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The Dental Hygienist in Portugal and Italy: Differences in the professional profile with a focus on satisfaction

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RESUMO

Introdução: Um higienista oral (HO), como recomendado pela Organização Mundial de Saúde (OMS), pode desempenhar um papel crucial no desenvolvimento de estratégias preventivas e facilitar os cuidados primários através do seu papel na promoção da saúde oral e na prevenção de doenças. Os cuidados de higiene oral abrangem várias práticas clínicas, tais como exames, tratamentos preventivos e terapêuticos e educação para a saúde oral, que se enquadram no âmbito da prática da profissão.

A grande variedade destas competências reconhecidas e a natureza relativamente nova desta figura profissional conduziram a um quadro muito amplo e pouco claro na Europa.

Reconhece-se que existe uma variação considerável relativamente ao que constitui a prática da higiene oral nos Estados-Membros do EDHF. Existem inúmeras variáveis a considerar no perfil profissional que podem diferir de país para país.

Foi efectuada previamente uma Scoping review (não publicada) para consultar toda a literatura disponível e verificar as evidências relativas aos higienistas orai nos dois países em estudo. Assim, a investigação foi efectuada sobre as caraterísticas relevantes para a definição do perfil profissional: Legislação, Formação académica e Competência. Após a scoping review, concluiu-se que os dois perfis profissionais são, na sua maioria, compatíveis, mas surgiram algumas diferenças fundamentais que justificam um estudo mais aprofundado. Atualmente, não existem estudos que comparem diretamente os perfis profissionais dos higienistas orais nos dois países, sendo igualmente escassa a informação disponível nos diferentes países sobre este assunto. Esta lacuna na literatura científica abre a oportunidade de fornecer dados comparativos originais, úteis tanto para os profissionais como para as instituições de saúde e académicas de Portugal e Itália.

Objetivos: Este estudo pretendeu colmatar a lacuna de informação existente na literatura atual no que respeita à comparação do perfil profissional dos Higienistas Orais em Portugal e Itália, que é inexistente. Foram investigadas as principais caraterísticas que unem e diferenciam os Higienistas Orais entre os dois países, com especial enfoque na satisfação. Para uma visão mais completa e exaustiva, foram acrescentadas algumas novas secções relacionadas com o perfil profissional, nomeadamente: *salário, segurança e proteção, trabalho em equipa, ambiente de trabalho e satisfação.*

Para o efeito, foi elaborado um questionário dirigido aos higienistas dentários dos dois países em análise.

Métodos: O estudo foi desenhado como um estudo observacional, descritivo e transversal. Foi elaborado um questionário com base nos resultados prévios da scoping review, utilizando a plataforma de inquéritos online (Google Forms). O questionário estava disponível em português e italiano e foi dividido em 8 sectores e 172 questões de acordo com o campo a ser analisado.
A validade de conteúdo foi testada com cinco professores de Higiene Oral da Universidade de Lisboa com experiência no desenvolvimento de questionários e a validade facial foi avaliada com 7 estudantes de mestrado em Higiene Oral.
A população do estudo incluiu higienistas orais no ativo e membros das associações nacionais em Portugal (APHO) e Itália (AIDI). O questionário foi distribuído aos participantes através de links partilháveis por correio eletrónico pela associação do seu país. Os dados foram exportados do Excel para o SPSS para efetuar uma análise inferencial, testando a associação entre duas variáveis através do p-value. As variáveis com uma diferença significativa entre os dois países serão comparadas, com um nível de significância fixado em 0,05.

Resultados: Num estudo com 2587 higienistas orais registados em associações nacionais, foram obtidas 155respostas(6%), por amostragem não probabilística.
Em Portugal, 93,9% dos participantes localiza-se no Centro e Sul, em Itália prevalece o Norte (67,4%) ($p < 0,001$).
No domínio da legislação, em ambos os países, a maioria trabalha no sector privado, sendo mais frequente em Itália (96,6%). Relativamente aos regimes de vínculos laborais, em Portugal, 57,6% são trabalhadores por conta de outrem e 47% são freelancers, em comparação com 91% de freelancers em Itália. O horário de trabalho revela: em Portugal, 63,1% dos participantes trabalham em horários flexíveis, contra 83,1% em Itália ($p=0,005$). Em Portugal, 69,2% dos HO afirmam que o seu horário depende do número de consultas com os pacientes, percentagem que sobe até 92,1% em Itália.
Quanto ao trabalho em equipa entre HO e dentistas: em Portugal, 9,1% dos HDs não trabalham em equipa, contra 1,1% em Itália. Além disso, 39,4% dos portugueses trabalham sob supervisão obrigatória, em comparação com 19,1% dos italianos ($p=0,005$).
Respeito aos programas de vigilância da saúde oral oferecidos pelo Serviço Nacional de Saúde, 97% dos HO em Portugal confirmaram a sua existência, em Itália apenas 54,7% ($p<0,001$).
Em Portugal, 98,5% dos higienistas dentários não são obrigados a obter créditos de formação para atualizar as suas competências, enquanto em Itália 100% têm de os adquirir através de cursos ($p<0,001$). No entanto, 87,9% dos higienistas portugueses reconhecem a importância de se manterem actualizados profissionalmente.

Em termos de documentação das qualificações profissionais necessárias para exercer a profissão, 98,5% dos participantes portugueses consideram que é necessário, em comparação com 67,8% em Itália ($p<0,001$).

Em Portugal, 100% dos participantes reivindicam autonomia profissional, contra 90,9% em Itália ($p = 0,013$). Ao mesmo tempo, 92,3% dos portugueses participam em equipas multidisciplinares, em comparação com 58% dos italianos ($p=0,001$).

No domínio da formação académica, a existência de um exame final de curso é confirmada por 50,8% dos participantes em Portugal e 96,6% em Itália ($p<0,001$). Além disso, 92,1% dos HO italianos afirmam que existe um exame adicional para o exercício da profissão, apenas 17,2% dos portugueses concordam ($p<0,001$).

Em Itália, 100% obtiveram um "Mestrado", o que não é tão comum em Portugal, onde 65,2% não obtiveram o "pós graduação" ($p<0,001$). Além disso, 96,3% dos italianos confirmam a existência de dois níveis de mestrado (I e II), enquanto os portugueses são unânimes (100%) em negá-lo. ($p<0,001$). Relativamente ao mestrado em Higiene Oral, 88,5% dos HO portugueses afirmam que é um curso dirigido especificamente aos higienistas orais. Em Itália, 68,3% não reconhecem esta exclusividade. A duração de um doutoramento é de 4 anos para 60,4% dos portugueses, enquanto 58,7% dos italianos afirmam que é de 2 anos ($p<0,001$).

Entre as competências, em Portugal, 93,8% tiram e interpretam radiografias, enquanto em Itália apenas 20,7% podem tirar radiografias($p<0,001$) e 80,5% interpretá-las ($p=0,0018$).

98,5% dos HO portugueses afirmam fazer diagnósticos após uma anamnese, enquanto em Itália apenas 48,8% declaram o mesmo ($p<0,001$). Após o diagnóstico, em Portugal, 86,2% dos higienistas elaboram um plano de tratamento, em Itália a percentagem é de 65,5% ($p = 0,004$). Sobre a utilização de laserterapia, em Portugal 6,3% afirmam utilizá-la, e em Itália 59,8% ($p < 0,001$). Das áreas de intervenção, 55,6% dos HO portugueses prestam serviços em ortodontia contra 25,3% em Itália ($p<0,001$), e em implantologia, 59,7% dos portugueses contra 27,7% dos italianos ($p<0,001$). Realtivamente as suas acções preventivas, 100% dos italianos responderam que educam os pacientes sobre os dispositivos de saúde oral em casa, em comparação com 82,8% dos portugueses ($p<0,001$). 48,4% dos higienistas portugueses participam em programas de cessação tabágica, enquanto que em Itália 78,2% ($p<0,001$)

Em Portugal, 84,4% dos higienistas orais manipulam material de impressão, em Itália isso é feito por 42,5% ($p < 0,001$). Além disso, 25% dos participantes portugueses realizam anestesia local, enquanto que em Itália é realizada por 8,1% ($p < 0,005$).

As respostas relativas às medidas de segurança para prevenir acidentes e lesões no trabalho mostram que 92,9% dos DH italianos e 79,4% dos portugueses confirmam a existência de tais

medidas (p<0,016). A influência negativa das relações interpessoais no trabalho de grupo acontece, em Portugal, "às vezes/raramente" para 63,5% dos participantes, enquanto em Itália 91,6% referem "muitas vezes/sempre" (p<0,001).
Por último, a satisfação média é mais elevada em Itália (3,20) do que em Portugal (2,70), no que respeita a legislação de apoio à formação e ao desenvolvimento profissional. A satisfação média com o salário e o crescimento profissional é de 2,35 em Portugal e de 2,91 em Itália (p = 0,001). A pontuação é de 3,81 em Itália e 3,35 em Portugal (p = 0,003) no nível de satisfação com a qualidade global dos programas de formação académica.
A satisfação com as competências técnicas gerais fornecidas aos higienistas orais é de 3,46 em Portugal e de 3,13 em Itália (p=0.040). A posição no trabalho em equipa apresenta um valor médio de 4,12 em Portugal e 3,77 em Itália(p=0.030). O nível de satisfação com a qualidade de vida que a profissão permite registou um valor médio mais elevado em Itália (3,69) do que em Portugal (3,42).

