| | 25-34 | 39 | 45.8 | 56 | 48.5 | 6 | 5.7 | 0 | 0.0 | 0 | 0.0 |
| | 35-44 | 39 | 35.5 | 68 | 46.4 | 20 | 14.6 | 3 | 1.9 | 2 | 1.7 |
| | 45-54 | 45 | 25.7 | 89 | 50.4 | 32 | 21.0 | 5 | 2.9 | 0 | 0.0 |
| | 55-64 | 37 | 20.5 | 109 | 57.2 | 33 | 15.4 | 4 | 4.6 | 3 | 2.3 |
| | 65-74 | 32 | 16.7 | 117 | 59.5 | 36 | 19.0 | 8 | 4.9 | 0 | 0.0 |
| | ≥75 | 11 | 11.1 | 56 | 55.8 | 29 | 27.7 | 4 | 5.4 | 0 | 0.0 |
| **REGION** | Flemish Region | 159 | 23.8 | 431 | 57.3 | 128 | 16.8 | 13 | 1.9 | 3 | 0.3 |
| | Brussels-Capital Region | 16 | 38.9 | 22 | 36.9 | 9 | 16.1 | 2 | 3.2 | 2 | 5.0 |
| | Walloon Region | 52 | 35.9 | 89 | 47.4 | 26 | 11.8 | 9 | 5.0 | 0 | 0.0 |
| **DENTITION** | Dentate* ≥35 | 161 | 24.0 | 421 | 53.3 | 139 | 18.0 | 22 | 3.7 | 5 | 1.0 |
| | Edentulous ≥35 | 3 | 6.0 | 18 | 56.4 | 11 | 34.0 | 2 | 3.6 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 4 | 10.2 | 11 | 35.1 | 12 | 40.9 | 4 | 13.8 | 0 | 0.0 |
| | Lower secondary school | 15 | 12.6 | 67 | 61.0 | 26 | 20.8 | 3 | 2.2 | 2 | 3.5 |
| | Higher secondary school | 56 | 23.4 | 174 | 52.2 | 66 | 18.9 | 11 | 4.6 | 2 | 1.0 |
| | Higher education | 123 | 33.2 | 250 | 53.9 | 52 | 11.7 | 5 | 1.0 | 1 | 0.1 |
| **SOCIAL STATUS** | No | 214 | 30.9 | 487 | 53.6 | 124 | 13.6 | 14 | 1.8 | 2 | 0.1 |
| **VT-BIM** | Yes | 13 | 12.8 | 54 | 46.7 | 39 | 27.5 | 10 | 8.9 | 3 | 4.2 |
| **TOTAL** | | **227** | **28.3** | **542** | **52.8** | **163** | **15.5** | **24** | **2.8** | **5** | **0.7** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participants with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.8.2. *Chronic health conditions*

Table 6.45 presents data on chronic health conditions, heart disease and diabetes within the past 12 months as reported by participants aged 15 years and older. One-third of the participants (31.9%) reported having one or more chronic condition or disability. This proportion was higher in females (34.8%) than in males (28.8%), and more than one third of participants aged 45 years and older reported having a chronic condition. There were differences between regions. A total of 26.4% of residents in the Flemish Region reported a chronic condition, significantly less than in the Walloon Region and in the Brussels-Capital Region, 39.6% and 47.6%, respectively. Chronic conditions were more frequently reported by edentulous participants (45.9%) than by dentate participants (38.4%).

The level of education of the participants was a relevant factor, with participants with low level of education reporting a nearly twice as high frequency of chronic health conditions compared to those with higher education (31.1%). Also, participants with social status VT-BIM reported a higher frequency (50.5%) of chronic conditions than participants without this status (29.0%).

Among other health conditions, the occurrence of heart disease and diabetes mellitus (diabetes) in the past 12 months was also reported by participants, but to a much lesser extent. Heart disease was reported by 4.1% of participants, with the highest frequency in those aged 75 years and older (11.9%). Diabetes was reported by 5.6% of participants, reaching 13.2% in the age group 65-74 years and 13.8% in those aged 75 years and older. Further comparisons were not performed due to the small number of participants within these subgroups.

***Table 6.45.*** *Chronic health conditions, heart disease and diabetes in participants 15 years and older (N= 1,389, N= 1,251 and N= 1,039), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Chronic health condition | | Heart disease | | Diabetes | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % |
| **GENDER** | Male | 127 | 28.8 | 33 | 5.0 | 36 | 4.5 |
| | Female | 173 | 34.8 | 20 | 3.2 | 31 | 4.8 |
| **AGE GROUP** | 15-24 | 9 | 9.9 | 0 | 0.0 | 1 | 0.4 |
| | 25-34 | 23 | 35.7 | 0 | 0.0 | 0 | 0.0 |
| | 35-44 | 32 | 22.8 | 1 | 0.8 | 4 | 1.8 |
| | 45-54 | 59 | 38.9 | 6 | 3.1 | 5 | 4.7 |
| | 55-64 | 70 | 38.5 | 13 | 6.2 | 15 | 8.2 |
| | 65-74 | 66 | 35.6 | 20 | 8.9 | 25 | 13.2 |
| | ≥75 | 40 | 38.9 | 13 | 11.9 | 17 | 13.8 |
| **REGION** | Flemish Region | 208 | 26.4 | 45 | 4.8 | 43 | 3.8 |
| | Brussels-Capital Region | 25 | 47.6 | 0 | 0.0 | 9 | 9.4 |
| | Walloon Region | 67 | 39.6 | 8 | 3.8 | 15 | 5.0 |
| **DENTITION** | Dentate* ≥35 | 315 | 38.4 | 58 | 5.5 | 77 | 9.2 |
| | Edentulous ≥35 | 16 | 45.9 | 2 | 6.3 | 7 | 16.5 |
| **EDUCATION** | Primary school/no diploma | 20 | 61.2 | 2 | 3.6 | 8 | 20.0 |
| | Lower secondary school | 45 | 43.9 | 12 | 10.2 | 13 | 9.5 |
| | Higher secondary school | 100 | 34.5 | 24 | 5.5 | 18 | 4.3 |
| | Higher education | 127 | 31.1 | 15 | 2.8 | 26 | 5.7 |
| **SOCIAL STATUS VT-BIM** | No | 237 | 29.0 | 44 | 3.7 | 49 | 3.8 |
| | Yes | 63 | 50.5 | 9 | 5.9 | 18 | 9.7 |
| **TOTAL** | | **300** | **31.9** | **53** | **4.1** | **67** | **5.6** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022.*
*N = number of participants; % = percentage; * participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.8.3. *General health and quality of life*

This section provides an overview of the overall quality of life of participants aged 15 years and older. The EQ-5D instrument (EuroQol Group, 1990) was used to measure quality of life related to general health. This simple and quick questionnaire assesses the impact of general health on quality of life according to 5 dimensions: mobility, personal care, daily activities, pain/discomfort and anxiety and depression. Based on the responses to these five dimensions, it is possible to create a health profile of every individual (Sciensano, 2022).

The results are presented in Table 6.46. In Belgium, 68.1% of the population aged 15 years and older reported no health problems. Their average EQ-5D score was 0.9 (±0.2). Males were more likely to report the absence of health problems than females (71.2% and 65.2%, respectively). The lowest proportions reporting not having health problems were found in participants aged 45-54 years (61.1%) and those aged 75 and older (61.2%). A total of 73.6% of participants in the Flemish Region reported not having health problems, followed by 60.4% in the Walloon Region and 52.4% in the Brussels-Capital Region.

Reporting absence of health problems increased gradually with higher educational levels, from 38.8% in participants with primary school education or no diploma to 68.9% in those with higher education. This trend was also observed in relation to social status with 49.5% of participants with social status VT-BIM reporting not having health problems compared to 71.9% of participants without this status.

***Table 6.46.*** *Frequency of participants 15 years and older reporting absence of health problems and impact of general health on quality of life, as measured by the EQ-5D instrument (N= 932), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Absence of health problems | | EQ-5D score | |
|---|---|---|---|---|---|
| | | N | % | Mean | SD |
| **GENDER** | Male | 319 | 71.2 | 0.9 | 0.2 |
| | Female | 338 | 65.2 | 0.8 | 0.2 |
| **AGE GROUP** | 15-24 | 68 | 90.1 | 0.9 | 0.1 |
| | 25-34 | 80 | 64.3 | 0.9 | 0.2 |
| | 35-44 | 97 | 77.2 | 0.9 | 0.2 |
| | 45-54 | 110 | 61.1 | 0.8 | 0.2 |
| | 55-64 | 115 | 61.7 | 0.8 | 0.2 |
| | 65-74 | 127 | 64.5 | 0.9 | 0.2 |
| | ≥75 | 60 | 61.2 | 0.8 | 0.3 |
| **REGION** | Flemish Region | 522 | 73.6 | 0.9 | 0.2 |
| | Brussels-Capital Region | 27 | 52.4 | 0.8 | 0.2 |
| | Walloon Region | 108 | 60.4 | 0.8 | 0.2 |
| **DENTITION** | Dentate* ≥35 | 492 | 66.1 | 0.8 | 0.2 |
| | Edentulous ≥35 | 17 | 55.2 | 0.7 | 0.3 |
| **EDUCATION** | Primary school/ no diploma | 10 | 38.8 | 0.6 | 0.3 |
| | Lower secondary school | 69 | 56.1 | 0.8 | 0.2 |
| | Higher secondary school | 210 | 65.5 | 0.8 | 0.2 |
| | Higher education | 300 | 68.9 | 0.9 | 0.2 |
| **SOCIAL STATUS VT/BIM** | No | 601 | 71.0 | 0.9 | 0.2 |
| | Yes | 55 | 49.5 | 0.7 | 0.3 |
| **TOTAL** | | **657** | **68.1** | **0.9** | **0.2** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

## 6.9. Results: Oral health and health care services consumption

Data on registered oral health and health care services consumption were retrieved from the IMA-AIM 2018-2022 database, providing an overview of the care services consumption of the Belgian population.

### 6.9.1. *Oral health care services consumption*

The data on oral health consumption include services provided by a general dentist or a dentist specialized in periodontology or orthodontics.

Table 6.47 shows the number of dental visits during the 5-year period 2018-2022, and the percentage of participants who regularly visited a dentist. A regular attender was defined as having at least 3 visits to a dentist, excluding emergency visits, in 3 different years, over a five-year period. The data show that 69.6% of participants met this criterion for regular dental visits in the period 2018-2022, while 9.0% had no single dental visit during this period. Females (72.6%) attended a dentist more often on a regular basis than males (66.5%). In contrast, irregular and emergency visits were more frequent in male participants (22.3% vs 20.7% and 1.5% vs 0.8%, respectively). Regular attendance was less frequent in the youngest group of participants aged 5-7 years (29.0%).

Regular dental visits were more frequently reported by residents of the Flemish Region (72.2%) than those of the Brussels-Capital Region (67.1%) and the Walloon Region (65.4%). Regular attendance was significantly more frequent in dentate participants (73.2%) than in those edentulous (22.9%).
The frequency of regular dental visits consistently increased with educational attainment, with participants with higher education level reporting regular visits more often (75.5%) than participants with primary school education or no diploma (57.0%). Also, participants with social status VT-BIM reported regular visits less frequently (58.8%) than those without this status (71.8%).

Table 6.48 presents data on diagnostic and preventive services based on registered care consumption. A preventive oral examination was recorded for 63.3% of participants, followed by intra-oral radiographs (45.5%), scaling or prophylaxis (44.1%), extra-oral radiographs (31.7%) and sealant application (2.8%). A marginal difference was recorded in preventive oral examination frequencies between females (64.1%) and males (62.1%). Moreover, a peak in preventive oral examination consumption of more than 80% was recorded in adolescents and young adults aged 12-24 years, with the most plausible explanation being orthodontic assessments and monitoring of wisdom teeth eruption. These examinations were more frequently reported by residents of the Flemish Region (66.3%) than those of the Brussels-Capital Region (64.6%) and the Walloon Region (47.1%). The consumption of preventive oral examinations increased with educational attainment, with participants with higher level of education recording a significantly higher consumption (64.3%) than those with low educational level (28.7%). Participants with social status VT-BIM underwent preventive oral examinations less frequently (58.7%) than those without this status (64.1%).

The highest proportion of sealant applications was recorded in the 12-14 years age group (27.9%), as this preventive service is essentially targeted at children and adolescents.

A small difference was recorded in the use of scaling or prophylaxis services between females (46.6.%) and males (41.6%). Utilisation of these services increased consistently with age, reaching its highest level in the 65-74 years age group. Scaling or prophylaxis was more frequently recorded for participants in the Flemish Region (47.2%), followed by those in the Brussels-Capital Region (42.0%) and the Walloon Region (39.0%).

The consumption of scaling or prophylaxis services increased with educational attainment, with participants with higher education recording a significantly higher consumption (63.3%) compared to those with primary school education or no diploma (30.3%). In participants with social status VT-BIM these services were recorded less frequently (35.8%) than in those without this status (45.7%).