Conclusões: Não foram identificadas diferenças substanciais entre todos os domínios investigados. As principais diferenças foram encontradas na legislação onde os higienistas portugueses são obrigados a trabalhar sob supervisão enquanto os italianos têm prática independente. Relativamente à formação académica, as diferenças surgem com as oportunidades e percursos de formação pós-graduada, assim como requisitos de formação contínua e acesso à profissão. As diferenças de competências dizem respeito às radiografias, ao diagnóstico e ao plano de tratamento elaborados pelos higienistas portugueses mas não pelos italianos.
Enquanto os HO italianos manifestam maior satisfação com a formação, as oportunidades salariais e a qualidade geral do trabalho relacionada com a vida, os HO portugueses sentem-se mais satisfeitos com as suas competências e com a dinâmica do trabalho em equipa.

Palavras-chave: *Higienistas orais, Itália, Portugal, perfil profissional, legislação*

ABSTRACT

Introduction: It is recognised that there is considerable variation regarding the practice of dental hygiene across EDHF member states. There is currently no research that directly compares the professional profiles of dental hygienists in the two countries, and equally poor is the information available from the individual countries.

Objective: The main characteristics that unite and differentiate Dental Hygienists between the two countries, with a special focus on satisfaction, were investigated, precisely: *legislation, salary, academic education, competencies, safety and security, teamwork, working environment and satisfaction.* A questionnaire directed to dental hygienists in the two countries under review was developed to do this.

Methods: A questionnaire was created using the online survey platform (Google Forms), available in Portuguese and Italian and divided into 8 sectors with 172 questions.

The study population included working dental hygienists and members of the national associations in Portugal (APHO) and Italy (AIDI). Variables with significant differences between the two countries will be compared, with a significance level set at 0.05.

Results: 155 dental hygienists answered the questionnaire. Key differences between the two countries were found in legislation with employment distribution between freelancers and employees ($p<0.001$), the efficacy of the National Health System($p<0.001$), and Continuing education requirement ($p<0.001$). Regarding academic education, differences arise with the existence of degree examinations qualifying to the profession ($p<0.001$), and the opportunities and pathways in postgraduate education ($p<0.001$). Differences in competencies concern x-rays ($p<0.001$), diagnosis ($p<0.001$), and treatment plan ($p = 0.004$). While Italian DHs express higher satisfaction in training ($p=0.003$), salary opportunities($p=0.001$), and overall life-related to job quality ($p=0.032$), Portuguese DHs feel more satisfied with their competencies ($p=0.040$) and teamwork dynamics ($p=0.030$). **Conclusion**: No substantial differences were identified among all the fields under investigation. The lack of data in other countries makes this professional profile a non-unique and evolving reality, highlighting the need for further research.

Keywords: Dental hygienists, Italy, Portugal, professional profile, legislation

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Acronyms list

ACSS…….....*Administração Central dos Serviços de Saúde*

AIDI…….…….…….……..…*Associazione Italiana Igienisti Dentali*

AIO……...…….…..*Associazione Italiana Odontoiatri*

APHO……..……..…...*Associação Portuguesa de Higienistas Orais*

ASO……..……..…….…. *Assistente Studio Odontoiatrico*

BO..……..…….…….…….…….Burnout

CAO.…… Coordination of the Associations of Dentists

CCNL . …….……..*Contratto Collettivo Nazionale di Lavoro*

CME ……..….Continuing Medical Education

DH..…….……Dental Hygienists

DVR……..…..……Risk Assessment Document

EDHF……...…European Dental Hygienist Federation

ERS…….…….……...….*Entitade Reguladora da Saúde*

ESCO…….…..European Skills, Competences, Qualifications and Occupations

FAD..…….…….……..*Formazione a distanza*

IFDH …….....International Dental Hygienists Federation

INAIL…… *Istituto Nazionale Assicurazione contro gli Infortuni sul Lavoro*

ISCO…….…….....International Standard Classification of Occupations

ITL...……..…….….Intention to Quit

JS ...…….…….….Job satisfaction

LEA.……..……...….*Livelli Essenziali di Assistenza*

NDHA……...…….National Dental Hygienists Association

PDTO……..Photodynamic Therapy

PNRR…….. *Piano Nazionale di Ripresa e Resilienza*

PNLG…….……...*Piano Nazionale Linee Guida*

PNPSO.……..*Programa Nacional de Promoção de Saúde Oral*

SNS ...…….….*Serviço Nacional de Saúde*

SSN.……*Servizio Sanitario Nazionale*

TSDT……... *Técnicos Superiores de Diagnóstico e Terapêutica*

UNID…….…….……..…*Unione Italiana Igienisti Dentali*

UNICEF…….……United Nations International Children's Emergency Fund

WHO……...…….… World Health Organization

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1. Introduction

A dental hygienist is a primary oral healthcare professional who provides general and oral healthcare throughout a patient's life.[1] Worldwide, dental hygienists work as clinicians, administrators, communicators, collaborators, critical thinkers, advocates, and coordinators who provide patient-centered and prevention-centered comprehensive oral care to promote personal and social health and achieve health equity. [2,3]

The World Health Organization (WHO) recommended that dental hygienists, because of their role in oral health promotion and disease prevention, can play a crucial role in developing preventive strategies and facilitating primary care.[4] Dental hygiene care encompasses various clinical practices, such as examinations, preventive and therapeutic treatments, and oral health education that fall within the scope of practice of the profession. These practices are conducted following a systematic framework that includes assessment, diagnosis, planning, implementation, evaluation, and documentation[5].

Historically, the profession has transitioned from being assistants who aided dentists in treatment to becoming healthcare professionals who provide care within the scope of dental hygiene practice. This transformation is based on their responsibility for critical thinking and decision-making, more precisely, dental hygienists could be defined as personnel who provide dental hygiene interventions based on the attributes of an evidence-based comprehensive approach, continuity, prevention of oral diseases, and pursuit of oral health promotion. Accordingly, the essence and professionalism of dental hygienists are reviewed to be like the concept of primary health care professionals defined by the World Health Organization and UNICEF.[5]

The wide variety of these recognised competencies and the relatively new nature of this professional figure led to a very broad and unclear picture in Europe. It is recognised that there is considerable variation regarding of what constitutes the practice of dental hygiene across EDHF member states. This is compounded by the fact that the International Standard Classification of Occupations (ISCO) does not classify dental hygienists as a unique group. Instead, they are included within the sub-group "3251–Dental assistants and therapists". As

such, it is difficult to determine from a regulatory perspective, exactly what constitutes the role of a dental hygienist. Recently, in the latest classification of the ESCO in May 2024, the

profession was classified as “Dental Hygienists” within the sub-group 2261.3. However, there is still overlapping with the previous classification, with the profession being described in both sub-groups.[6] The regulation lists activities that include “preparing cavities”, “placing fillings” and “fitting dental prostheses”, which many member states consider outside the standard expected scope of practice. Core activities for dental hygienists across member states are largely centered in:

- Educational and promotional activities relating to preventive oral health.
- Examination, diagnosis and provision of preventive dental care.[7]

Table 1 outlines some of the procedures that European dental hygienists are permitted to undertake in some countries, according to the “Mutual evaluation of regulated professions” project. On occasion, these extra-regulated activities are only permitted on condition that the hygienist can demonstrate suitable training, competence, and indemnity[7].

Procedure	Number of countries permitting the activity
Placement of topical treatment and fissure sealants	10
Administering local anaesthesia	9
Working with ionising radiation and taking photographs	8
Adjusting existing restorations	7
Care of implants and peri-implant tissues	5
Tooth whitening upon prescription	5
Administration of medicinal products	4
Removal of sutures after the wound has been checked by a dentist	4
Placement and removal of dental dam	3
Taking impressions	3
Prescribing radiographs	3
Use of antimicrobial therapy to manage plaque related diseases	3
Application and removal of orthodontic appliances	2
Emergency refitting of crowns	2
Treatment of caries in primary teeth	2
Treatment of periodontal disease prescribed by a dentist/ root planing	2
Placement and removal of retraction threads	1
Desensitising agent application to dentine	1
Placement of temporary dressings and re-cementing crowns with temporary cement	1
Oral cancer screening	1
Prescriptions (restricted)	1
Inhalational sedation	1
Subcutaneous and intramuscular injections	1

Table 1. Dental hygiene procedures by 24 countries of EDHF.[8]

There are numerous variables to consider about the professional profile to have a clear all-around picture of the health professional, such as the rules that the legislation imposes, the variety of competencies allowed, and the academic education required to qualify for the profession.

These variables may differ from country to country, making each dental hygienist a separate figure. There are currently only a limited number of studies comparing the professional profiles of Dental hygienists between two or more countries or examining the differences at the international level.

This study aims to analyze the main characteristics that unite and differentiate Dental Hygienists between Portugal and Italy, with a special focus on satisfaction.

In the next section, we present the main points that characterize the organization of the dental hygienist profession in the two countries under study. Then we will get to the heart of the research by highlighting the main differences already known and investigate those more specific and relevant to be noted in the present study.

2. Literature review

A scoping review (not published) has already been conducted to consult all available literature and check the evidence for dental hygienists in the two countries under investigation[9].

The search strategy was developed from the research question *"What are the differences between the professional profiles of dental hygienists in Portugal and Italy?"* From a total of 203 included articles from grey literature (APHO, AIDI, EDHF, IFDH) and 2 Databases (PubMed and ScienceDirect), only 24 full-text articles were assessed for eligibility. In the manual search for data in the full texts, the author focused on the data of interest by assessing which were inherent to the review's objective.

This review was designed to identify the main differences and similarities in the professional figure of the Dental hygienist in two different countries and socio-cultural contexts, Portugal, and Italy.

The research was therefore conducted into the relevant characteristics for defining the professional profile: Legislation, Academic education, and Competence.

After the scoping review, it was concluded that the two occupational profiles are, for the most part, compatible, but some fundamental differences arose that warrant further study.

2.1 Dental Hygienist in Italy

2.1.1 Definition from the Code of Ethics

The dental hygienist is the health professional who performs the public interest activity described in the professional profile and the didactic regulations of the degree courses. This professional figure intervenes following his/her competencies and based on scientific evidence and recommendations expressed in guidelines and good practice, with particular attention to the interception of signs and symptoms in the field of primary, secondary, and tertiary prevention to promote and improve the oral health of the assisted person.[10]

2.1.2 History of the profession

The figure of the Dental Hygienist (*Igienista Dentale*) in Italy was first created in 1976, with a two-year course financed by the Molise Region that, however, failed to obtain any legal recognition. In 1978, the University of Bari established the first two-year "*Scuola Diretta a Fini Speciali per Igienista Dentale*" (Direct school for special purposes for dental hygienists). Following this initial recognition of the need for university training of the Dental Hygienist, the AIDI (*Associazione Igienisti Dentali Italiani* - Italian Dental Hygienists Association, representative of the category founded in 1981) began its quest for recognition of the profession by national institutions.

On 26 February 1999, Law No. 42 repealed the term "auxiliary", establishing the term "health professions" and "job descriptions", giving cultural and decision-making autonomy to professionals with a university diploma. Interministerial Decree No. 509 of 3 November 1999 regulates the transformation of three-year university diplomas in the health area into first-level degrees.[11]

2.1.3 University institutions

There are currently 27 active degree courses in Italy on a total of 32 university campuses. Every year 659 aspiring dental hygienists enter the first year of the degree course and, consequently, a roughly similar number of professionals enter the world of work at the same time. [11]

2.1.4 Professional category

The Ministerial Decree of 29 March 2001 (published in the Official Gazette No. 118 on 23 May 2001) includes the dental hygienist in the "Health Professions belonging to the technical assistance area".[12]

2.1.5 Professional register

The Decree of 13 March 2018 (published in the Official Gazette, General Series, No. 77 on 03 April 2018) establishes the constitution of the registers of technical, rehabilitation and prevention health professions established within the Orders of medical radiology health technicians and technical, rehabilitation and prevention health professions. According to current legislation (Law 3/2018 and Ministerial Decree of 13 March 2018) - registration in the Professional Register is mandatory for the practice of the profession, regardless of the context in which one works (civil servant, private employee, freelance profession).[13] Furthermore, the Italian Dental Hygienist must regularly, once a year, satisfy financial obligations to the Order.[10]

2.2 Dental Hygienist in Portugal

2.2.1 Definition from the Code of Ethics

Dental hygienists (*Higienistas Orais*) are health professionals whose functional scope is, among others, to improve public health by educating the population and providing quality oral health care. In the course of their duties, oral hygienists carry out clinical, educational, and other activities in the field of oral health intending to promote the well-being of the users. [14]

2.2.2 History of the Profession

In Portugal, the DH program started in 1984 by a joint effort from Lisbon Dental School and the University of Washington in Seattle, USA. It started as a 2.5 years' program, a non-university degree. The program focused on prevention instead of treatment to reduce the costs of oral diseases in the country. In 1987, a 3 years' program was introduced, which has evolved, and in 2001, the program was fully integrated at the University of Lisbon as a university degree.[15]

2.2.3 University institutions

Currently, in Portugal, two institutions are training Dental Hygienists. The "Faculdade de Medicina Dentária Ulisboa", since 1984 and the "Escola Superior de Saúde do Instituto Politécnico de Portalegre" since 2010. In the past, the training course was also offered at the "Instituto Superior do Alto Ave" and in "Instituto Politécnico de Saúde do Norte" at the Cooperativa do Ensino Superior Politécnico e Universitário.[16]

2.2.4 Professional category

In 1988, dental hygienists entered the career of "Técnicos de Diagnôstico e Terapêutica" (Decreto-Lei Nº. 247/88 de 13 de Julho).

In 1999, the legal status of the TSDT *(Técnicos Superiores de Diagnóstico e Terapêutica)* career was established (Decreto-Lei Nº. 564/99 de 21 Dezembro).[16]

2.2.5 Professional register

The register of the professional title is compulsory, as stated in articles 4th and 5th of Law decree 320/99, August 11th. The professional license is issued by the *Administração Central dos Serviços de Saúde (ACSS)* from the Ministry of Health. To apply for recognition to work in Portugal as a Diagnostic and Therapeutic Technician- Oral Hygienist, with a degree from a foreign institution, a request must be submitted to ACSS. [17]

The ACSS organizes and keeps a register of the professionals covered by this diploma, which is subject to the payment of a fee of an amount to be established by joint decree of the Ministers of Finance and Ministry of Health.[18]

2.3 Comparison

The following points report the differences found in the three areas of the professional profile (legislation, academic education, and competencies) identified in the scoping review.[8]

Each area has some missing data, which is an important limitation of the previous review. This is due to the limited availability of information in the grey literature. In the electronic search of scientific databases, articles comparing Italy and Portugal are non-existent; the only studies included discussed some world differences and the characteristics of DH exclusively in Portugal.

Therefore, an adequate comparison could not be made on some issues related to the professional profile. This justifies the need to investigate further aspects and the missing ones through a questionnaire directed to the dental hygienists of the two countries under study.

2.3.1 Academic education

The academic pathway provides for both countries:

- A 3-year degree with the acquisition of 180 credits, conferring a Bachelor's degree.
- A "*Mestrado*" for Portugal and a "*Magistrale*" for Italy lasting 2 years and 120 credits;
- "*Pós-graduações*" for Portugal or "*Master*" for Italy lasting 1 year and 60 credits.[19,20]

The difference arises with the possibility provided by both countries to participate in a PhD*:*
In Portugal exists a Doctoral course called "*Ciências e Tecnologias da Saúde Oral*" directed specifically to Dental hygienists[21.] In Italy, as in Portugal, dental hygienists who want to obtain a PhD have several related areas in which they can specialize, but in contrast to the situation in Portugal, in Italy there is no specific PhD for their profession.

Additionally, the PhD in the two countries has different durations:

- In Portugal, this lasts four years with 240 credits conferring a doctoral degree;
- In Italy, the PhD lasts three years acquiring 180 credits.[19,22]

Furthermore, unlike in Portugal, there are two types of Master in Italy: Level I and Level II. The difference is in the access requirements: a bachelor's degree or university diploma is required for admission to a first-level Master, while a specialized degree is required for admission to a second-level Master.[23]

Another important difference is that, at the end of the three-year degree course, in Italy, the degree examination shall have the value of a State exam qualifying for the exercise of the profession.[24] This is why, conceptually, Italian DHs have no direct access to the profession compared to a newly graduated dental hygienist in Portugal.[25]

Lastly, unanswered data was the kind of assessment, in Italy is based on a grading scale for each examination and for the final one[20] , while for Portugal no reference was found in the literature either to the grading scale or to the existence of a final board exam.

2.3.2 Legislation

In terms of missing data in legislation, it's known that Italian dental hygienists who work as freelancers can freely negotiate their remuneration[10]. The author could not find information for Portugal in this regard.

Regarding remuneration and recruitment, the following features are valid in Portugal but have not been found in Italian legislation: Recruitment for jobs is subject to the provisions of the Labor Code and Remuneration is established in a collective labor regulation instrument in public enterprises and health partnerships integrated into the SNS.[26]

Professional qualifications and supporting documents are required for practice, as well as language skills for the recognition of professional qualifications.[27]

A very important issue is the presence of obligatory CE (Continuing Education) credits, which can be acquired through accredited training events, this is a program set up by the Ministry of Health for the institutional recognition of professional training in the health sector and is intended to provide all health professionals with the knowledge they need to keep up-to-date and competent from a professional point of view. The training courses can be residential (congresses, conventions, courses, etc.) or distance learning activities (FAD), via telematics or face-to-face lectures. In conclusion, the "CE" system in Italy is structured in three-year periods of 150 credits. [28] This system is fully consolidated in Italy, while in Portugal there is no mention of its existence.