***Table 6.47.*** *Dental attendance during the 5-year-period 2018-2022 according to registered care consumption (N= 1382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Regular visits** | | Irregular visits*** | | Emergency visits**** | | No visits | |
|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 454 | 66.5 | 141 | 22.3 | 11 | 1.5 | 73 | 11.2 |
| | Female | 537 | 72.6 | 131 | 20.7 | 7 | 0.8 | 46 | 6.7 |
| **AGE GROUP** | 5-7 | 10 | 29.0 | 13 | 58.5 | 0 | 0.0 | 6 | 12.5 |
| | 8-11 | 31 | 56.4 | 20 | 32.1 | 0 | 0.0 | 6 | 11.4 |
| | 12-14 | 45 | 92.5 | 4 | 3.9 | 0 | 0.0 | 2 | 3.6 |
| | 15-24 | 100 | 79.3 | 20 | 17.3 | 2 | 1.0 | 5 | 3.4 |
| | 25-34 | 81 | 61.3 | 33 | 28.0 | 4 | 2.5 | 13 | 10.7 |
| | 35-44 | 110 | 69.9 | 39 | 20.6 | 2 | 0.9 | 16 | 9.5 |
| | 45-54 | 169 | 73.4 | 36 | 18.1 | 4 | 2.2 | 14 | 8.5 |
| | 55-64 | 176 | 70.2 | 43 | 21.0 | 4 | 1.3 | 18 | 8.8 |
| | 65-74 | 177 | 75.5 | 36 | 15.3 | 1 | 0.5 | 20 | 9.2 |
| | ≥75 | 92 | 65.0 | 28 | 21.5 | 1 | 0.7 | 19 | 13.5 |
| **REGION** | Flemish Region | 717 | 72.2 | 168 | 19.4 | 14 | 1.4 | 74 | 8.4 |
| | Brussels-Capital Region | 49 | 67.1 | 12 | 18.5 | 1 | 0.6 | 9 | 14.4 |
| | Walloon Region | 225 | 65.4 | 92 | 26.5 | 3 | 0.9 | 36 | 8.2 |
| **DENTITION** | Dentate* ≥35 | 712 | 73.2 | 171 | 19.0 | 12 | 1.3 | 66 | 7.8 |
| | Edentulous ≥35 | 12 | 22.9 | 11 | 26.1 | 0 | 0.0 | 21 | 51.0 |
| **EDUCATION** | Primary school/no diploma | 20 | 57.0 | 9 | 26.9 | 0 | 0.0 | 7 | 16.1 |
| | Lower secondary school | 84 | 59.6 | 22 | 22.3 | 0 | 0.0 | 19 | 18.1 |
| | Higher secondary school | 250 | 72.9 | 55 | 19.1 | 4 | 0.8 | 24 | 8.0 |
| | Higher education | 344 | 75.5 | 80 | 17.0 | 10 | 2.2 | 27 | 7.5 |
| **SOCIAL STATUS VT-BIM** | No | 875 | 71.8 | 218 | 20.2 | 18 | 1.4 | 94 | 8.0 |
| | Yes | 116 | 58.8 | 52 | 27.0 | 0 | 0.0 | 25 | 14.2 |
| **TOTAL** | | **991** | **69.6** | **272** | **21.5** | **18** | **1.1** | **119** | **9.0** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage;*
**participant with at least one natural tooth; **at least 3 contacts in 3 different years; ***at least one contact;*
***** supplements for emergency consultation and emergency service supplement (RIZIV/INAMI codes 301055-081, 3735586).*
*Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.48.*** *Diagnostic and preventive services carried out by a dentist during the 5-year-period 2018-2022 according to registered care consumption (N= 1,382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Preventive oral examination | | Sealant | | Scaling or prophylaxis | | Intra-oral radiograph | | Extra-oral radiograph | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 394 | 62.5 | 14 | 2.6 | 315 | 41.6 | 323 | 44.4 | 202 | 29.4 |
| | Female | 461 | 64.1 | 12 | 3.0 | 303 | 46.6 | 354 | 46.5 | 243 | 33.9 |
| **AGE GROUP** | 5-7 | 19 | 67.0 | 0 | 0.0 | 0 | 0.0 | 5 | 14.9 | 0 | 0.0 |
| | 8-11 | 45 | 69.3 | 5 | 6.6 | 0 | 0.0 | 19 | 30.9 | 8 | 10.3 |
| | 12-14 | 44 | 85.6 | 13 | 27.9 | 0 | 0.0 | 25 | 51.7 | 28 | 50.0 |
| | 15-24 | 101 | 82.3 | 8 | 5.6 | 14 | 11.5 | 59 | 46.8 | 74 | 57.1 |
| | 25-34 | 88 | 63.6 | - | - | 66 | 51.7 | 52 | 42.3 | 40 | 28.8 |
| | 35-44 | 119 | 73.5 | - | - | 92 | 53.2 | 68 | 37.9 | 43 | 29.9 |
| | 45-54 | 152 | 64.8 | - | - | 145 | 63.3 | 125 | 55.6 | 73 | 30.1 |
| | 55-64 | 153 | 67.1 | - | - | 145 | 60.1 | 130 | 50.9 | 82 | 36.0 |
| | 65-74 | 115 | 48.9 | - | - | 160 | 67.4 | 128 | 53.9 | 65 | 27.8 |
| | ≥75 | 19 | 13.0 | - | - | 86 | 62.5 | 66 | 44.8 | 32 | 23.4 |
| **REGION** | Flemish Region | 621 | 66.3 | 15 | 2.5 | 512 | 47.2 | 470 | 45.0 | 296 | 29.6 |
| | Brussels-Capital Region | 36 | 64.6 | 1 | 2.5 | 39 | 42.0 | 36 | 39.5 | 25 | 34.5 |
| | Walloon Region | 198 | 47.1 | 10 | 3.5 | 157 | 39.0 | 171 | 46.4 | 124 | 34.7 |
| **DENTITION** | Dentate* ≥35 | 553 | 58.7 | - | - | 626 | 63.6 | 515 | 50.8 | 291 | 31.1 |
| | Edentulous ≥35 | 5 | 8.2 | - | - | 2 | 3.8 | 2 | 2.8 | 4 | 5.2 |
| **EDUCATION** | Primary school/no diploma | 12 | 28.7 | 0 | 0.0 | 11 | 30.3 | 12 | 34.6 | 9 | 25.6 |
| | Lower secondary school | 54 | 39.4 | 0 | 0.0 | 70 | 53.4 | 57 | 41.8 | 29 | 22.3 |
| | Higher secondary school | 200 | 60.7 | 0 | 0.0 | 218 | 60.5 | 164 | 45.5 | 103 | 30.9 |
| | Higher education | 289 | 64.3 | 0 | 0.0 | 294 | 63.3 | 245 | 50.5 | 136 | 30.2 |
| **SOCIAL STATUS VT-BIM** | No | 754 | 64.1 | 22 | 2.5 | 620 | 45.7 | 589 | 45.8 | 375 | 30.6 |
| | Yes | 99 | 58.7 | 4 | 4.4 | 87 | 35.8 | 86 | 42.8 | 68 | 36.0 |
| **TOTAL** | | **855** | **63.3** | **26** | **2.8** | **708** | **44.1** | **677** | **45.5** | **445** | **31.7** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.49 describes data on consultations with specialists in periodontology and orthodontics. Overall, 4.4% of the participants consulted a periodontologist and 5.9% consulted an orthodontist during the period 2018-2022. Consultations with a periodontologist increased from the age of 25 years up to 74 years. Except for orthodontic consultations in the 12-14 years and 15-24 years age groups, the use of orthodontic services was significantly less frequent across other age categories. The small numbers of participants in different categories did not allow further subgroup analyses.

***Table 6.49.*** *Consultations with a specialized dentist during 5-year-period 2018-2022 according to registered care consumption, (N= 1,382), OHDRES 2023-2024, Belgium (N=1,724 and N=1,382)*

| | | Consultation periodontology | | Consultation orthodontics | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| **GENDER** | Male | 26 | 3.5 | 28 | 5.4 |
| | Female | 45 | 5.3 | 29 | 6.3 |
| **AGE GROUP** | 5-7 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | 0 | 0.0 | 4 | 7.1 |
| | 12-14 | 0 | 0.0 | 9 | 17.3 |
| | 15-24 | 0 | 0.0 | 29 | 26.9 |
| | 25-34 | 2 | 1.2 | 10 | 7.4 |
| | 35-44 | 6 | 3.9 | 2 | 1.1 |
| | 45-54 | 17 | 7.0 | 3 | 1.5 |
| | 55-64 | 16 | 7.9 | 0 | 0.0 |
| | 65-74 | 23 | 12.2 | 0 | 0.0 |
| | ≥75 | 7 | 5.1 | 0 | 0.0 |
| **REGION** | Flemish Region | 51 | 5.0 | 39 | 4.6 |
| | Brussels-Capital Region | 6 | 4.5 | 2 | 8.7 |
| | Walloon Region | 14 | 3.3 | 16 | 7.3 |
| **DENTITION** | Dentate* ≥35 | 11 | 1.0 | 5 | 0.6 |
| | Edentulous ≥35 | 0 | 0.0 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 1 | 0.9 | 0 | 0.0 |
| | Lower secondary school | 7 | 7.9 | 1 | 0.8 |
| | Higher secondary school | 19 | 4.5 | 5 | 1.4 |
| | Higher education | 34 | 7.1 | 11 | 3.2 |
| **SOCIAL STATUS** | No | 59 | 4.2 | 53 | 5.8 |
| **VT-BIM** | Yes | 12 | 5.5 | 4 | 6.3 |
| **TOTAL** | | **71** | **4.4** | **57** | **5.9** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022.*
*N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

Table 6.50 describes data on conservative treatments carried out by general dentists based on registered services during the period 2018-2022. Overall, one-surface fillings were recorded in 26.6% of participants, while multi-surface fillings were registered in 54.2%. Also, endodontic treatments without increased difficulty were documented in 13.3% of participants, prosthetic procedures fees in 6.5%, and extractions or minor surgical interventions in 15.6%. Small differences between females and males were observed across the various types of conservative treatments delivered, but no clear trend emerged. One-surface fillings showed no specific pattern in relation to age, whereas multi-surface fillings increased with age, peaking in the 55-64 years age group. Endodontic treatments were most frequently recorded in participants aged 45-54 years. Although differences were observed between regions, no clear trend could be established when all conservative treatments were considered together.

The consumption of conservative treatments was lower in participants with primary school education or no diploma and lower secondary school education, compared to those with higher secondary school or higher education. For endodontic treatments, a gradual increase was reported with increasing level of education. Conservative treatments were more frequently recorded in participants with social status VT-BIM, particularly prosthetic procedures and minor surgical interventions, compared to those without this status.

Table 6.51 presents mean numbers of services carried out by dentists according to registered care consumption and the IMA-AIM Atlas. The overall mean number of registered dental services was 16.7 (±14.4), with females averaging 17.1 (±14.1) and males 16.2 (±14.8) services. The highest mean number of dental services was registered in the age group 15-24 years with a mean of 22.0 (± 14.7) services. Across the regions, the Walloon Region recorded the lowest mean dental care consumption, with an average of 15.2 (±13.4) services. Dentate participants had a mean dental care consumption of 19.1 (±14.9), which was nearly six times higher than that of edentulous participants (3.2 ±7.8). No significant difference in the number of dental care services was registered between participants with VT-BIM social status and those without this status.