2.3.3 Competences

Regarding this field, the main difference between the two countries concerns the possibility of taking X-rays. In Portugal, it is an operation granted to dental hygienists whereas it is not in Italy.[25]

For professionals in both countries, it is not legal to give local anesthesia and do a temporary filling.[15]

The previous scoping review also lacked answers related to the field of competencies, namely: the possibility of making/collecting photographic documentation[29], which are actions found in Italian articles but not mentioned in Portuguese documents. In addition, Italian DHs are required to possess certain additional competencies, but no evidence about it was found for Portuguese hygienists. These competencies include skills in English, informatics, labor law,

business organization, management area, innovation area, relational area, research, and consultancy.[29]

For both countries, no information was found about laser therapy.

From these limitations, the available literature on this topic is not complete and does not allow for a precise answer to every condition of the question of this review. These results highlight the need to conduct questionnaires addressed to dental hygienists in Portugal and Italy to fill the limitations of the previous scoping review and to investigate in a more focused and detailed manner all the various common or different aspects that exist, adding some knowledge in the research.

A further fundamental variable to study is “job satisfaction”. the study of job satisfaction can reveal fundamental differences between the two countries.

2.4 Job satisfaction

Dental hygienists play an important role in the management of the patient’s preventive oral care; however, there is little research investigating career longevity issues such as “job satisfaction”, “burnout”, and “intention to leave” in the dental hygiene profession[30].
Below is an overview of the main factors influencing the job satisfaction of DHs at international level; examining in detail the specific highlights of the two countries researched (Italy and Portugal).

Body’s literature review on dental hygiene career and job satisfaction appears to be the most current and complete. In Body’s review of 32 studies, she concluded that most dental hygienists are satisfied with the practice of dental hygiene. [31] As well as reported by Boyer, the studies, which measured satisfaction in a variety of ways and quantified dental hygienists' satisfaction in terms of percent satisfaction, established that between 70% and 99% of dental hygienists are satisfied with their jobs.[32] The most frequently cited reason for satisfaction included the enjoyment of working with people and providing a service. The least satisfying aspects were repetition, lack of variety, physical and emotional demands, and little or no opportunity for advancement.[31]

Glasscoe in another study, investigates reentry to the dental hygiene workforce and found that there are four major incentives for reentry. These reasons are an increased salary, increased

benefits, improved procedures for infection control and increased decision-making opportunities.[33]

Badal et al. in their study conducted in the United States identified several trends influencing job satisfaction (JS), burnout (BO) and intention to quit (ITL) among dental hygienists. The literature reveals that JS, BO and ITL may influence each other and have similar results.[30]

Autonomy and empowerment were associated with higher job satisfaction, which appeared to have the greatest impact on decreasing burnout and intention to leave.[30] One common finding suggests that autonomy over the health care provider's work and responsibilities impacted their JS, BO, and ITL. Another common finding was the impact of empowerment on clinicians' attitudes toward their jobs and work performance.[30]

Disengagement was related to frustration with personal work-related goals. A possible way to overcome disengagement may include supporting the dental hygienist's autonomy in decisions related to providing quality preventive care and fully utilizing the scope of practice allowed by law, such as administering local anesthetics; administering nitrous oxide; and placing and finishing restorations.[30]

Strong leadership and support from management were identified as important factors for clinicians to perform their duties proficiently and decreased BO and ITL. Healthcare providers also should have a good work-life balance, without excessively long working hours, to prevent BO and have JS. In addition, having adequate staffing to meet the job demand played a key role in JS to prevent BO and turnover.[30]

Operations or organizational structure was also an area where respondents reported only slight satisfaction in the Job Satisfaction Survey. Organizational structure may include formalization of policies and procedures; participation in decision-making; and growth opportunities. An organizational structure with good management, support staff, leadership, work hours/shifts, work-life balance, the teamwork, can also lead to higher job satisfaction in healthcare settings. Furthermore, health insurance and other benefits have been significantly associated with job satisfaction. [30]

In any healthcare environment, communication is critical among team members as a lack in communication can lead to frustration, job dissatisfaction, impact retention, and ultimately impact patient care. When effective teamwork and communication are utilized, it can help with workflow, reduce errors, and increase productivity. Burnout may also be a result of factors such

as accelerated dental hygiene schedules, shorter patient appointment times, inadequate lunch breaks, or lack of staff support[30].

Jones-Teti *et al.* in another article, explored the career paths and satisfaction of dental hygienists who have pursued master's and doctoral degrees. Findings suggest satisfaction with advanced education and a wide variety of career paths. The findings suggested completion of advanced education provided access to many opportunities which led to personal growth along with professional credibility. In addition, participants felt their advanced education also supported the further development of the profession and encouraged other dental hygienists to continue their education.[34]

Numerous factors could influence the daily work of dental hygienists, both positively and negatively, and investigating these aspects could be helpful for better work performance and a better lifestyle. The study of these factors may also be useful for employers, as they could explore ways to support dental hygienists in meeting their work-related goals for continued growth and career longevity.

A proactive approach in addressing factors impacting job satisfaction may ultimately contribute to improved patient care and positive oral health outcomes.[30]

The current study looked specifically to the satisfaction of dental hygienists related to dimensions studied (legislation, academic education, salary, competencies, safety and security, teamwork, and work environment)

2.5 Summary

A comparison of the professional profiles of the dental hygienist in Italy and Portugal is particularly interesting and necessary for the following reasons:

- **Lack of targeted studies:** There is currently no research that directly compares the professional profiles of dental hygienists in the two countries. This gap in the scientific literature opens the opportunity to provide original comparative data, useful for both professionals and health academic institutions in both countries. Such a study could highlight similarities and differences in regulations, training, salary, skills practiced, safety and security factors, work environment, and job satisfaction regarding these dimensions.

- **Confusing and scarce information:** information regarding the dental hygienist profession is often poor or limited in both countries, especially regarding specific responsibilities, skills, role in prevention, and public awareness. A comparison could help clarify and better structure information for the public and strengthen understanding of the role of the dental hygienist.

In Italy in fact, in his daily operational practice the hygienist encounters, often concurrently, two problems: poor public baseline information related to prevention and insufficient basic information related to the institutional figure of the hygienist.[35] In the common belief, the dental hygienist has a job description-apparently a very meager one-that assigns him or her defined and limited job skills. The scope within which he or she can move is becoming increasingly broader and more varied. Today the dental hygienist is sometimes a hyperspecialized figure who, thanks to continuous training and updating, works in the field of prevention in all its facets, no longer just those related to the oral cavity. [35]

In Portugal, too, although the oral health indicators in Portugal are much lower than the European average (Lourenço & Barros)[36] , since the profession was introduced, many changes have taken place in higher education, the health care system, public health policies, and society itself. In the future, and in view of professional mobility in Europe, it will be necessary to standardize competencies by creating EU directives that delimit the scope of practice.[37]

- **Previous scoping review**: A scoping review that has already been conducted has led to preliminary conclusions that need to be further explored and new issues to be investigated. A comparative analysis could complement these findings, highlighting practical aspects that scoping reviews may not have explored in depth.

In conclusion, such a study would not only fill a gap in research but could also help improve the training and professional recognition of dental hygienists in both countries, facilitating greater awareness of their crucial role in public health.

3. Objectives

This study aims to fill the information gap in the currently available literature regarding comparing the professional profile of Dental Hygienists in Portugal and Italy, which is non-existent. In addition, some new sections related to the professional profile will be added for a more complete and exhaustive view. A questionnaire directed to dental hygienists in the two countries under review was developed to do this.

The following research objectives were defined:

A. Assess and compare similarities and differences in **legislation** between dental hygienists in Portugal and Italy

B. Assess similarities and differences in **salary** between dental hygienists in Italy and Portugal

C. Assess similarities and differences in **academic education** between dental hygienists in Italy and Portugal

D. Assess similarities and differences in **competencies** between dental hygienists in Italy and Portugal

E. Assess similarities and differences in **safety and security** between dental hygienists in Italy and Portugal

F. Assess similarities and differences in **teamwork** between dental hygienists in Italy and Portugal

G. Assess similarities and differences in the **working environment** between dental hygienists in Italy and Portugal

H. Assess the **satisfaction** with legal aspects, salary, academic education, competencies, safety and security, teamwork, working environment and general job satisfaction between dental hygienists in Italy and Portugal.

4. Materials and Methods

4.1 Study design

The study was designed as an observational, descriptive, cross-sectional study using a non-random or non-probabilistic sampling technique.

4.2 Population and Sample

The study population included working dental hygienists and members of the national associations in Portugal (APHO) and Italy(AIDI).

The strategy for obtaining the sample size involved these steps:

I. Find how many associated dental hygienists there are in Portugal and Italy

- PORTUGAL: The Portuguese Association of Dental Hygienists (APHO - *Associação Portuguesa de Higienistas Orais*) was contacted by email to investigate the total number of DH members, this number is *805* (data of January 2024).

- ITALY: The two national associations of dental hygienists were contacted and provided the investigator the following data:
  - Association of Italian Dental Hygienists (AIDI) has a total of *1782* members (data of September 2023).
  - National Union of Dental Hygienist (UNID) didn't answer.

These numbers might not be representative of the total population because not all DHs are associated with the national association.