***Table 6.50.*** *Conservative treatments carried out by a general dentist during 5-year-period 2018-2022 according to registered care consumption (N= 1,382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Fillings 1 surface | | Fillings >1 surface | | Endodontics without increased difficulty | | Any prosthetic fee** | | Extraction or minor surgery | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 182 | 26.1 | 383 | 54.2 | 110 | 15.1 | 64 | 6.1 | 144 | 16.7 |
| | Female | 204 | 27.0 | 429 | 54.3 | 103 | 11.5 | 59 | 6.9 | 113 | 14.5 |
| **AGE GROUP** | 5-7 | 5 | 22.3 | 3 | 10.0 | 0 | 0.0 | 0 | 0.0 | 1 | 2.2 |
| | 8-11 | 9 | 9.7 | 17 | 27.3 | 0 | 0.0 | 0 | 0.0 | 3 | 2.7 |
| | 12-14 | 14 | 25.4 | 23 | 47.3 | 1 | 1.5 | 0 | 0.0 | 16 | 31.1 |
| | 15-24 | 39 | 35.6 | 61 | 49.3 | 8 | 9.3 | 0 | 0.0 | 23 | 21.2 |
| | 25-34 | 30 | 22.5 | 58 | 47.9 | 17 | 11.7 | 0 | 0.0 | 1 | 0.4 |
| | 35-44 | 49 | 31.7 | 99 | 60.9 | 26 | 14.7 | 0 | 0.0 | 2 | 0.6 |
| | 45-54 | 73 | 29.9 | 157 | 68.0 | 53 | 23.9 | 3 | 0.8 | 5 | 2.4 |
| | 55-64 | 68 | 27.4 | 169 | 69.6 | 46 | 17.5 | 25 | 10.8 | 59 | 25.6 |
| | 65-74 | 68 | 30.2 | 155 | 64.9 | 45 | 21.8 | 46 | 18.0 | 98 | 38.8 |
| | ≥75 | 31 | 19.1 | 70 | 46.5 | 17 | 10.3 | 49 | 33.3 | 49 | 33.3 |
| **REGION** | Flemish Region | 266 | 26.6 | 563 | 54.3 | 133 | 11.8 | 87 | 6.9 | 179 | 15.9 |
| | Brussels-Capital Region | 18 | 24.7 | 44 | 57.5 | 14 | 17.8 | 7 | 4.6 | 20 | 20.9 |
| | Walloon Region | 102 | 27.1 | 205 | 52.9 | 66 | 14.8 | 29 | 6.4 | 58 | 13.2 |
| **DENTITION** | Dentate* ≥35 | 288 | 29.4 | 646 | 65.8 | 187 | 18.8 | 107 | 10.1 | 209 | 18.9 |
| | Edentulous ≥35 | 1 | 2.1 | 4 | 6.0 | 0 | 0.0 | 16 | 29.4 | 4 | 10.2 |
| **EDUCATION** | Primary school/no diploma | 5 | 11.2 | 18 | 45.2 | 5 | 10.2 | 8 | 24.3 | 12 | 31.7 |
| | Lower secondary school | 40 | 28.2 | 77 | 57.4 | 21 | 14.5 | 28 | 19.9 | 32 | 24.3 |
| | Higher secondary school | 94 | 29.4 | 213 | 62.7 | 56 | 14.8 | 43 | 10.4 | 76 | 17.6 |
| | Higher education | 131 | 26.9 | 292 | 61.4 | 85 | 17.8 | 21 | 3.5 | 61 | 10.3 |
| **SOCIAL STATUS VT-BIM** | No | 333 | 26.4 | 700 | 53.7 | 179 | 12.5 | 97 | 5.7 | 216 | 14.1 |
| | Yes | 52 | 27.5 | 110 | 56.3 | 34 | 17.7 | 26 | 10.8 | 41 | 23.2 |
| **TOTAL** | | **386** | **26.6** | **812** | **54.2** | **213** | **13.3** | **123** | **6.5** | **257** | **15.6** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth;*
***the services registered only concern removable prosthesis, fixed prosthesis is not included in the nomenclature.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 6.51.*** *Services carried out by dentists during the 5-year-period 2018-2022 according to registered care consumption and IMA-AIM Atlas (N= 1,382), OHDRES 2023-2024, Belgium (N= 1,382)*

| | | Dental services | | Preventive dental services | | Dental radiographs incl. CBCT | | Dental imaging by a dentist | | Orthodontic services | | Early orthodontic services | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| **GENDER** | Male | 16.2 | 14.8 | 5.3 | 5.5 | 2.0 | 2.9 | 2.0 | 2.9 | 0.8 | 3.5 | 0.0 | 0.1 |
| | Female | 17.1 | 14.1 | 6.0 | 5.9 | 2.2 | 3.0 | 2.2 | 3.0 | 0.9 | 4.0 | 0.0 | 0.1 |
| **AGE GROUP** | 5-7 | 3.4 | 4.0 | 1.6 | 1.4 | 0.2 | 0.7 | 0.2 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 8-11 | 7.1 | 7.9 | 2.8 | 2.7 | 1.3 | 2.7 | 1.3 | 2.7 | 0.1 | 0.3 | 0.1 | 0.3 |
| | 12-14 | 15.0 | 9.6 | 4.5 | 3.5 | 2.5 | 2.4 | 2.5 | 2.4 | 1.7 | 5.0 | 0.0 | 0.3 |
| | 15-24 | 22.0 | 14.7 | 3.8 | 3.3 | 3.2 | 3.0 | 3.2 | 3.0 | 6.7 | 8.6 | - | - |
| | 25-34 | 13.8 | 12.9 | 5.3 | 4.9 | 1.5 | 2.0 | 1.5 | 2.0 | 0.0 | 0.2 | - | - |
| | 35-44 | 15.4 | 12.3 | 6.3 | 5.3 | 1.6 | 2.3 | 1.6 | 2.3 | - | - | - | - |
| | 45-54 | 19.5 | 14.7 | 7.1 | 6.3 | 2.3 | 3.0 | 2.3 | 3.0 | - | - | - | - |
| | 55-64 | 19.3 | 15.9 | 6.8 | 6.7 | 2.3 | 3.3 | 2.2 | 3.3 | - | - | - | - |
| | 65-74 | 20.9 | 16.8 | 7.8 | 7.0 | 2.2 | 2.9 | 2.1 | 2.9 | - | - | - | - |
| | ≥75 | 16.9 | 14.8 | 6.0 | 6.8 | 2.5 | 4.1 | 2.4 | 4.1 | - | - | - | - |
| **REGION** | Flemish Region | 17.4 | 14.7 | 6.0 | 5.7 | 2.1 | 3.0 | 2.0 | 3.0 | 0.9 | 4.0 | 0.0 | 0.1 |
| | Brussels-Capital Region | 17.4 | 15.9 | 6.4 | 6.2 | 2.2 | 2.8 | 2.2 | 2.8 | 0.8 | 3.0 | 0.0 | 0.2 |
| | Walloon Region | 15.2 | 13.4 | 4.8 | 5.5 | 2.1 | 2.9 | 2.1 | 2.9 | 0.8 | 3.5 | 0.0 | 0.0 |
| **DENTITION** | Dentate* ≥35 | 19.1 | 14.9 | 7.1 | 6.4 | 2.2 | 3.2 | 2.2 | 3.2 | 0.0 | 0.0 | - | - |
| | Edentulous ≥35 | 3.2 | 7.8 | 0.3 | 1.5 | 0.2 | 1.2 | 0.2 | 1.2 | 0.0 | 0.0 | - | - |
| **EDUCATION** | Primary school/no diploma | 10.0 | 9.5 | 2.6 | 4.2 | 1.0 | 1.4 | 1.0 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Lower secondary school | 16.7 | 16.4 | 5.3 | 6.0 | 1.5 | 2.5 | 1.5 | 2.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Higher secondary school | 17.9 | 14.3 | 6.5 | 5.9 | 1.9 | 2.9 | 1.9 | 2.9 | 0.1 | 1.4 | 0.0 | 0.0 |
| | Higher education | 18.5 | 14.6 | 7.6 | 6.4 | 2.3 | 3.1 | 2.3 | 3.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| **SOCIAL STATUS VT-BIM** | No | 16.7 | 14.1 | 5.9 | 5.8 | 2.1 | 3.0 | 2.1 | 3.0 | 0.9 | 3.9 | 0.0 | 0.1 |
| | Yes | 16.9 | 16.0 | 4.4 | 5.0 | 1.9 | 2.5 | 1.9 | 2.5 | 0.8 | 3.1 | 0.0 | 0.0 |
| **TOTAL** | | **16.7** | **14.4** | **5.7** | **5.7** | **2.1** | **2.9** | **2.1** | **2.9** | **0.9** | **3.8** | **0.0** | **0.1** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022; N = number of participants; % = percentage; *participant with at least one natural tooth.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

### 6.9.2. *General health care services consumption*

Table 6.52 describes data on consultations with physicians based on registered care consumption. A specific set of service codes was used to construct profiles of medical care consumption, categorised as follows: “regular contacts” (at least three visits to general practitioner or specialist, excluding emergency visits, in three different years over a five-year period), “irregular contacts” (at least one contact during the five-year period), and “no contact” (no recorded consultation during a five-year period).

The majority of the Belgian population (82.8%) had regular contacts with a general practitioner or specialist during the period 2018-2022, while 7.2% had no recorded visits during this period. Slightly more females (84.1%) than males (81.5%) had regular contacts with a physician. Likewise, irregular visits were slightly more frequent in female participants (10.6%), compared to males (9.4%). Regular visits were least frequent in the youngest group of participants aged 5-7 years and most frequent in the age group 75 years and older. Moreover, irregular visits were most frequent in children aged 5-7 years (31.1%). Regular medical visits were more frequently reported by residents of the Flemish Region (90.4%) than those of the Walloon Region (75.8%) and the Brussels-Capital Region (60.1%). Similar levels of regular visits to a physician were observed in dentate (86.2%) and edentulous participants (83.5%). However, irregular visits were more frequent in edentulous participants (12.8%) than in dentate participants (9.0%). The highest frequency of regular visits to a physician was observed in participants with primary school level of education or no diploma (92.7%). In contrast, the frequency of irregular visits was highest for participants with higher education. Finally, participants with social status VT-BIM reported regular visits less frequently (77.5%) than those without this status (83.9%).

***Table 6.52*** *Consultation with a physician during 5-year-period 2018-2022 according to registered care consumption (N= 1,382), OHDRES 2023-2024, Belgium (N= 1,724 and N= 1,382)*

| | | Regular contacts** | | Irregular contacts (at least 1) | | No visits | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | % | % |
| **GENDER** | Male | 581 | 81.5 | 58 | 9.4 | 29 | 9.1 |
| | Female | 639 | 84.1 | 52 | 10.6 | 23 | 5.3 |
| **AGE GROUP** | 5-7 | 23 | 61.1 | 5 | 31.1 | 1 | 7.8 |
| | 8-11 | 49 | 83.7 | 6 | 9.6 | 2 | 6.8 |
| | 12-14 | 43 | 75.7 | 5 | 14.7 | 3 | 9.6 |
| | 15-24 | 112 | 80.0 | 8 | 6.5 | 5 | 13.5 |
| | 25-34 | 108 | 78.7 | 13 | 9.4 | 6 | 11.9 |
| | 35-44 | 143 | 79.3 | 14 | 12.5 | 8 | 8.2 |
| | 45-54 | 193 | 85.5 | 19 | 9.8 | 7 | 4.7 |
| | 55-64 | 207 | 87.3 | 19 | 7.7 | 11 | 5.0 |
| | 65-74 | 212 | 89.8 | 14 | 7.1 | 7 | 3.2 |
| | ≥75 | 130 | 90.6 | 7 | 8.1 | 2 | 1.3 |
| **REGION** | Flemish Region | 880 | 90.4 | 63 | 7.9 | 16 | 1.7 |
| | Brussels-Capital Region | 50 | 60.1 | 9 | 13.7 | 11 | 26.3 |
| | Walloon Region | 290 | 75.8 | 38 | 12.8 | 25 | 11.4 |
| **DENTITION** | Dentate* ≥35 | 847 | 86.2 | 69 | 9.0 | 33 | 4.8 |
| | Edentulous ≥35 | 38 | 83.5 | 4 | 12.8 | 2 | 3.7 |
| **EDUCATION** | Primary school/no diploma | 33 | 92.7 | 3 | 7.3 | 0 | 0.0 |
| | Lower secondary school | 118 | 91.5 | 6 | 7.6 | 1 | 0.8 |
| | Higher secondary school | 299 | 83.7 | 19 | 7.8 | 11 | 8.6 |
| | Higher education | 395 | 86.1 | 40 | 10.2 | 16 | 3.7 |
| **SOCIAL STATUS** | No | 1,048 | 83.9 | 99 | 10.5 | 40 | 5.6 |
| **VT/BIM** | Yes | 171 | 77.5 | 11 | 7.7 | 11 | 14.8 |
| **TOTAL** | | **1,220** | **82.8** | **110** | **10.0** | **52** | **7.2** |

*Source: HIS 2023-2024 and AIM-IMA 2018-2022. N = number of participants; % = percentage; *participant with at least one natural tooth; ** at least 3 contacts in 3 different years. Results to be interpreted with caution if the number of participants is lower than 100.*

# 7. COMPARISON OF RESULTS OHDRES 2023-2024 WITH EARLIER OHDRES SURVEYS

This chapter describes, compares and discusses trends in oral health and oral health-related behavior of the Belgian population, as recorded during the different oral health surveys of 2008-2010, 2012-2014 and 2023-2024. Even though for most oral health indicators major shifts are not expected to occur within a short period of time, it remains important to monitor the impact of societal changes, policy adjustments and oral health promotion initiatives on a regular basis.

In order to interpret the obtained information, it is important to highlight some specific aspects of the different surveys.

- An initial data registration on oral health was carried out in in Belgium in the period 2008-2010, referred to as the OHDRES 2008-2010. This first data collection round consisted of data collected on the basis of an oral examination, data obtained through questionnaires to the participants and data relating to healthcare consumption retrieved from the AIM-IMA, but without a link to data from the national health interview survey (HIS). A detailed report of the OHDRES 2008-2010 can be consulted via the NIHDI website (link FR/NL).
- A subsequent data collection was launched during the period from 2012 to 2014. For this survey, a link at the individual level with the data from the national health survey (HIS 2013) was realized. Collecting oral health data in combination with general health data offers considerable added value. The online report of the OHDRES 2012-2014 can be consulted via the website of NIHDI and bundles the methods used and describes the results of the OHDRES 2012-2014 project (link FR/NL).
- After a 10-year break, a following oral health data collection took place, being the OHDRES 2023-2024 project, the subject of this report. The OHDRES 2023-2024 links information collected through face-to-face interviews as part of the national Health Interview Survey 2023-2024, with oral health data obtained by clinical examination and selected health care consumption data, at an individual level. For more information on methodological aspects and detailed results, we refer to the different chapters within this report.

The comparison between the different surveys was based on samples of 2,755 participants in OHDRES 2008-2010, 1,875 participants in OHDRES 2012-2014 and 1,724 (oral health examination data) / 1382 (linked database: oral health examination data, interview data and health care consumption data) participants in OHDRES 2023-2024.

In this section, following variables are described and compared: selected background characteristics of participants, reported oral hygiene practices (brushing frequency, interdental cleaning), oral hygiene (plaque index), periodontal status (DPSI), dental status (DMFT score, number of caries-free participants, tooth wear, exposed root surfaces, number of permanent teeth, use of removable dentures, edentulousness and presence of functional occlusion, prosthetic appliances), presence of oral health complaints and dental attendance. For a detailed explanation of the different variables, we refer to the respective survey reports.

It is important to keep in mind that all results were weighted in order to maximize representativity of the results for the general Belgian population. It is also important to point out that the datasets (merged data) of the previous data collections are no longer available. The access to the data was limited in time, as imposed by the Information Security Committee. Therefore, only crude comparisons on means (±SD, if available) or numbers could be performed.

## 7.1. Socio-demographic data

In table 7.1 the socio-demographic characteristics of the different samples are shown according to gender, age group, region, and highest educational level attained.

***Table 7.1**. Sociodemographic characteristics of participants in different OHDRES surveys, OHDRES 2008-2010 (N= 2,755), OHDRES 2012-2014 (N= 1,875) and OHDRES 2023-2024 (N= 1,724 and N= 1,382), Belgium*

| Socio-demographic characteristics | | OHDRES 2008-2010 | | OHDRES 2012-2014 | | OHDRES 2023-2024 | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % |
| **GENDER** | Male | 1,295# | 47 | 949# | 50.6 | 826 | 49.7 |
| | Female | 1,460# | 53 | 926# | 49.4 | 898 | 50.3 |
| **AGE GROUP** | 5-7 | - | - | - | - | 35 | 2.9 |
| | 5-11 | 71 | 2.7 | 59 | 3.9 | - | - |
| | 8-11 | - | - | - | - | 78 | 7.0 |
| | 12-14 | 95 | 3.6 | 91 | 7.2 | 73 | 6.0 |
| | 15-24 | 290 | 11.7 | 91 | 10.4 | 153 | 11.9 |
| | 25-34 | 222 | 13.1 | 284 | 13.5 | 161 | 12.4 |
| | 35-44 | 389 | 16.3 | 330 | 16.3 | 231 | 13.4 |
| | 45-54 | 437 | 15.3 | 294 | 16.5 | 274 | 13.3 |
| | 55-64 | 433 | 13.5 | 247 | 12.4 | 294 | 13.6 |
| | 65-74 | 329 | 9.8 | 177 | 7.9 | 271 | 10.3 |
| | ≥75 | 359 | 8.9 | 104 | 4.6 | 154 | 9.2 |
| **REGION** | Flemish Region | 1,669 | 59.2 | 731 | 39.0 | 1,120 | 59.5 |
| | Brussels-Capital Region | 147 | 14.8 | 521 | 27.8 | 128 | 10.9 |
| | Walloon Region | 939 | 26.0 | 623 | 33.2 | 476 | 29.6 |
| **TOTAL** | | | | | | **1,724** | **100.0** |
| **EDUCATION*** | Primary school/no diploma | 390 | 13.7 | 155 | 10.1 | 36 | 3.8 |
| | Lower secondary school | 436 | 16.3 | 226 | 16.2 | 125 | 11.7 |
| | Higher secondary school | 610 | 28.3 | 455 | 35.5 | 329 | 34.4 |
| | Higher education | 664 | 41.7 | 554 | 39.2 | 451 | 50.1 |
| **TOTAL** | | **2,755** | **100.0** | **1,875** | **100.0** | **1,382** | **100.0** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage; #data calculated from the percentages, no crude data available anymore, *education: only ≥ 25-year-olds for OHDRES 2008-2010 and 2012-2014, only non-students for OHDRES 2023-2024. Results to be interpreted with caution if the number of participants is lower than 100.*

The sample was more concordant with the composition of the Belgian population in the OHDRES 2012-2014, as in the present sample (for more details see also Chapter 6 section 6.3).

Overall, males and females were well represented in all three OHDRES surveys. Regarding age groups, the number of participants from 25 years and older was adequate in all OHDRES surveys, and to some extent the number of participants in the age group 15-24 years. However, the number of children aged 14 years and younger was below the threshold of 100 individuals in all OHDRES surveys. This is a limitation to be considered when interpreting the results of these surveys. Between regions, Brussels-Capital Region was either over-represented (OHDRES 2008-2010, OHDRES 2012-2014) or well represented (OHDRES 2023-2024). The Flemish Region was under-represented in OHDRES 2012-2014, while the Walloon Region was under-represented in the OHDRES 2008-2010. The number of participants in relation to their level of education is very limited for those with primary school education or no diploma in the OHDRES 2023-2024.

## 7.2. Oral hygiene and related habits

Regarding oral hygiene, data on reported **brushing frequency** and interdental cleaning were compared (Tables 7.2a and 7.2b). It should be noted that concerning reported brushing frequency, in the OHDRES 2008-2010, no distinction was made between brushing natural teeth or dentures, while the OHDRES 2012-2014 and present survey specifically asked about the brushing frequency of natural teeth. The percentage of participants reporting brushing twice daily or more increased from 50.4% in the OHDRES 2008-2010 survey, to 53.0% in the OHDRES 2012-2014 survey and 60.2% in the OHDRES 2023-2024 survey. Women report twice daily brushing more often than men, in all surveys. The increase in brushing frequency is seen in all ages groups.

**Interdental cleaning** encompassing the use of dental floss, interdental brushes and/or toothpicks was reported by 46% of participants aged 25 years and over in the OHDRES 2012-2014, which is barely 1% less than in the OHDRES 2008-2010. In the OHDRES 2008-2010, 48% of men reported regular interdental cleaning compared to 38% in the OHDRES 2012-2014. For women, this was 54% and 51% respectively. In the present cohort, 51.8% reported practicing some form of interdental cleaning, 8.2% of which twice daily. The frequency of daily interdental cleaning in females was 32.0%, which is higher than that reported by males (19.1%). It should be noted that the data from the OHDRES 2023-24 were obtained by the HIS interviewers instead of by the dentist-examiners (which was the case in the previous surveys); this might have affected the results.

The **oral hygiene** of the participants was clinically assessed by the amount of dental plaque present according to the criteria described earlier in this report (chapter 6) (Table 7.3). Long-term trends were calculated based on aggregated percentages of brushing at least once daily versus rarely or never. The percentage of persons with good to acceptable self-reported oral hygiene habits increased (significant correlation r2=0.996, p=0.042). When looking at the clinically assessed plaque quantities (PI), based on mean ±SD of the total groups, no such trend was observed.

***Table 7.2a.*** *Frequency of tooth brushing reported by dentate participants 5 years and older in different OHDRES surveys, OHDRES 2008-2010# (N= 2,755), OHDRES 2012-2014 (N= 1,757) and OHDRES 2023-2024 (N= 1,079), Belgium*

| Toothbrushing frequency (part 1) | | Twice daily or more | | | | | | Once daily | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2008-2010# | | 2012-2014 | | 2023-2024 | | 2008-2010# | | 2012-2014 | | 2023-2024 | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 287 | 47.9 | 388 | 43.0 | 246 | 52.9 | 578 | 44.9 | 377 | 45.9 | 226 | 41.1 |
| | Female | 496 | 56.0 | 569 | 63.4 | 374 | 67.2 | 777 | 56.3 | 282 | 33.7 | 188 | 32.1 |
| **AGE GROUP** | 5-7 | 30 | 51.6 | 30 | 46.7 | 13 | 55.4 | 38 | 46.8 | 27 | 51.3 | 9 | 44.6 |
| | 8-11 | - | - | - | - | 25 | 60.0 | - | - | - | - | 17 | 37.2 |
| | 12-14 | 46 | 44.3 | 54 | 61.2 | 21 | 52.2 | 38 | 49.6 | 31 | 35.2 | 14 | 46.6 |
| | 15-24 | 145 | 43.6 | 98 | 45.3 | 61 | 60.4 | 122 | 48.6 | 76 | 49.6 | 35 | 37.3 |
| | 25-34 | 110 | 51.0 | 159 | 61.0 | 68 | 70.3 | 98 | 40.8 | 94 | 32.4 | 34 | 25.0 |
| | 35-44 | 188 | 59.5 | 180 | 52.1 | 84 | 62.6 | 170 | 37.6 | 113 | 38.5 | 47 | 34.8 |
| | 45-54 | 206 | 58.7 | 173 | 61.4 | 105 | 62.5 | 189 | 35.6 | 90 | 34.1 | 65 | 33.0 |
| | 55-64 | 196 | 47.3 | 118 | 46.8 | 101 | 54.7 | 194 | 40.3 | 90 | 40.7 | 83 | 42.9 |
| | 65-74 | 138 | 42.5 | 70 | 46.8 | 93 | 54.8 | 132 | 41.6 | 64 | 43.3 | 77 | 41.3 |
| | ≥75 | 119 | 44.4 | 37 | 50.5 | 49 | 58.1 | 151 | 41.5 | 33 | 44.4 | 33 | 35.5 |
| **REGION** | Flemish Region | 740 | 47.5 | 342 | 53.2 | 465 | 58.1 | 758 | 45.1 | 282 | 39.9 | 314 | 37.5 |
| | Brussels-Capital Region | 84 | 58.7 | 324 | 68.9 | 43 | 81.0 | 53 | 32.6 | 133 | 25.6 | 14 | 18.2 |
| | Walloon Region | 428 | 52.5 | 291 | 47.5 | 112 | 56.4 | 365 | 34.8 | 244 | 44.7 | 86 | 41.8 |
| **EDUCATION** | Primary school/no diploma | 98 | 42.1 | 65 | 41.5 | 14 | 63.4 | 97 | 41.1 | 37 | 37.6 | 11 | 31.3 |
| | Lower secondary school | 140 | 47.3 | 96 | 42.5 | 52 | 48.3 | 144 | 45.7 | 84 | 43.9 | 46 | 45.6 |
| | Higher secondary school | 238 | 48.5 | 240 | 51.2 | 161 | 55.0 | 212 | 41.0 | 177 | 41.9 | 131 | 39.5 |
| | Higher education | 288 | 58.9 | 338 | 63.9 | 272 | 66.6 | 276 | 36.3 | 179 | 31.0 | 154 | 31.2 |
| **TOTAL** | Dentate*# | **1,252** | **50.4** | **957** | **53.0** | **620** | **60.2** | **1,176** | **40.5** | **659** | **39.9** | **414** | **36.5** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage; * participant with at least one natural tooth: #in OHDRES 2008-2010 also participants wearing dentures were included. Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 7.2b.*** *Frequency of tooth brushing reported by dentate participants 5 years and older in different OHDRES surveys, OHDRES 2008-2010# (N= 2,755), OHDRES 2012-2014 (N= 1,757) and OHDRES 2023-2024 (N= 1,079), Belgium*

| Toothbrushing frequency (part 2) | | Less than once daily | | | | | | Never | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2008-2010# | | 2012-2014 | | 2023-2024 | | 2008-2010# | | 2012-2014 | | 2023-2024 | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 130 | 7.7 | 71 | 8.4 | 36 | 5.6 | 55 | 2.9 | 15 | 2.0 | 4 | 0.4 |
| | Female | 50 | 3.7 | 37 | 2.5 | 5 | 0.7 | 45 | 2.9 | 7 | 0.2 | 0 | 0.0 |
| **AGE GROUP** | 5-7 | 2 | 1.6 | 1 | 1.9 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | 8-11 | - | - | - | - | 2 | 1.7 | - | - | - | - | 1 | 1.2 |
| | 12-14 | 7 | 5.3 | 4 | 3.6 | 1 | 1.2 | 1 | 0.3 | 0 | 0.0 | 0 | 0.0 |
| | 15-24 | 18 | 5.5 | 16 | 4.7 | 2 | 2.3 | 3 | 1.2 | 1 | 0.1 | 0 | 0.0 |
| | 25-34 | 11 | 7.2 | 15 | 5.2 | 5 | 4.7 | 1 | 0.4 | 4 | 0.6 | 0 | 0.0 |
| | 35-44 | 23 | 3.8 | 24 | 6.8 | 5 | 2.7 | 3 | 0.3 | 5 | 2.5 | 0 | 0.0 |
| | 45-54 | 29 | 4.6 | 13 | 3.3 | 8 | 4.5 | 8 | 1.0 | 2 | 1.1 | 0 | 0.0 |
| | 55-64 | 29 | 4.7 | 10 | 9.2 | 5 | 2.2 | 11 | 7.1 | 3 | 2.2 | 1 | 0.3 |
| | 65-74 | 30 | 8.5 | 13 | 8.1 | 6 | 3.1 | 20 | 4.2 | 4 | 1.5 | 2 | 0.8 |
| | ≥75 | 26 | 5.9 | 5 | 4.4 | 7 | 6.4 | 52 | 12.7 | 3 | 0.7 | 0 | 0.0 |
| **REGION** | Flemish Region | 100 | 4.7 | 41 | 5.8 | 35 | 4.1 | 42 | 2.3 | 9 | 0.9 | 4 | 0.3 |
| | Brussels-Capital Region | 6 | 7.5 | 27 | 3.9 | 2 | 0.8 | 1 | 0.6 | 7 | 1.2 | 0 | 0.0 |
| | Walloon Region | 74 | 6.4 | 40 | 5.6 | 4 | 1.8 | 57 | 5.5 | 9 | 1.6 | 0 | 0.0 |
| **EDUCATION** | Primary school/no diploma | 22 | 9.0 | 18 | 12.4 | 1 | 4.2 | 25 | 7.6 | 8 | 7.3 | 1 | 1.2 |
| | Lower secondary school | 33 | 5.8 | 19 | 8.5 | 7 | 5.6 | 9 | 1.2 | 6 | 3.5 | 1 | 0.5 |
| | Higher secondary school | 40 | 9.6 | 29 | 5.4 | 18 | 5.5 | 6 | 1.0 | 7 | 1.1 | 0 | 0.0 |
| | Higher education | 24 | 2.2 | 22 | 4.9 | 10 | 2.1 | 1 | 2.6 | 0 | 0.0 | 1 | 0.1 |
| **TOTAL** | Dentate*# | **180** | **5.6** | **108** | **5.5** | **41** | **3.1** | **100** | **2.9** | **22** | **1.1** | **4** | **0.2** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage; * participant with at least one natural tooth; #in OHDRES 2008-2010 also participants wearing dentures were included. Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 7.3.*** *Plaque index in dentate participants 5 years and older in different OHDRES surveys, OHDRES 2008-2010 (N= 2,472), OHDRES 2012-2014 (N= 1,740) and OHDRES 2023-2024 (N= 1,659 and N= 1,324), Belgium*