II. Determine the proportion for the three geographical areas, depending on data given by the associations.
    - Portugal has the following percentage distribution of dental hygienists, with the respective number in proportion to the total population (805):
      - North = 40 (5%) DHs
      - Centre = 121 (15%) DHs
      - South = 644 (80%) DHs

- Italy has the following percentage distribution of dental hygienists, with the respective number in proportion to the total population (1782):
  - North = 1069 (60%) DHs
  - Centre = 267 (15%) DHs
  - South = 446 (25%) DHs

III. Associations sent the questionnaire to the members:

- Participants were contacted by e-mail by their own association.
- In the e-mail, the objective of the study and its modalities was described.
- In addition, the fulfilment of the requirements for inclusion in the study were requested and the informed consent was included in the first part of the questionnaire.
- In the same email, the participants found the link to the online survey platform (GoogleForm) with the questionnaire for them to answer.

The number of answers obtained makes it possible to determine the response rate in relation to the proposed number.

Proceedings for data collection:

- A first email introducing the investigator and details of the nature of the study. In this email, participation of the associations was requested, starting with sharing the number of members.
- In the second email, the associations are asked to disseminate the following message to the members: information about the study, the positive effects of participating in it, the link to access the questionnaire and the approximate timeframe for completion (15-20 min).
- A third email, for "reminder" purposes was sent 3 weeks after the first dissemination of the questionnaire.

4.2.1 Inclusion and exclusion criteria

The inclusion criteria for participation in the questionnaire required that dental hygienists hold a degree or certification qualifying them to practice. They must be, at the time of answering the questionnaire, professionally active. A prerequisite was that they had been trained and qualified in Portugal or Italy and were practising their profession in one of the two countries.

Those who were not dental hygienists were excluded, and professionals who were unemployed at the time of the study. Any other profession in the dental field was also been excluded.

4.3 Ethical aspects

Following ethical principles, participants were informed, by an "informed consent" section at the beginning of the questionnaire, about the study's objective, the procedures of the study, any risks, and benefits and what was expected by their participation.

It was explained how their participation in the study could be useful in increasing knowledge about dental hygienists in Portugal and Italy and highlighting differences, similarities, experiences, and points of view. It could also be a source of inspiration and growth for the participants.

Participants were be assured of the confidentiality of the investigation, ensuring that their answers are anonymized and guaranteeing the protection of their personal information and data, as well as informed of their voluntary participation.

Below there are the risks taken into consideration:

- Time commitment: recognize to participants that they may need to take time out of their busy schedules to complete the questionnaire correctly (15-20 min)
- Emotional commitment: recognize to participants that they might be asked about issues such as job satisfaction, relationships with colleagues, teamwork, remuneration, and competencies performed.

The participants were furnished with the name and contact details of the investigators in charge, to answer any doubts or problems.

4.4 Instrument for Obtaining Data

A questionnaire was created based on the previous results of the scoping review, using the online survey platform (Google Forms). The questionnaire was distributed to participants via shareable links by e-mail by their country association. Responses were automatically collected and exported for further processing and analysis.

The questionnaire was available in Portuguese and Italian and was divided into 8 sectors and 172 questions, according to the field to be analyzed: *legislation, academic education, salary, competencies, security, teamwork, working environment and job satisfaction.*
The content validity was tested with five Dental Hygiene professors at the University of Lisbon that were also experienced in questionnaire development and face validity was assessed with 7 Dental Hygiene master students. Some changes were made to the questionnaire regarding language adaptations and some redundant questions were withdrawn.

4.4.1 Variables

The details criteria and the rating scales applied for each section and variable depend on the nature of the questions. Furthermore, questions were asked at the end of each category to assess the level of satisfaction with that aspect of the professional profile. Next to each answer option are the scores given in the database to perform the relevant statistical analysis. (Annex 4 database)

Sociodemographic profile

Includes investigation questions concerning the personal characteristics of the participant.
The variables considered were:

Variable	Criteria	Type of data
Country of region	Italy / Portugal	Nominal
Geographical location	North / Center / South	Nominal
Age	20-30 / 31-40 / 41-50 / more than 50	Ordinal
Years of experience	<1 year / 1-5 years / 6-10 years / more than 10 years	Ordinal
Gender	Female / Male / Other	Nominal
Practice in the private or public sector	Yes / No	Nominal
Independent practice or freelancer	Yes / No	Nominal

Table 2. Variables to characterize the sociodemographic profile.

Professional profile section

Includes questions concerning the characteristics of dental hygienists' working context. The questions in this macro-section will provide an overview of the eight relevant dimensions that define the profession in the two countries under study.
The variables considered were:

Variable		Criteria	Type of data
Legislation	**Existence/ non-existence**	Yes / No	Nominal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Salary	**Existence/ non-existence**	Yes / No	Nominal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Academic education	**Kind of education program**	University course / non-university professional course	Nominal
	Degree course duration	1 / 2 / 3 / 4 years	Nominal
	Current academic education	I have a (master course-master's degree-PhD) / I am currently attending(…) / I do not have (…)	Nominal
	Existence/ non-existence	Yes / No	Nominal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Competencies	**Existence/ non-existence**	Yes / No	Nominal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Safety and security	**Existence/ non-existence**	Yes / No	Nominal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Teamwork	**Ocurrence**	Never (1) /rarely (2) / sometimes (3) / often (4) / always(5).	Ordinal
	Satisfaction	Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Working environment		Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal
Job satisfaction		Totally unsatisfied(1) / Unsatisfied(2)/ Neutral (3) / Satisfied(4) / Totally satisfied (5)	Ordinal

Table 3. Variables of professional profile

4.5 Statistical analysis

Data were exported to SPSS from Excel. The inferential analysis allowed the verification of the significance of the association between two variables generating a p-value. Thus, by consulting the p-value, it will be possible to compare those variables whose difference in the two countries under study is statistically significant and therefore worthy of attention. The level of significance accepted in the present study was 0.05.

The Chi-square test of independence was used to compare nominal study variables to test whether there was an association, or dependence, between two categorical variables. More precisely, it is required to test whether the association between two variables of interest is statistically significant, provided they are both qualitative, in the two countries Portugal and Italy. Specifically, these items concern: sociodemographic profile, legislation, salary, academic education, skills, safety, teamwork and lastly, working environment.

Satisfaction measured on a Likert scale was treated as a scale variable. However, it is important to remember that even though Likert variables, they retain an ordinal nature, representing ordinal levels of satisfaction or non-satisfaction. This means that differences between categories on the Likert scale are not necessarily uniform.

Hence, it is necessary to perform a normality test, the analysis of the distribution of the data collected using a Likert scale to assess whether these data follow a normal distribution or not. Even if the answers on a Likert scale are ordered, it is not guaranteed that the data follow a normal distribution. Therefore, it is important to use normality tests to determine whether the data can be treated as normally distributed for subsequent statistical analysis.

- The *Kolmogorov-Smirnov* test is a non-parametric test to verify the distance between the empirical distribution of a sample and a reference distribution.
- The *Shapiro-Wilk* test tests the null hypothesis that a sample comes from a normal population.

If the *p-value* obtained from these tests is less than 0.05, the null hypothesis is rejected, and it can be concluded that the data do not come from a population with a normal distribution.

This was found by performing the normality test, which recorded a sig value < 0.001 for all items. It can therefore be said that the test population does NOT follow a normal distribution.

Parametric tests may not be useful if the data do not follow a normal distribution, because their conclusions may be distorted. On the contrary, non-parametric tests are more resistant to deviations from normality and do not require the assumption of normality.

The non-parametric test used for the statistical analysis of satisfaction was the Mann-Whitney U test. The significance value (p-value) obtained from the Mann-Whitney test is less than 0.05, indicating that there is strong evidence that a difference exists, and it is possible to conclude that there is a significant difference between the two countries concerning the satisfaction variable. In other words, it is concluded that there is a significant effect of being from one of the two countries on satisfaction measured in the different domains.

5. Results

From a population of 2587 dental hygienists registered with national associations, 155 responses were obtained, which corresponds to a response rate of 6% of the population. The sample distribution of dental hygienists in the two countries was:

- 66 DHs from Portugal (42,6%)
- 89 DHs from Italy (57,4%)

corresponding to 8,2% of the Portuguese and 4,99% of the Italian universe of dental hygienists.

5.1. Sociodemographic data

The first section of the questionnaire investigates the sociodemographic profile of the sample. The sample is in both countries predominantly female, representing more than 80% in both countries, with a slightly higher share of males in Italy.

The geographic distribution of the participants in the two countries is statistically different (p <0.001). It is possible to observe that, while in Portugal the greatest distribution is in the Centre (71.2%) followed by the South (22.7%) and finally the North (6.1%); in Italy, the order is different, as we find a significant affluence of dental hygienists in the North (67.4%), then the Centre (20.2%) and finally the South (12.4%). Most participants claim to have more than 10 years of experience, 57.6% in Portugal and 53.9% in Italy.

Concerning professional exercise in a public or private structure, in both countries, exercise in the private sector represents the majority, more frequent in Italy (96.6%). However, it is possible to note how statistically significant the difference is between the percentages of workers in the public sector, who are more present in Portugal (p=0.002). In fact, 18.2% of Portuguese Dental hygienists say they do not work in the private sector while in Italy only 3.4%. Respectively, 19.7% in Portugal claim to work in the public sector and Italy a smaller

percentage 9%. It is noticeable how the data overlap in that, some dental hygienists could work simultaneously in a public and private structure.

Regarding the working relationship regimes, the difference between the most popular scheme among the dental hygienists participating in the study in the two countries is statistically relevant in two questions ($p < 0.001$). In Portugal, 57.6% of DH are employees and 47% are freelancers. In Italy 91% of DHs are freelancers. (Table 4).

Table 4. Differences in Sociodemographic data between Portugal and Italy.

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Geographical area	North	4	6,1%	60	67,4%	**<0,001**
	Center	47	71,2%	18	20,2%	
	South	15	22,7%	11	12,4%	
Professional experience	1 - 5 years	18	27,3%	28	31,5%	0,851
	6-10 years	10	15,2%	13	14,6%	
	More than 10 years	38	57,6%	48	53,9%	
Gender	Female	57	86,4%	72	80,9%	0,368
	Male	9	13,6%	17	19,1%	
	Other	0	0,0%	0	0,0%	
Age	20-30 years	20	30,3%	24	27,0%	0,383
	31-40 years old	23	34,8%	24	27,0%	
	41-50 years old	12	18,2%	16	18,0%	
	More than 50 years	11	16,7%	25	28,1%	
Main activity in the private sector	No	12	18,2%	3	3,4%	**0,002**
	Yes	54	81,8%	86	96,6%	
Main activity in a public health centre	No	53	80,3%	81	91,0%	0,054
	Yes	13	19,7%	8	9,0%	
Principal activity as an employee	No	28	42,4%	81	91,0%	**<0,001**
	Yes	38	57,6%	8	9,0%	
Principal activity as an freelancer	No	35	53,0%	8	9,0%	**<0,001**
	Yes	31	47,0%	81	91,0%	

5.2 Professional profile data

5.2.1 Legislation

First, DHs were asked whether they work in teams with the dentist or not, and the differences in responses are relevant (p=0.018). In Portugal, 9.1% said no while in Italy 1.1%. It's crucial to emphasize that working in teams is distinct from working under the supervision of a dentist because the latter could be mandatory. The answers have evidenced that 39.4% of Portuguese DHs claim to be subject to this obligation while in Italy 19.1% (p=0.005).

The opportunity to open their own clinic represents a reality for 27.3% of dental hygienists in Portugal while 60.7% of Italians affirm that it’s possible to do it ($p < 0.001$).

Most health services are provided by the private sector, in both countries, (Portugal 89.4% and Italy 96.6%). In addition, the existence of oral health monitoring programmes provided by the National Health Service was investigated, leading to significant results (p<0.001). What emerged was that in Portugal 97% of dental hygienists recognized the existence of such programmes while in Italy 54.7% answered yes.

Regarding professional indemnity insurance, 95.5% for Portugal and 97.7% for Italy recognize as an obligation. This obligation is followed by that of having insurance for accidents at work, there is a significant difference between the two countries (p<0.001). In Portugal, 93.9% of the participants in the study affirm that it is compulsory, whereas in Italy 36.5% claim that this obligation exists. (Table 5).

Table 5. Differences in *Legislation data* between Portugal and Italy.

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P - value**
Teamwork with dentist	No	6	9,1%	1	1,1%	**0.018**
	Yes	60	90,9%	88	98,9%	
Obligation to work under the supervision of a dentist/doctor	No	40	60,6%	72	80,9%	**0.005**
	Yes	26	39,4%	17	19,1%	
Legal possibility to open your own practice	No	48	72,7%	35	39,3%	**< 0.001**
	Yes	18	27,3%	54	60,7%	
Majority of oral health care provided by the private sector	No	7	10,6%	3	3,4%	0.073
	Yes	59	89,4%	85	96,6%	
Existence of National Health Service programs for oral health monitoring	No	2	3,0%	39	45,3%	**< 0.001**
	Yes	64	97,0%	47	54,7%	
Professional Liability Insurance Obligation	No	3	4,5%	2	2,3%	0.439
	Yes	63	95,5%	85	97,7%	
Mandatory work accidents insurance	No	4	6,1%	54	63,5%	**< 0.001**
	Yes	62	93,9%	31	36,5%	

Professional register

The clear predominance of the population of hygienists participating in the study declares the compulsoriness of professional registration, being 93.9% in Portugal and 98.9% in Italy. On the other hand, a membership in a professional association is not mandatory for 95.5% of DH in Portugal and 87.5% in Italy.

Under investigation is the presence of "mandatory continuing education credits" to be collected to practice the profession of Dental Hygienist. In Portugal 98.5% of DHs answered that they had no such obligation, in Italy 100% of participants answered "yes" ($p < 0.001$).

The unanimity of Italian DHs (100%) affirm that these credits can be acquired through training courses while Portuguese dental hygienists appear to disagree (37.1%) ($p<0.001$).

Regarding documentation attesting the professional qualifications to exercise the Dental hygienist profession ($p < 0.001$), 98.5% of Portuguese participants responded to the need for such documentation, 67.8% responded to the same need in Italy. (Table 6).

Table 6. Differences *Professional register data* between Portugal and Italy

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Mandatory professional register for DH	No	4	6,1%	1	1,1%	0,085
	Yes	62	93,9%	88	98,9%	
Compulsory membership of a professional association	No	63	95,5%	77	87,5%	0,089
	Yes	3	4,5%	11	12,5%	
"Mandatory credits (points) for continuing education" to be able to exercise	No	65	98,5%	0	0,0%	**< 0,001**
	Yes	1	1,5%	89	100,0%	
Credits acquired through accredited training	No	23	37,1%	0	0,0%	**< 0,001**
	Yes	39	62,9%	87	100,0%	
Professional qualifications and supporting documents to practise	No	1	1,5%	28	32,2%	**< 0,001**
	Yes	65	98,5%	59	67,8%	
Official recognition of a foreign applicant to practice the profession	No	0	0,0%	1	1,2%	0,378
	Yes	64	100,0%	82	98,8%	
Language skills of a foreign applicant for the recognition of professional qualifications	No	20	33,3%	24	29,6%	0,639
	Yes	40	66,7%	57	70,4%	

Professional Responsibility

About the practitioner's operational autonomy, such as the practitioner's ability to make decisions for each patient the analysis suggests significant differences (p = 0.013), in Portugal 100% claimed autonomy as compared to 90.9% in Italy.

Another significant difference in duties appeared in participation in multidisciplinary teams in their clinical practice with 92.3% of Portuguese participants and 58% Italian participants saying yes (p=0.001).

Regarding the update of skills and knowledge 87.9% of Portuguese dental hygienist recognize this duty while 97.7% of Italian DH indicate this is subject to the accreditation system (p=0.014).

The next significant difference between the two countries concerns the duty to keep patient records always accurate and up to date. All Portuguese participants (100 %) responded that they had to fulfil this duty, 90.9 % affirmed the same in Italy (p=0.012).

The dental hygienists taking part in the study were asked whether they had ever experienced themselves acting against current legislation in their clinical practice. In Portugal 18.2% of the participating dental hygienists have already found themselves in a position of having to act in their practice ignoring the legislation as compared to Italy (5.7%) (p = 0.014). (Table 7)

Table 7. Differences in *Professional responsibility data* between Portugal and Italy

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Operational autonomy	No	0	0,0%	8	9,1%	**0.013**
	Yes	65	100,0%	80	90,9%	
Duty to act in accordance with clinical information	No	0	0,0%	2	2,3%	0.218
	Yes	66	100,0%	86	97,7%	
Duty to protect, improve or maintain the patient's state and level of health	No	0	0,0%	1	1,1%	0.385
	Yes	66	100,0%	87	98,9%	
Duty to properly inform the patient in order to obtain informed consent	No	1	1,5%	2	2,3%	0.736
	Yes	65	98,5%	86	97,7%	
Duty of professional secrecy	No	0	0,0%	3	3,4%	0.13
	Yes	66	100,0%	85	96,6%	
Duty to participate in multidisciplinary teams	No	5	7,7%	37	42,0%	**< 0.001**
	Yes	60	92,3%	51	58,0%	
Duty to update knowledge and skills	No	8	12,1%	2	2,3%	**0.014**
	Yes	58	87,9%	86	97,7%	

Duty to keep adequate and up-to-date patients records	No	0	0,0%	8	9,1%	**0.012**
	Yes	66	100,0%	80	90,9%	
Duty to understand and apply the ethical principles of healthcare	No	0	0,0%	1	1,1%	0.385
	Yes	66	100,0%	87	98,9%	
Awareness to have a professional and trustworthy responsibility	No	0	0,0%	2	2,3%	0.218
	Yes	66	100,0%	86	97,7%	
Duty to know how the health system works and the country's legislation	No	11	16,7%	18	20,5%	0.552
	Yes	55	83,3%	70	79,5%	
Basic life support training required	No	17	25,8%	35	39,8%	0.069
	Yes	49	74,2%	53	60,2%	
Condition of proceeding, in daily practice, against the legislation in force	No	54	81,8%	83	94,3%	**0.014**
	Yes	12	18,2%	5	5,7%	

5.2.2 Salary

The first divergence concerns the working hours from which the salary is derived, divided into fixed and flexible. In Portugal, 63.1% of the participants work flexible hours, in Italy this population represents 83.1%. The remaining population works a fixed schedule, 36.9% in Portugal and 16.9% among Italian participants ($p = 0.005$).