| Plaque Index | | OHDRES 2008-2010 | | OHDRES 2012-2014 | | OHDRES 2023-2024 | |
|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD |
| **GENDER** | Male | 0.7 | 0.8 | 0.8 | 0.9 | 0.8 | 0.7 |
| | Female | 0.6 | 0.7 | 0.67 | 0.7 | 0.7 | 0.7 |
| **AGE GROUP** | 5-7 | 0.3 | 0.6 | 0.6 | 0.7 | 0.5 | 0.6 |
| | 8-11 | - | - | - | - | 0.8 | 0.7 |
| | 12-14 | 0.5 | 0.5 | 0.4 | 0.6 | 0.8 | 0.7 |
| | 15-24 | 0.4 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 |
| | 25-34 | 0.6 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 |
| | 35-44 | 0.6 | 0.7 | 0.7 | 0.9 | 0.6 | 0.6 |
| | 45-54 | 0.7 | 0.7 | 0.7 | 0.8 | 0.6 | 0.7 |
| | 55-64 | 0.7 | 0.7 | 0.8 | 0.9 | 0.7 | 0.7 |
| | 65-74 | 0.9 | 0.8 | 0.8 | 0.9 | 0.9 | 0.8 |
| | ≥75 | 1.4 | 0.9 | 0.7 | 0.8 | 1.2 | 0.9 |
| **REGION** | Flemish Region | 0.6 | 0.8 | 0.6 | 0.7 | 0.7 | 0.8 |
| | Brussels-Capital Region | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.7 |
| | Walloon Region | 0.8 | 0.7 | 1.0 | 0.9 | 0.7 | 0.7 |
| **TOTAL** | Dentate* | | | | | **0.7** | **0.7** |
| **EDUCATION**** | Primary school/no diploma | 0.7 | 0.8 | 1.2 | 1.0 | 0.9 | 0.8 |
| | Lower secondary school | 0.8 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 |
| | Higher secondary school | 0.7 | 0.7 | 0.9 | 0.8 | 0.8 | 0.8 |
| | Higher education | 0.6 | 0.6 | 0.5 | 0.7 | 0.6 | 0.6 |
| **TOTAL** | Dentate* | **0.7** | **0.7** | **0.7** | **0.8** | **0.7** | **0.7** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; SD = standard deviation;*
**participant with at least one natural tooth;*
***education: only ≥ 25-year-olds for OHDRES 2008-2010 and 2012-2014, only non-students for OHDRES 2023-2024.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

In contrast with reported oral hygiene practices, the plaque index did not evolve significantly across the different surveys, as shown in table 7.3. All data sets show a gradient according to educational achievement. In the present survey, the difference between age groups is less striking than in the previous surveys, as is the difference between regions.

## 7.3. Periodontal status

The periodontal status of the participants was assessed based on the distribution of the highest registered **DPSI** in the mouth and this according to the criteria described in Chapter 6. Figure 7.1 presents the results for the different survey years.

Comparison with the previous data collection rounds shows that the situation recorded for the OHDRES 2023-2024 did not change much compared to the OHDRES 2008-2010 survey. For the OHDRES 2012-2014, the histogram shows higher frequencies at category 0. However, since the original data of previous surveys are no longer available, no statistical analysis could be performed.

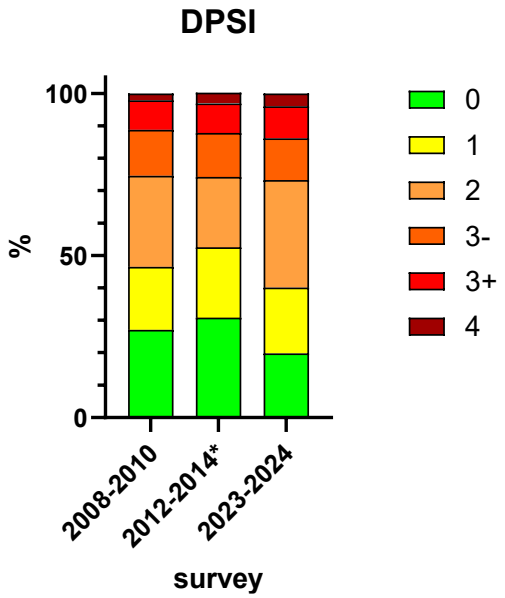


***Figure 7.1**: Distribution of highest DPSI-score per dentate participant 15 years and older in different OHDRES surveys; OHDRES 2008-2010 (N= 2,306), OHDRES 2012-2014 (N= 1,343) and OHDRES 2023-2024 (N= 1,488 and N= 1,200), Belgium; only dentate participants included; * = percentage of non-missing data, recalculated as original database is no longer available.*

## 7.4. Dental status

The dental status of the participants was assessed by determining the number of caries-free participants and mean **DMFT scores**, according to the criteria described by the World Health Organization (WHO). For more details we refer to Chapter 5.

The mean DMFT scores reflect the presence of caries or its sequels in the permanent dentition (Table 7.4). Overall, the mean DMFT score decreased from 10.4 (±8.4) in the OHDRES 2008-2010 survey to 9.6 (±8.1) in the OHDRES 2012-2014 survey and 8.3 (±7.2) in the most recent survey. The high DMFT scores in older age groups decreased as well. Participants aged 45 years and older had a gradual decrease in DMFT score between all three surveys, indicating a downward trend. A downward trend was also observed in the Flemish and Brussels-Capital Regions. The gradient according to educational achievement remains considerable in all cohorts.

As in previous surveys, the main component of the DMFT-index was the F component, reflecting restorative care. In older age groups (above 55 years of age), the M-component rises considerably. The changes in D-component remained well within the limits of the variability, evolving around 1.0.

The presence of frank open cavities and the proportion of **caries-free** individuals are more relevant indicators for overall oral health. Over the different survey years there was an overall increase in caries-free individuals (Table 7.5), from 11.1% in the OHDRES 2008-2010 survey to 18.1% in OHDRES 2023-2024; however, this did not yield a significant regression analysis (r2=0.95, p=0.15).

***Table 7.4.*** *DMFT index in dentate participants 5/12 years and older in different OHDRES surveys, OHDRES 2008-2010 (N= 2,472), OHDRES 2012-2014 (N= 1,820) and OHDRES 2023-2024# (N= 1,573 and N= 1,262), Belgium*

| DMFT index | | OHDRES 2008-2010 | | OHDRES 2012-2014 | | OHDRES 2023-2024# | |
|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD |
| **GENDER** | Male | 9.6 | 8.2 | 9.2 | 7.8 | 8.3 | 7.1 |
| | Female | 11.1 | 8.5 | 9.9 | 8.3 | 8.8 | 7.3 |
| **AGE GROUP** | 5-7 | 0.3 | 0.9 | 0.3 | 0.7 | - | - |
| | 12-14 | 1.3 | 0.3 | 0.7 | 1.8 | 1.5 | 2.9 |
| | 15-24 | 3.7 | 4.8 | 3.2 | 3.7 | 2.4 | 3.6 |
| | 25-34 | 6.6 | 5.9 | 6.5 | 4.7 | 5.4 | 5.1 |
| | 35-44 | 10.3 | 6.0 | 10.4 | 6.2 | 8.0 | 5.8 |
| | 45-54 | 12.6 | 6.5 | 13.9 | 6.1 | 10.1 | 6.1 |
| | 55-64 | 14.7 | 7.1 | 16.5 | 7.3 | 12.8 | 6.5 |
| | 65-74 | 17.3 | 7.5 | 15.4 | 7.3 | 13.7 | 7.1 |
| | ≥75 | 19.3 | 8.1 | 16.8 | 8.2 | 12.9 | 7.7 |
| **REGION** | Flemish Region | 11.3 | 8.7 | 9.8 | 8.0 | 8.9 | 7.2 |
| | Brussels-Capital Region | 8.0 | 8.0 | 7.9 | 7.5 | 7.4 | 6.7 |
| | Walloon Region | 9.8 | 7.6 | 9.7 | 8.3 | 8.3 | 7.2 |
| **TOTAL** | Dentate* | | | | | **8.6** | **7.2** |
| **EDUCATION**** | Primary school/no diploma | 15.8 | 8.4 | 15.4 | 9.4 | 12.7 | 7.0 |
| | Lower secondary school | 12.9 | 7.8 | 14.8 | 7.2 | 10.9 | 7.2 |
| | Higher secondary school | 13.9 | 6.2 | 12.0 | 7.1 | 10.7 | 6.9 |
| | Higher education | 11.8 | 5.8 | 10.0 | 6.7 | 9.2 | 6.5 |
| **TOTAL** | Dentate* | **10.4** | **8.4** | **9.6** | **8.1** | **8.7** | **7.2** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N= number, SD = standard deviation; #12 years and older; *participant with at least one natural tooth; ** education: only ≥ 35-year-olds for OHDRES 2008-2010, ≥25-year-olds for OHDRES 2012-2014, non-students for OHDRES 2023-2024. Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 7.5.*** *Frequency of dentate caries-free participants 5 years and older (i.e. free from cavitated caries lesions, missing and filled teeth (dmft/DMFT score = 0) in different OHDRES surveys, OHDRES 2008-2010 (N= 2,472), OHDRES 2012-2014 (N= 1,820) and OHDRES 2023-2024 (N= 1,686 and N= 1,348), Belgium*

| Caries-free | | OHDRES 2008-2010 | | OHDRES 2012-2014 | | OHDRES 2023-2024 | |
|---|---|---|---|---|---|---|---|
| | | N | % | N | % | N | % |
| **GENDER** | Male | 122 | 11.9 | 102 | 14.5 | 130 | 19.6 |
| | Female | 136 | 10.5 | 113 | 14.9 | 113 | 16.6 |
| **AGE GROUP** | 5-7 | 41 | 64.4 | 27 | 37.5 | 19 | 43.4 |
| | 8-11 | - | - | - | - | 46 | 50.7 |
| | 12-14 | 41 | 48.5 | 47 | 70.8 | 45 | 61.3 |
| | 15-24 | 79 | 29.0 | 50 | 28.9 | 68 | 45.8 |
| | 25-34 | 15 | 9.8 | 28 | 9.8 | 27 | 12.0 |
| | 35-44 | 8 | 2.9 | 12 | 4.6 | 11 | 6.1 |
| | 45-54 | 6 | 0.7 | 13 | 2.4 | 11 | 6.0 |
| | 55-64 | 8 | 0.9 | 4 | 2.1 | 4 | 1.1 |
| | 65-74 | 2 | 0.5 | 3 | 1.5 | 6 | 2.1 |
| | ≥75 | 10 | 2.1 | 2 2 | 2.1 | 6 | 3.9 |
| **REGION** | Flemish Region | 137 | 10.3 | 89 | 14.5 | 148 | 16.7 |
| | Brussels-Capital Region | 21 | 16.7 | 65 | 14.0 | 18 | 20.1 |
| | Walloon Region | 100 | 9.8 | 61 | 15.3 | 77 | 20.2 |
| **TOTAL** | Dentate* | | | | | **243** | **18.1** |
| **EDUCATION**** | Primary school/ no diploma | 122 | 24.1 | 7 | 8.2 | 1 | 4.7 |
| | Lower secondary school | 43 | 8.5 | 8 | 1.5 | 6 | 5.1 |
| | Higher secondary school | 45 | 7.5 | 18 | 3.7 | 12 | 4.8 |
| | Higher education | 22 | 5.3 | 33 | 5.5 | 29 | 7.2 |
| **TOTAL** | Dentate* | **258** | **11.1** | **215** | **14.7** | **243** | **18.1** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage; *participant with at least one natural tooth;*
*** education: only ≥ 25-year-olds for OHDRES 2008-2010 and 2012-2014, only non-students for OHDRES 2023-2024. Results to be interpreted with caution if the number of participants is lower than 100.*

**Erosive tooth wear** was assessed in a different way compared to previous surveys. However, when considering the outcome variable ‘any form of hard tissue loss’ which was recorded in the OHDRES 2008-2010 and OHDRES 2023-2024 as an acceptable equivalent, a net increase in prevalence can be observed. A mean prevalence of 34.7% and 33.9% respectively was recorded in the previous surveys, whereas in the present survey 44.2% of participants showed signs of tooth wear. It is important to note that early signs of tooth wear limited to the enamel surface were not recorded in any of the OHDRES editions. Tooth wear was only recorded when dentine exposure was present. An age effect was observed in all 3 surveys, with lowest prevalences in the 12-14 years age group (from 1.7% in OHDRES 2008-2010 over 8.7% in OHDRES 2012-2014 to 12.9% in the most recent survey) to highest scores in participants aged 75 years and older (39.3%, 53.9%, and 62.9% respectively).

The risk of dental erosion was in earlier surveys determined based on self-reported consumption of beverages and foods (both frequency and time of consumption). A participant was considered at high risk of dental erosion when acidic beverages and foods were consumed between meals. In the most recent survey, due to logistical reasons, this item was recorded and encoded in a different way. Although information is available on the frequency of consumption of soft drinks, the moment of consumption was not recorded. In the OHDRES 2023-2024, daily consumption of soft drinks amounted to 18.5%, which is much lower than the number recorded in the OHDRES 2008-2010 (34.0%).

The number of teeth with **exposed roots** and carious and filled root surfaces was recorded during the clinical oral examination in participants 15 years old and above. The percentage of participants with exposed root surfaces was not mentioned in the OHDRES 2008-2010 survey and amounted to 38.7% in the OHDRES 2012-2014 and 56.3% in the most recent survey. In 11.4% of participants in the OHDRES 2012-2014 and 14.7% of participants in the OHDRES 2023-2024, exposed root surfaces with signs of caries or fillings were present at the moment of the oral examination. Both data show a clear rising trend.

The mean number of exposed roots per individual amounted to1.9 (±3.3) in the OHDRES 2008-2010 survey, to 1.9 (±3.4) in the OHDRES 2012-2014 survey and increased to 3.5 (±4.7) in the most recent survey. The longer retention of natural teeth may be a reason thereof. However, the mean number is fraught with a high standard deviation. The mean number of carious or restored root surfaces did also increase in the same proportion (from 0.3 (±1.1) in the OHDRES 2008-2010 and 0.3 (±1.0) in the OHDRES 2012-2014 to 0.5 (±1.5) in the OHDRES 2023-2024).

The mean **number of permanent teeth** present in the mouth can serve as an indirect indicator for global oral health. To this end, the dentition was considered to be formed by 32 teeth. No striking changes were detected between the three data sets and this for the majority of the subgroups compared or available (Table 7.6). The average number of permanent teeth decreases with increasing age in all survey years and increases with level of education. However, it must be noted that different age groups were used in the consecutive survey years. Therefore, comparisons need to be done with caution.

***Table 7.6.*** *Mean number of permanent teeth in participants in different OHDRES surveys, OHDRES 2008-2010# (N= 2,016), OHDRES 2012-2014 (N= 1,875) and OHDRES 2023-2024# (N= 1,573 and N= 1,262), Belgium*

| Mean number of permanent teeth | | OHDRES 2008-2010# | | OHDRES 2012-2014 | | OHDRES 2023-2024# | |
|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | Mean | SD |
| **GENDER** | Male | 22.8 | 7.5 | 22.8 | 8.5 | 25.1 | 7.0 |
| | Female | 22.9 | 7.7 | 22.1 | 9.1 | 24.5 | 7.1 |
| **AGE GROUP** | 5-7 | - | - | 5.4 | 5.5 | - | - |
| | 12-14 | - | - | 25.0 | 5.1 | 26.5 | 3.7 |
| | 15-24 | - | - | 28.1 | 1.8 | 28.5 | 1.6 |
| | 25-34 | 28.7 | 2.9 | 28.5 | 3.5 | 28.0 | 3.9 |
| | 35-44 | 27.2 | 4.4 | 27.21 | 4.2 | 27.4 | 3.8 |
| | 45-54 | 24.5 | 5.7 | 24.0 | 6.8 | 26.8 | 4.5 |
| | 55-64 | 21.3 | 7.2 | 18.6 | 9.1 | 23.4 | 7.0 |
| | 65-74 | 18.7 | 8.5 | 16.5 | 9.5 | 20.1 | 8.5 |
| | ≥75 | 16.2 | 9.1 | 14.5 | 10.4 | 15.3 | 9.3 |
| **REGION** | Flemish Region | 21.8 | 8.0 | 21.8 | 9.0 | 24.2 | 7.4 |
| | Brussels-Capital Region | 24.0 | 7.6 | 23.3 | 9.0 | 26.9 | 5.1 |
| | Walloon Region | 24.2 | 6.5 | 23.5 | 8.3 | 25.4 | 6.8 |
| **TOTAL** | | | | | | **24.8** | **7.1** |
| **EDUCATION*** | Primary school/no diploma | 16.1 | 9.5 | 15.7 | 10.4 | 15.8 | 10.4 |
| | Lower secondary school | 20.3 | 7.9 | 19.3 | 9.6 | 18.9 | 10.1 |
| | Higher secondary school | 23.1 | 7.0 | 24.0 | 7.6 | 23.9 | 7.2 |
| | Higher education | 25.7 | 6.5 | 26.0 | 5.9 | 26.0 | 5.9 |
| **TOTAL** | | **22.8** | **7.6** | **22.4** | **8.8** | **24.6** | **7.3** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N= number, SD = standard deviation;*
*#only 25 years and older included in OHDRES 2008-2010 & 12 years and older included in OHDRES 2023-2024;*
** education: only ≥ 25-year-olds for OHDRES 2008-2010 and 2012-2014, only non-students for OHDRES 2023-2024.*
*Results to be interpreted with caution if the number of participants is lower than 100.*

## 7.5. Prosthodontic and functional status

The presence of a **removable partial denture** was recorded for all participants. Table 7.7 shows the distribution according to the selected background variables in the relevant age groups. In adults aged 25 years and over, the use of a (partial) removable denture decreased from 19.9% to 8.0% over the three surveys. This yielded a nearly significant regression line (r2=0.992, p=0.056).

Another remarkable fact is that the application of implant-supported fixed or removable prostheses has increased considerably with 8.6% of participants in the OHDRES 2023-24 having at least 1 implant (data not shown in table). This treatment type is used mainly by the higher educated part of the sample. As data were not collected in the OHDRES 2008-2010 survey and numbers were low in the OHDRES 2012-2014 (2.9%), further analysis was not undertaken.

**Edentulousness** (both upper and lower jaw) was recorded for all participants aged 35 years and older. The percentage of completely edentulous individuals decreased from 7.6% in OHDRES 2008-2010 to 4.0% in OHDRES 2012-2014 and remained unchanged in the most recent survey (3.9%). The percentage of edentulous participants aged 55-64 years increased significantly between the OHDRES 2008-2010 and 2012-2014 surveys (6.0% to 7.4%). In the OHDRES 2023-2024 survey, completely edentulous participants were mainly found in the age group of 74 years and above (13.5%). The number of edentulous adult participants not wearing complete dentures remains a minority with only 2 individuals in the present sample.

***Table 7.7.*** *Number of participants 15 years and older with at least one bridge or removable partial prosthesis in different OHDRES surveys, OHDRES 2008-2010 (N= 2,306), OHDRES 2012-2014 (N= 1,657) and OHDRES 2023-2024 (N= 1,488 and N= 1,245), Belgium*

| Bridge or partial prosthesis | | OHDRES 2008-2010 | | | | OHDRES 2012-2014 | | | | OHDRES 2023-2024 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Bridge | | Partial prosthesis | | Bridge | | Partial prosthesis | | Bridge | | Partial prosthesis | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 82 | 7.4 | 302 | 17.2 | 47 | 4.5 | 131 | 13.3 | 88 | 7.2 | 78 | 6.6 |
| | Female | 142 | 13.6 | 463 | 22.2 | 61 | 6.9 | 178 | 17.5 | 108 | 10.2 | 88 | 8.7 |
| **AGE GROUP** | 15-24 | 0 | 0.0 | 1 | 0.2 | 2 | 0.1 | 1 | 0.2 | 0 | 0.0 | 0 | 0.0 |
| | 25-34 | 5 | 4.1 | 5 | 1.8 | 1 | 0.1 | 3 | 2.0 | 4 | 1.9 | 1 | 0.8 |
| | 35-44 | 24 | 6.2 | 18 | 5.1 | 8 | 2.3 | 16 | 3.3 | 12 | 5.4 | 10 | 4.1 |
| | 45-54 | 443 | 12.6 | 108 | 22.7 | 19 | 7.5 | 49 | 18.9 | 31 | 10.8 | 11 | 3.5 |
| | 55-64 | 75 | 27.1 | 178 | 30.7 | 32 | 14.5 | 96 | 41.4 | 52 | 15.1 | 32 | 11.0 |
| | 65-74 | 43 | 20.9 | 209 | 55.1 | 31 | 17.8 | 85 | 46.3 | 67 | 21.6 | 56 | 19.6 |
| | ≥75 | 33 | 17.8 | 246 | 61.6 | 14 | 15.2 | 58 | 49.6 | 30 | 22.4 | 56 | 32.6 |
| **REGION** | Flemish Region | 130 | 9.1 | 498 | 23.6 | 47 | 6.9 | 146 | 18.0 | 132 | 9.2 | 108 | 8.6 |
| | Brussels-Capital Region | 12 | 9.4 | 23 | 15.6 | 28 | 4.6 | 58 | 10.7 | 17 | 7.4 | 11 | 4.0 |
| | Walloon Region | 82 | 15.7 | 244 | 15.3 | 33 | 3.6 | 105 | 11.7 | 47 | 8.4 | 47 | 7.2 |
| **TOTAL** | Dentate* | | | | | | | | | **196** | **8.7** | **166** | **7.6** |
| **EDUCATION** | Primary school/no diploma | 24 | 5.2 | 239 | 29.6 | 10 | 5.6 | 68 | 48.4 | 5 | 18.2 | 7 | 17.1 |
| | Lower secondary school | 45 | 15.8 | 205 | 33.1 | 17 | 6.3 | 74 | 30.3 | 14 | 9.1 | 27 | 20.3 |
| | Higher secondary school | 60 | 10.6 | 190 | 19.0 | 30 | 6.7 | 103 | 10.7 | 52 | 12.3 | 47 | 12.4 |
| | Higher education | 90 | 13.6 | 104 | 9.8 | 46 | 9.6 | 61 | 11.7 | 64 | 11.0 | 32 | 5.5 |
| **SOCIAL STATUS** | WIGW | - | - | - | - | 55 | 12.2 | 186 | 37.6- | - | - | - | - |
| | OMNIO | - | - | - | - | 2 | 0.5 | 8 | 8.3 | - | - | - | - |
| | VT-BIM | - | - | - | - | - | - | - | - | 17 | 6.4 | 31 | 12.0 |
| **TOTAL** | Dentate* | **224** | **10.9** | **765** | **19.9** | **108** | **5.7** | **309** | **15.3** | **159** | **8.3** | **142** | **8.0** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage; *participant with at least one natural tooth, only ≥35 years ;*
** social statute: WIGW/OMNIO in OHDRES 2010-2012 and VT-BIM in OHDRES 2023-2024;*
*Results to be interpreted with caution if the number of participants is lower than 100.*