A more detailed discussion of working hours concerns its dependence on the number of appointments with patients. The percentages represent a situation where, in Portugal 69.2% state that their schedule depends on patients, in Italy this percentage is 92.1% ($p < 0.001$).

Participants were asked whether their salary depended on the hours at their workplace. In Portugal, 47.7% said yes while in Italy, 27.6% said the same (p=0.011).

A further significant difference is whether their employment was subject to the provisions of a Labor Code ($p < 0.01$). 90.5 % of the Portuguese population claiming to be subject to these provisions, while in Italy the percentage is 45.3%. (Table 8).

Table 8. Differences in *Salary data* between Portugal and Italy.

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Possibility of freely negotiating your own salary for freelance workers	No	20	31,7%	20	23,3%	0.248
	Yes	43	68,3%	66	76,7%	
Compulsory registration with the financial service for freelance workers	No	0	0,0%	2	2,3%	0.225
	Yes	64	100,0%	86	97,7%	
Remuneration set by legislation	No	52	81,3%	73	83,0%	0.786
	Yes	12	18,8%	15	17,0%	
Type of working schedule	Fixed	24	36,9%	15	16,9%	**0.005**
	Flexible	41	63,1%	74	83,1%	
Working hours dependent on patient appointments	No	20	30,8%	7	7,9%	**< 0.001**
	Yes	45	69,2%	82	92,1%	
Working hours for week	0-20 hours	5	7,7%	10	11,4%	0.592
	21-40 hours	39	60,0%	55	62,5%	
	More than 40 hours	21	32,3%	23	26,1%	
Remuneration according to hours worked	No	34	52,3%	63	72,4%	0.011
	Yes	31	47,7%	24	27,6%	
Remuneration on a percentage rate for each service carried out	No	11	16,9%	14	15,9%	0.867
	Yes	54	83,1%	74	84,1%	
Access to health insurance or other benefits	No	57	87,7%	72	82,8%	0.401
	Yes	8	12,3%	15	17,2%	
Employment subject to the provisions of the Labour Code	No	6	9,5%	47	54,7%	**< 0.001**
	Yes	57	90,5%	39	45,3%	

5.2.3 Academic education

The population that participated in the questionnaire mostly graduated from a university course, 89.4% in Portugal and 96.6% in Italy. The duration of these courses shows a difference statistically significant, since, in Portugal, 3% participated in a course lasting less than 3 years, 81.1% attended for 3 years and 15.2% followed a 4-year course ($p < 0.001$). In Italy, 100% of DHs have attended a 3-year course.

A significant difference is found in the credits of the bachelor's degree course ($p = 0.018$). Most of the participants answered that the number of credits is 180 (72.7% PT and 75.3% ITA). The existence of a final bachelor's degree exam represents a significant difference between the two countries. The results indicate a percentage of 50.8% in Portugal who affirm it, in Italy 96.6% state the existence of a final Bachelor'degree examination ($p < 0.001$).

Dental hygienists are asked about the existence of a further qualifying examination that allows to practice of the profession. This examination exists in Italy, for 92.1% of participants, while in Portugal 17.2% affirm its presence ($p < 0.001$).

Finally, an aspect of the practical training provided by the university degree course was evaluated, which shows significant differences in the number of clinical practice hours, ($p < 0.001$). Most the Portuguese population is divided between the two options "0-300 hours" with 37.5% and "301-600 hours" with 41.1%. In Italy, population splits between "301-600 hours" with 37.2% and in "More than 600 hours" with 48.8%. (Table 9).

Table 9. Differences in *Degree course data:* between Portugal and Italy.

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Type of Dh academic education	University course	59	89,4%	86	96,6%	0,07
	Non-university professional course	7	10,6%	3	3,4%	
Course duration	Less than 3 years	2	3,0%	0	0,0%	**<0,001**
	3 years	54	81,8%	89	100,0%	
	4 years	10	15,2%	0	0,0%	
HO Bachelor's Degree Course Credits	Less than 180 credits	0	0,0%	8	9,9%	**0.018**
	180 credits	40	72,7%	61	75,3%	
	More than 180 credits	15	27,3%	12	14,8%	
Approval of credits through exams	No	5	8,2%	3	3,4%	0.202
	Yes	56	91,8%	85	96,6%	
Final course work (bacherlor's thesis)	No	5	7,8%	2	2,3%	0.108
	Yes	59	92,2%	86	97,7%	
Final Bachelor's Degree Exam	No	32	49,2%	3	3,4%	**< 0.001**
	Yes	33	50,8%	85	96,6%	
Qualification exam for the exercise of the profession	No	53	82,8%	7	7,9%	**< 0.001**
	Yes	11	17,2%	82	92,1%	
Grading Scale as Exam Grading	NO	1	1,5%	3	3,5%	0.460
	Yes	64	98,5%	83	96,5%	
Mandatory clinical and intership hours during the bachelor's degree	No	1	1,5%	2	2,2%	0.753
	Yes	64	98,5%	87	97,8%	
Practical hours (clinical and community) in the degree	0-300 hours	21	37,5%	12	14,0%	**< 0.001**
	301-600 hours	23	41,1%	32	37,2%	
	More than 600 hours	12	21,4%	42	48,8%	

Master

Concerning the one-year postgraduate course called "Master" in Italy and "pós graduações" in Portugal, the difference between the two countries is statistically relevant ($p < 0.001$). This is because in Portugal most of the participants, 65.2%, have not obtained a "pós graduação", in

Italy, on the other hand, 100% of the participants in the study already have a master's degree, regardless of whether it is Level 1 or Level 2.

The relevant difference concerns the existence of two Master's levels (I and II), in fact, Portuguese participants unanimously (100%) state that they do not exist, in Italy the presence of two Master's levels is affirmed by 96.3% of the participant population ($p < 0.001$). (Table 10).

Table 10 **.** Differences in *Master data* between Portugal and Italy

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Master course (one-year postgraduate course called "*Master*" in both countries)	I have a Master	21	31,8%	89	100,0%	**<0,001**
	I am currently attending a Master	2	3,0%	0	0,0%	
	I don't have a Master	43	65,2%	0	0,0%	
Existence of post-graduate programmes for Dental hygienists	No	3	4,8%	1	1,1%	0.175
	Yes	60	95,2%	86	98,9%	
Duration between 6 months and one year	No	1	1,7%	4	4,9%	0.322
	Yes	57	98,3%	78	95,1%	
Existence of Level I and Level II post-graduate courses	No	66	100,0%	3	3,7%	**< 0.001**
	Yes	0	0,0%	79	96,3%	
Post-graduate course credits	Less than 60 credits	10	22,2%	15	20,0%	0.664
	60 credits	28	62,2%	52	69,3%	
	More than 60 credits	7	15,6%	8	10,7%	

Master's degree

The *"Mestrado"* in Portugal and the *"Magistrale"* in Italy (2 years post-graduate) experience between the two countries is equally significant (p =0.005). In both countries the majority of the population has not obtained a Master's degree, 63.6% of Portuguese DHs and 82% of Italian DHs are without a Master's degree.

Dental hygienists were questioned about the existence of a Master's degree (two years post-graduate degree, 120 credits), called "*Mestrado*" in Portugal and "*Magistrale*" in Italy.

Their answers were positive for most of the participants in both countries, however, they presented a significant difference, 1.6% in Portugal stated no and 9.5% in Italy (p = 0.047). 88.5% of Portuguese dental hygienists state that the master's degree offered by universities in Portugal is a course directed specifically to dental hygienists. In Italy, 68.3% of participants do not recognize a Master's degree directed exclusively to DHs (p<0,001).(Table 11)

Table 11. Differences in *Master's degree data* between Portugal and Italy.

		Country where professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Master's degree (2 years post-graduate degree called "*Mestrado*" in Portugal and "*Magistrale*" in Italy)	I have a Master's degree	16	24,2%	15	16,9%	**0,005**
	I am currently attending a Master's degree	8	12,1%	1	1,1%	
	I don't have a Master's degree	42	63,6%	73	82,0%	
Existence Master's in science Degree for DH	No	1	1,6%	8	9,5%	**0.047**
	Yes	62	98,4%	76	90,5%	
MSc specifically aimed at dental hygienists	No	7	11,5%	56	68,3%	**< 0.001**
	Yes	54	88,5%	26	31,7%	
Duration of the MSc	1 year	4	6,7%	3	3,7%	0.115
	2 years	56	93,3%	74	90,2%	
	3 years	0	0,0%	5	6,1%	
MSc Credits	Less than 120 credits	3	6,3%	8	11,8%	0.125
	120 credits	37	77,1%	56	82,4%	
	More than 120 credits	8	16,7%	4	5,9%	
Existence of academic and specialised MSc	No	26	51,0%	47	64,4%	0.136
	Yes	25	49,0%	26	35,6%	

PhD

Finally, 6.1% of Portuguese dental hygienists are already PhDs and 9.1% are currently attending doctorates. In Italy, 1.1% are PhDs and no one is currently engaged in a doctoral course (p=0.003).

The relevant discrepancy appears in the duration of the doctorate (p<0.001). Most Portuguese participants, 60.4%, declare the duration to be 4 years. In Italy, a majority equivalent to 58.7% attests to the duration of 2 years.

As far as credits are concerned, there are further substantial differences (p < 0.001).