***Table 7.8.*** *Number of participants 15 years and older wearing removable complete prostheses in one or two jaws in different OHDRES surveys, OHDRES 2008-2010 (N= 2,306), OHDRES 2012-2014 (N= 1,657) and OHDRES 2023-2024# (N= 1,224 and N= 993), Belgium*

| Complete prosthesis | | OHDRES 2008-2010 | | | | OHDRES 2012-2014 | | | | OHDRES 2023-2024# | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 full denture | | 2 full dentures | | 1 full denture | | 2 full dentures | | 1 full denture | | 2 full dentures | |
| | | N | % | N | % | N | % | N | % | N | % | N | % |
| **GENDER** | Male | 202 | 10.7 | 104 | 5.6 | 63 | 5.8 | 32 | 2.8 | 59 | 8.2 | 26 | 3.8 |
| | Female | 312 | 13.6 | 179 | 7.2 | 90 | 9.5 | 30 | 2.8 | 64 | 10.9 | 23 | 3.9 |
| **AGE GROUP** | 15-24 | 1 | 0.2 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | - | - | - | - |
| | 25-34 | 3 | 0.7 | 2 | 0.4 | 1 | 0.9 | 0 | 0.0 | - | - | - | - |
| | 35-44 | 6 | 2.2 | 3 | 0.3 | 4 | 0.8 | 2 | 0.6 | 2 | 0.6 | 0 | 0.0 |
| | 45-54 | 57 | 9.6 | 20 | 4.0 | 20 | 0.7 | 4 | 1.5 | 5 | 1.1 | 3 | 0.9 |
| | 55-64 | 97 | 17.8 | 36 | 6.0 | 47 | 21.7 | 20 | 6.9 | 22 | 7.9 | 7 | 2.1 |
| | 65-74 | 150 | 36.1 | 88 | 21.6 | 47 | 23.5 | 17 | 9.3 | 44 | 15.5 | 16 | 5.1 |
| | ≥75 | 196 | 46.5 | 134 | 30.0 | 33 | 32.3 | 18 | 16.8 | 50 | 30.5 | 23 | 14.8 |
| **REGION** | Flemish Region | 350 | 15.5 | 196 | 8.3 | 71 | 7.2 | 29 | 2.3 | 93 | 12.0 | 36 | 4.9 |
| | Brussels-Capital Region | 12 | 7.4 | 6 | 3.7 | 26 | 6.4 | 7 | 2.9 | 3 | 3,0 | 1 | 0.8 |
| | Walloon Region | 152 | 7.8 | 81 | 3.9 | 56 | 6.2 | 26 | 0.6 | 27 | 6.8 | 12 | 2.7 |
| **TOTAL** | | | | | | | | | | **123** | **9.6** | **49** | **3.8** |
| **EDUCATION** | Primary school/no diploma | 195 | 23.7 | 112 | 21.8 | 34 | 29.5 | 13 | 10.9 | 13 | 42.1 | 8 | 23.2 |
| | Lower secondary school | 138 | 19.0 | 77 | 11.0 | 45 | 19.5 | 22 | 2.5 | 29 | 24.6 | 13 | 12.4 |
| | Higher secondary school | 117 | 10.4 | 67 | 5.9 | 46 | 8.2 | 17 | 0.7 | 38 | 11.8 | 10 | 2.4 |
| | Higher education | 43 | 3.6 | 17 | 1.2 | 26 | 3.8 | 9 | 2.8 | 14 | 3.3 | 6 | 1.7 |
| **SOCIAL STATUS** | WIGW | - | - | - | - | 103 | 21.8 | 44 | 9.3 | - | - | - | - |
| | OMNIO | - | - | - | - | 3 | 2.9 | 2 | 2.2 | - | - | - | - |
| | VT-BIM | - | - | - | - | - | - | - | - | 27 | 21.2 | 13 | 9.7 |
| **TOTAL** | | **514** | **11.3** | **283** | **6.5** | **153** | **7.6** | **62** | **2.8** | **110** | **10.6** | **43** | **4.1** |

*Source: OHDRES 2008-2010, OHDRES 2012-2014 and OHDRES 2023-2024; N = number of participants; % = percentage;*
** social statute: WIGW/OMNIO in OHDRES 2010-2012 and VT-BIM in OHDRES 2023-2024; # available only for ages 35 and above in OHDRES 2023-2024*
*Results to be interpreted with caution if the number of participants is lower than 100.*

In this report, we used the following definition for functional occlusion: participants with at least 20 natural teeth (at least 10 in the upper jaw and at least 10 in the lower jaw) and at least 2 functional occlusal contacts on each side (right and left). The percentages of participants aged 25 years and older with a functional occlusion without wearing a removable prosthesis increased from 68.5% (OHDRES 2008-2010), over 69.5% (OHDRES 2012-2014) to 77.7% in the OHDRES 2023-2024 survey; due to the limited possibilities of statistical analysis, this trend could not be confirmed by a regression analysis.

The mean number of functional occlusal contacts rose from 5.5 (±3.3) (in the OHDRES 2008-2010 to 5.8 (±3.2) in the OHDRES 2012-2014 and 6.8 (±3.0) in the OHDRES 2023-2024. This resulted in a nearly significant correlation coefficient (0.993, p= 0.053).

## 7.6. Complaints related to the face and the oral cavity

Using the questionnaire, participants were asked about the presence of pain or discomfort at the level of the face, mouth and/or teeth in the past 4 weeks. The OHDRES 2023-2024 survey shows that overall, 34.3% of participants reported experiencing at least one oral health related complaint. This is less than in both previous surveys. The relative importance of most frequently mentioned complaints was fairly constant : bleeding gums was ranked first, with a reported prevalence of 19.4% (versus 24.1% in OHDRES 2008-2010 and 31.7% in OHDRES 2012-2014 surveys), second came toothache with hot/cold with 12.8% (15.3% in OHDRES 2008-2010 and 21.7% in OHDRES 2012-2014) and other pain or discomfort in the mouth or face (7.8%, being 14.6% in OHDRES 2008-2010 and 14.5% in OHDRES 2012-2014). Moreover, pain in the jaw joint (temporomandibular joint) was mentioned by 6.2 % of participants in the OHDRES 2023-2024, versus 13.2% in the OHDRES 2008-2010 and 10.5% in the OHDRES 2012-2014 survey. Lack of the complete dataset from the previous surveys makes it difficult to underpin this trend with statistical tests.

## 7.7. Dental attendance

Regular visits to the dentist were defined as having at least 3 registered contacts with a dentist in 3 different years in the past 5 years. The percentage of participants regularly attending a dentist was 56.4% in the OHDRES 2008-2010 survey, 54.6% in the OHDRES 2012-2014 and 69.6% in the OHDRES 2023-2024, showing a sharp increase over the past 10 years. Participants with minimally 1 contact over the 5-year reference period amounted to 90.5% in the OHDRES 2008-2010, 80.3% in the OHDRES 2012-2014 and 91.0% in the OHDRES 2023-2024.

# 8. EVALUATION AND RECOMMENDATIONS

This chapter covers the main findings regarding the implementation of the OHDRES 2023–2024 project with a focus on their potential impact on the reported results and recommendations for future data collections concerning the oral health of the Belgian population.

## 8.1. Collaboration with the Contracting Authority

The ICE conducted this study in collaboration with Sciensano, which organized this data collection on the oral health of the Belgian population on behalf of the NIHDI. The study was carried out among participants of the HIS 2023–2024.

Prior to the start of the project a detailed protocol was developed in cooperation with Sciensano. In this protocol the necessary agreements were established regarding the study design and its practical organization. This protocol served as a guideline throughout the implementation of the project.

During the entire duration of the project, regular (bi-weekly) online meetings took place between the ICE and Sciensano's scientific team. Minutes were prepared for each of these meetings.

## 8.2. Challenges and Recommendations

### *8.2.1. Project Timing*

The delay between the approval of the OHDRES 2023–2024 project and the signing of the agreement between Sciensano and ICE resulted in a significant postponement in the recruitment and hiring of the required personnel. This affected the smooth initiation of the project. This issue requires particular attention in future data collections.

Participants for the OHDRES 2023–2024 project were recruited among participants of the HIS 2023–2024, based on the principle of second-phase recruitment. In practice, this meant that the initiation of data collection and the pace of participant enrollment proceeded in parallel. The impact of this was substantial, as the recruitment for the HIS 2023–2024 proceeded more slowly than initially expected. This ultimately affected the duration of the project and the final sample size achieved.

When the HIS 2023–2024 data collection commenced, the digital platform required by ICE for fieldwork planning was not yet operational. The implementation of the necessary digital infrastructure took several months, resulting in a long delay between the HIS interview and the OHDRES screening for early HIS participants.

The procedure to obtain authorization for linking with other existing databases (HIS data, IMA-AIM data) was complex and was therefore initiated at an early stage. The time required to perform the actual linkage was also significant and unpredictable, complicating efficient planning. IMA-AIM could provide the necessary support in this regard.

### *8.2.2. Project Organization and Planning*

The planning of the project required flawless coordination between the work carried out by Statbel interviewers, the follow-up by Sciensano, and the practical contacts and follow-up by the ICE secretariat. The digital application developed for this purpose allowed only limited monitoring, was incomplete, and lacked user-friendliness. Consequently, many aspects had to be followed up manually, requiring significant staffing resources and entailing risks of (avoidable) errors. Integrating all these processes into a single application and allowing sufficient time to thoroughly test the tool is a key point of attention for future data collection rounds.

An external partner was engaged to develop the online application for the training and calibration modules. The development process proved to be highly time-consuming. After project initiation, considerable delays were observed in the responsiveness of the calibration tool when multiple dentists were logged in simultaneously. Optimization of this application is therefore strongly recommended.

### *8.2.3. Fieldwork Execution*

As previously mentioned, the data collection for OHDRES 2023–2024 proceeded at the same pace as participant recruitment for HIS 2023–2024. Given the slower-than-expected recruitment for the HIS, this had repercussions for OHDRES 2023–2024. This not only impacted the duration of the project but also the final sample size achieved. The willingness of HIS participants to also participate in OHDRES 2023–2024 was in line with initial expectations.

Fieldwork further revealed that the current workload in dental practices negatively affected dentists' willingness to perform the oral examination on their own patients. A similar issue was observed regarding the recruitment and availability of ICE-screeners. The significant time investment required to review instructions, complete training, and undergo the calibration test also played a role, despite appreciated efforts by the NIHDI and professional associations to inform and motivate dentists to participate. Without the linkage of participation to accreditation requirements for general dentists, participation would have been significantly lower. Alternative approaches should therefore be considered for future data collection rounds. The potential involvement of dental hygienists in the data collection process should be explored.

The absence of both a structure and a culture of 'public health' concerning oral health in Belgium means that every data collection campaign must start from scratch, leading to the aforementioned logistical challenges.

### *8.2.4. Methodology*

Unlike the previous OHDRES study, the assessment of oral health-related behaviors was now integrated into the HIS 2023–2024 face-to-face interview, conducted by Statbel interviewers. This was a sound choice, not only because it significantly simplified the task for the participating dentists, but also because it ensured that such data were collected for all HIS 2023–2024 participants, resulting in a sample much larger than the OHDRES 2023–2024 component alone.

The methodology applied for the clinical examination ensured maximal comparability with previous data collections as well as international reporting. Naturally, there are limitations inherent to the selected indicators. For example, since no imaging was used to record the extent of oral health deterioration, the results likely underestimate the actual condition. However, this is common in most epidemiological studies and must be considered when interpreting the data.

The online entry of clinical oral health examination data by the dentists represented a significant added value, saving time and reducing data entry errors. This approach should certainly be retained in future data collection efforts.

The training and calibration process placed considerable demands on the participating dentists. Since performing an oral health examination in the context of an epidemiological study differs from a standard clinical assessment, the application of training and calibration remains highly recommended. The training and calibration modules consisted of a set of clinical images for scoring the different components of the study. Dentists reported difficulty in scoring certain indices due to the limited scope of available images and accompanying information. In the future, alternative calibration methods should be explored, such as using video clips. Further development of individual support for dental investigators could also be considered.

Finally, it should be considered whether involving a fixed team of screeners might not only be more efficient but also improve data quality. This process requires further evaluation and, where needed, adjustments.

#### *8.2.5. Analyzing and Reporting*

The data collected within the framework of the OHDRES 2023–2024 study are extensive and stored in a large database. This enables the exploration of a wide range of topics and research questions. Time and resources will be required to fully exploit this potential.

In addition, it is recommended that data collection on oral health be repeated regularly, as also indicated in strategic objectives 5 and 6 of the WHO Action Plan Oral Health (WHO, 2024).

A critical point of attention is the limited availability period of the linked database on the secured server, which is restricted to a maximum of five years, as stipulated by the decision of the Information Security Committee (ISC). This means that data exploration must be completed within that timeframe.

For the same reason, comparisons with previous data collection rounds are only partially feasible, which is a notable drawback given the considerable efforts involved in generating the data.

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# 10. ANNEXES

## 10.1. Oral Health Section of the HIS

*(other language versions available in Annex 12)*

| Code | English version |
|---|---|
| DH01<br>**Not asked in participants aged <15y* | Do you still have your natural teeth (at least one)?*<br>1. Yes<br>2. No |
| DH02<br>**Not asked if DH01 = 2* | How many times do you normally brush your teeth?<br>1. More than two times per day<br>2. Two times per day<br>3. Once a day<br>4. Less than once a day<br>5. Never |
| DH03<br>**Not asked if DH01 = 2 or if DH02 = 5* | Do you use a fluoridated toothpaste?<br>1. Yes<br>2. No<br>3. I don't know |
| DH04<br>**Not asked if DH01 = 2 or if DH02 = 5* | How many times do you normally clean in between your teeth?<br>1. More than two times per day<br>2. Two times per day<br>3. Once a day<br>4. Less than once a day<br>5. Never |
| DH05<br>**Not asked in participants aged <15y* | Do you have a removable dental prosthesis?<br>1. Yes<br>2. No |
| DH06<br>**Not asked in participants aged <15y or if DH05 = 2* | How many times do you normally brush your removable denture?<br>1. More than two times per day<br>2. Two times per day<br>3. Once a day<br>4. Less than once a day<br>5. Never |
| DH07 | How would you describe the state of your teeth and gums?<br>1. Very good<br>2. Good<br>3. Fair<br>4. Bad<br>5. Very bad |
| DH0801 | During the last four weeks, did you have toothache when consuming hot / cold foods or beverages?<br>1. No pain<br>2. Yes, light<br>3. Yes, moderate<br>4. Yes, heavy<br>5. Yes, extreme |
| DH0802 | During the last four weeks, did you have pain in or around the jaw joints?<br>1. No pain<br>2. Yes, light<br>3. Yes, moderate<br>4. Yes, heavy<br>5. Yes, extreme |

| | |
|---|---|
| DH0803 | During the last four weeks, did you have other pain or discomfort in mouth or face?<br>1. No pain<br>2. Yes, light<br>3. Yes, moderate<br>4. Yes, heavy<br>5. Yes, extreme |
| DH0804 | During the last four weeks, did you have bleeding gums?<br>1. None<br>2. While brushing or eating<br>3. Spontaneous<br>4. Do not know |
| DH09 | Was there any time during the past 12 months when you really needed dental examination or treatment for yourself, but it didn't happen?<br>1. Yes, at least once<br>2. No , this did not happen |
| DH10<br>**Not asked if DH09 = 2* | What was the main reason for not having a dental examination or treatment?<br>1. Could not afford to (too expensive or not covered by the mutuality or an insurance)<br>2. Too far to travel or no means of transportation<br>3. There was a waiting list, I couldn't get an appointment<br>4. Could not take time because of work, care for children or for others<br>5. I have fear of dentists<br>6. Wanted to wait and see if problem got better on its own<br>7. Didn't know any good dentist<br>8. Other reasons |
| | **The next set of questions is about visits to dentists, orthodontists or other dental care specialists.** |
| DC01 | When was the last time you visited a dentist?<br>1. Less than 6 months ago<br>2. 6 months ago or longer, but less than 12 months ago<br>3. 12 months ago or longer<br>4. Never<br>5. Don't know |
| DC02<br>**Not asked if DC01 = 1 or 2* | If your last visit was longer than 12 months ago, what is the reason?<br>1. Could not afford to (too expensive or not covered by the mutuality or an insurance)<br>2. Too far to travel or no means of transportation<br>3. There was a waiting list, I couldn't get an appointment<br>4. Could not take time because of work, care for children or for others<br>5. I have fear of dentists<br>6. Wanted to wait and see if problem got better on its own<br>7. Didn't know any good dentist<br>8. I had no complaints<br>9. Previous negative experience with dentist<br>10. I am ashamed of my mouth |

## 10.2. Clinical examination form

*(other language versions available on last 2 pages of annex 10 'illustrated guidelines clinical examination')*

INAMI

**ORAL HEALTH SURVEY, BELGIUM, 2023**
**CLINICAL EXAMINATION FORM**

**1. IDENTIFICATION DATA**

**HIS-number**
|__| - |_0_||__||__||__| - |_0_||__||__| - |_0_||__| - |_0_||__| (1)

**Postal code** ☐☐☐☐ (2)

**Dentist code** ☐☐☐ (3)

**Date of birth** ☐☐ ☐☐ ☐☐☐☐ (4a)
d d m m y y y y

**Gender** ☐ (4b)
(1=man, 2=woman, 3=other)

**Date of examination** ☐☐ ☐☐ ☐☐☐☐ (5)
d d m m y y y y

*Place an X or write a score in the box next to your choice*
*Eg.* ☒ *or* 3

**Was the participant examined?**

(6a) ☐ Yes (6b) ☐ No, refusal (6c) ☐ No, absent (6d) ☐ No, illness (6e) ☐ No, other reasons

**Reason of refusal:** (6a1) ☐ No interest (6a2) ☐ No time (6a3) ☐ Age (6a4) ☐ Impossible due to mental condition

**2. ANTERIOR DENTO-FACIAL ANOMALIES (age ≥ 12 years)**

SPACE

(7a) ☐ No crowding

(7b) ☐ Crowding in two segments (> 2 mm)

(7c) ☐ Crowding in one segment (> 2 mm)

(7d) ☐ Not applicable (na)

HORIZONTAL MALOCCLUSION

(8a) ☐ No

(8b) ☐ Anterior maxillary overjet (≥ 6 mm)

(8c) ☐ Anterior mandibular overjet (> 0 mm)

(8d) ☐ Not applicable (na)

VERTICAL MALOCCLUSION

(9a) ☐ No

(9b) ☐ Anterior overbite (≥ 5 mm)

(9c) ☐ Anterior open bite (> 0 mm)

(9d) ☐ Not applicable (na)

Segment = group incisor-canine (superior or inferior)

**3. PLAQUE INDEX (all ages)**

Selected teeth

| | | | | |
|---|---|---|---|---|
| | 55 16 | 52 12 | 64 24 | |
| (10- | | | | 12) |
| (13- | | | | 15) |
| | 44 84 | 32 72 | 36 75 | |

0 = No plaque (a)
1 = Plaque only detectable by probing (b)
2 = Plaque visible by naked eyes (c)
3 = Abundance of plaque (d)
X = Missing tooth (e)

**4. DUTCH PERIODONTAL SCREENING INDEX (DPSI) (age ≥ 15 years)**

| DPSI | SEXTANT Right | Central | Left | |
|---|---|---|---|---|
| MAX | | | | (16-18) |
| MAND | | | | (19-21) |

0 = Sound (a)
1 = Bleeding on probing (≤ 3 mm) (b)
2 = Calculus/overhanging filling (≤ 3 mm) (c)
3⁻ = Pocket 4-5 mm without gingival recession (d)
3⁺ = Pocket 4-5 mm with gingival recession (e)
4 = Pocket ≥ 6 mm (f)
/ = Not applicable (g)

**5. TOOTH WEAR ON INCISORS AND FIRST MOLARS BY SEXTANT (age ≥ 6 years)**

| Tooth wear | Right | Central | Left | |
|---|---|---|---|---|
| Max | | | | (22-24) |
| Mand | | | | (25-27) |

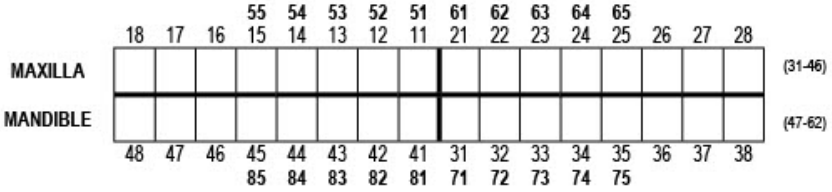
0 = no wear or initial loss of surface texture (a)
1= distinct defect, hard tissue loss with exposure of dentine (b)
/ = Not applicable (c)

**6. HYPOMINERALISATION OF FIRST MOLARS (age ≥ 6 years)**

| | No | Yes | NA | |
|---|---|---|---|---|
| MIH | | | | (28-30) |

No= no change in the colour and translucency of the enamel (a)
Yes= well-defined white, creamy or yellow-brownish opacities without or with post-eruptive breakdown (b)
/ = Not applicable (c)

**7. TOOTH STATUS (all ages)**




| Tooth Status | Score for permanent teeth | Score for deciduous teeth |
|---|---|---|
| Sound | 0 | a |
| Decayed | 1 | b |
| Restoration, with caries | 2 | c |
| Restoration, no decay | 3 | d |
| Missing due to caries | 4 | e |
| Missing for other reasons | 5 | n |
| Fissure sealant | 6 | f |
| Bridge, abutment, crown or veneer | 7 | g |
| Unerupted tooth | 8 | n |
| Trauma (fracture) | 9 | t |
| Not recorded | / | / |

ROOTS:

Number of teeth with exposed roots ☐☐ (63)

Number of teeth with exposed roots with decay or filling due to caries ☐☐ (64)

Number of implants ☐☐ (65)

**8. PROSTHODONTIC STATUS (all ages)**

MAXILLA

(66a) ☐ No prosthesis
(66b) ☐ More than one bridge
(66c) ☐ One bridge
(66d) ☐ Only a partial denture
(66e) ☐ Both bridge(s) and partial denture
(66f) ☐ Removable full denture

MANDIBLE

(67a) ☐ No prosthesis
(67b) ☐ More than one bridge
(67c) ☐ One bridge
(67d) ☐ Only a partial denture
(67e) ☐ Both bridge(s) and partial denture
(67f) ☐ Removable full denture

TYPE OF PROSTHESIS

MAXILLA

(68a) ☐ Resin based
(68b) ☐ Metal based
(68c) ☐ Not applicable

MANDIBLE

(69a) ☐ Resin based
(69b) ☐ Metal based
(69c) ☐ Not applicable

**9. FUNCTIONAL OCCLUSAL CONTACTS (age ≥ 15 years)**

| | Right | Left |
|---|---|---|
| **Number of contacts between natural occluding tooth pairs (without eventual removable partial denture)** | | |

(70-71)

| | Right | Left |
|---|---|---|
| **Number of contacts between natural and/or teeth of the partial denture (if the person wears one)** | | |

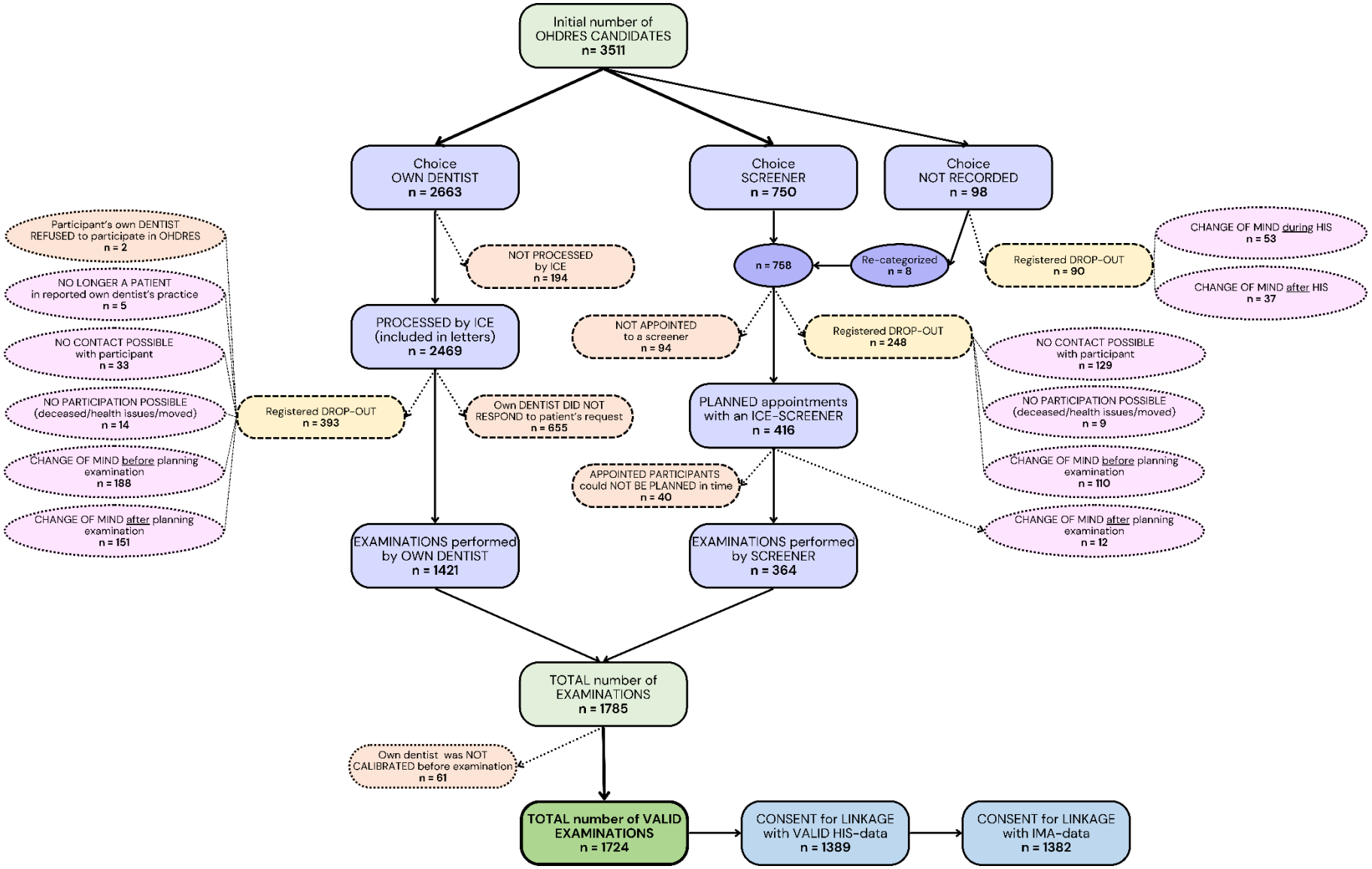
(72-73)

0, 1, 2, 3, 4 or 5 = number of contacts

/ = na (person is younger than 15 years)

/ = na (person is younger than 15 years or does not wear partial denture)

## 10.3. Flowchart OHDRES 2023-2024 sample



## 10.4. List of other annexes

(see separate document ‘annex file’)

List of annexes, with indication of language version in which the document is available:
NL = Dutch; FR = French; ENG = English; DEU = German

1. Study protocol (ENG)
2. Invitation letter participant (NL, FR)
3. Introductory leaflet participant (NL, FR)
4. Interview guide for Statbel interviewers (NL, FR)
5. Informative letter dentist (NL, FR)
6. Invitation letter dentist (NL, FR, DEU)
7. Informed consent forms (NL, FR, ENG, DEU)
8. Training and calibration instructions (NL, FR, ENG)
9. Compensation application form dentist (NL, FR)
10. Illustrated guidelines for the clinical examination (NL, FR, ENG)
11. Information Security Committee (ISC) deliberation (NL)
12. Oral health section HIS 2023-2024 (NL, FR, ENG, DEU)