In Portugal, most DHs, 64.3%, state that they acquire "180 credits" at the end of their doctoral studies, almost the same percentage of Italian DHs, 61.9%, state that they acquire "more than 240 credits". (Table 11).

Table 12. Differences in *PhD programme data* between Portugal and Italy.

		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
PhD experience	I have a PhD	4	6,1%	1	1,1%	**0,003**
	I am currently attending a PhD	6	9,1%	0	0,0%	
	I don't have a PhD	56	84,8%	88	98,9%	
Existence PhDs for DH	No	16	27,6%	31	40,3%	0.126
	Yes	42	72,4%	46	59,7%	
Duration of the PhD	2 years	8	16,7%	27	58,7%	**< 0.001**
	3 years	11	22,9%	17	37,0%	
	4 years	29	60,4%	2	4,3%	
PhD Credits	Less than 180 credits	0	0,0%	9	21,4%	**< 0.001**
	More than 240 credits	5	11,9%	26	61,9%	
	180 credits	27	64,3%	7	16,7%	
	240 credits	10	23,8%	0	0,0%	

5.2.4 Competencies

Regarding anamnesis the first significant difference concerns the performance of the intra-oral exam. The results report a 92.3% of the Portuguese population responding to perform this examination, in Italy 98.9% ($p = 0.040$).

A further anamnestic examination is the occlusion examination, which indicates 80% of Portuguese Dh's practising it compared to 61.6% of Italian dental hygienists.

Regarding anamnesis procedures, the DHs were questioned about the performance of radiography in their daily practice. The difference is statistically significant 93.8% of dental hygienists in Portugal take radiographs regularly, while in Italy 20.7% ($p < 0.001$).

Regarding interpreting these X-rays, the percentage of Italian hygienists is 80.5%. In Portugal, the participants confirm the previous percentage of 93.8% ($p = 0.0018$)

The last question asks participants whether oral diagnosis is a skill they perform in their daily practice. 98.5% of Portuguese participants say they make diagnoses after a previous anamnesis whereas in Italy 48.8% of Italian participant hygienists claim to perform diagnoses ($p < 0.001$). (Table 13).

Table 13. Differences in *Anamnesis data* between Portugal and Italy

Collection of clinical information		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Historical of vital parameters	No	38	58,5%	51	58,6%	0.984
	Yes	27	41,5%	36	41,4%	
Nutrition history and dietary habits	No	17	26,2%	26	30,2%	0.582
	Yes	48	73,8%	60	69,8%	
Pharmacological history	No	2	3,1%	9	10,3%	0.087
	Yes	63	96,9%	78	89,7%	
Head and neck examination	No	33	50,8%	42	48,3%	0.761
	Yes	32	49,2%	45	51,7%	
Intra-oral examination	No	5	7,7%	1	1,1%	**0.040**
	Yes	60	92,3%	86	98,9%	
Periodontal Health Assessment	No	1	1,5%	1	1,1%	0.835
	Yes	64	98,5%	86	98,9%	
Examination of the dentition	No	1	1,5%	6	6,9%	0.119
	Yes	64	98,5%	81	93,1%	
Occlusion examination	No	13	20,0%	33	38,4%	**0.015**
	Yes	52	80,0%	53	61,6%	
Assessment of oral lesions	No	3	4,6%	3	3,4%	0.715
	Yes	62	95,4%	84	96,6%	
Identify emergency situations	No	5	7,7%	8	9,2%	0.743
	Yes	60	92,3%	79	90,8%	
Detection of overflowing fillings	No	2	3,1%	1	1,1%	0.398
	Yes	63	96,9%	86	98,9%	
Taking x-rays	No	4	6,2%	69	79,3%	**< 0.001**
	Yes	61	93,8%	18	20,7%	
Interpreting X-rays	No	4	6,2%	17	19,5%	**0.018**
	Yes	61	93,8%	70	80,5%	
Oral diagnosis	No	1	1,5%	44	51,2%	**< 0.001**
	Yes	64	98,5%	42	48,8%	

In table 14 we can see the differences between “Treatment”. The first question was about the performance of manual supragingival calculus removal treatment. Of the participants from Italy, 100% state that they perform this service, in Portugal 93.8% affirm the same ($p = 0.019$).

Italian dental hygienists answer the question about performing periodontal probing in their services with 100% unanimity. The difference was significant with participants from Portugal whose percentage is 92.1% ($p = 0.008$).

The participants were questioned about their use of laser therapy. The results are significant because, in Portugal 6.3% claim to use it, and in Italy 59.8% claim to carry out laser therapy sessions ($p < 0.001$).

> Statistically relevant results include the difference between the percentages of specialized areas of intervention in: - Orthodontics, where 55.6% in Portugal claim to provide services in this area, in Italy 25.3% do so ($p < 0.001$).

- Implantology, 59.7% of participants in Portugal work in this area, in Italy 27.7% ($p < 0.001$).

- Dentistry, 46.8% in Portugal compared to 26.5% in Italy ($p = 0.011$).

Table 14. Differences in *Treatments data:* between Portugal and Italy

Treatments		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Manual removal of calculus supragingival	No	4	6,3%	0	0,0%	**0.019**
	Yes	60	93,8%	86	100,0%	
Subgingival calculus removal with ultrasonics	No	0	0,0%	0	0,0%	
	Yes	64	100,0%	87	100,0%	
Polishing of crowns and restorations	No	7	11,1%	10	11,6%	0.922
	Yes	56	88,9%	76	88,4%	
Periodontal probing	No	5	7,9%	0	0,0%	**0.008**
	Yes	58	92,1%	87	100,0%	
Root planing	No	6	9,4%	3	3,4%	0.128
	Yes	58	90,6%	84	96,6%	
Topical application of fluoride and other topical agents	No	3	4,8%	1	1,1%	0.175
	Yes	60	95,2%	86	98,9%	
Application of rubber dam	No	41	66,1%	39	45,3%	0.012
	Yes	21	33,9%	47	54,7%	
Application of fissure sealants	No	14	21,9%	21	24,4%	0.716
	Yes	50	78,1%	65	75,6%	
Desensitizing treatments	No	10	15,6%	5	5,7%	0.045
	Yes	54	84,4%	82	94,3%	
Tooth bleaching	No	8	12,5%	6	6,9%	0.241
	Yes	56	87,5%	81	93,1%	
Implant maintenance	No	6	9,4%	11	12,8%	0.514
	Yes	58	90,6%	75	87,2%	
Temporary filling	No	44	69,8%	66	75,9%	0.411
	Yes	19	30,2%	21	24,1%	
Laser therapy	No	59	93,7%	35	40,2%	**< 0.001**
	Yes	4	6,3%	52	59,8%	
Specialized areas of intervention in Orthodontics	No	28	44,4%	62	74,7%	**< 0.001**
	Yes	35	55,6%	21	25,3%	
Specialised areas of intervention in Periodontology	No	21	33,9%	42	50,0%	0.052
	Yes	41	66,1%	42	50,0%	
Specialized areas of intervention in Dentistry	No	54	87,1%	62	74,7%	0.065
	Yes	8	12,9%	21	25,3%	
Specialized Areas of Intervention in Implantology	No	25	40,3%	60	72,3%	**< 0.001**
	Yes	37	59,7%	23	27,7%	
Specialized Areas of Intervention in Pediatric Dentistry	No	33	53,2%	61	73,5%	**0.011**
	Yes	29	46,8%	22	26,5%	
Areas of intervention in patients with special needs	No	25	40,3%	33	39,3%	0.899
	Yes	37	59,7%	51	60,7%	

Prevention and information

The first statistically significant difference found in this sub-section, concerns the oral health education activity, 100% of the participants from Italy state that they perform this prevention method, in Portugal the percentage is 95.1% ($p = 0.039$).

The participants were then asked whether they were involved in educating patients about using domiciliary oral health devices. The answers reported a significant difference, where 100% of the Italian participants answered “yes” and 82.8% of the Portuguese population recorded a positive response to this preventive practice ($p < 0.001$).

Investigations continue into the existence of public health programmes, these are recorded as being present by 67.8% of the participants in Italy and 48.4% of the participants in Portugal ($p = 0.016$). A further practice to prevent problems in the oral cavity is dietary orientation. This practice is popular among 73.8% of participants in Portugal, in Italy, 87.2% state that it is performed ($p = 0.036$). Finally, the tobacco cessation programme is surveyed, with 48.4% of the dental hygienists responding to the questionnaire from Portugal declaring it as an exercise carried out. In Italy, 78.2% of participants state that they carry it out ($p < 0.001$).

Table 15. Differences in *Prevention and information data* between Portugal and Italy.

Prevention and information		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Oral health education	No	2	4,9%	0	0,0%	**0.039**
	Yes	39	95,1%	86	100,0%	
Education for the use of oral health aids at home	No	11	17,2%	0	0,0%	**< 0.001**
	Yes	53	82,8%	87	100,0%	
Public Health Programs	No	33	51,6%	28	32,2%	**0.016**
	Yes	31	48,4%	59	67,8%	
Dietary guidance	No	17	26,2%	11	12,8%	**0.036**
	Yes	48	73,8%	75	87,2%	
Smoking cessation programs	No	33	51,6%	19	21,8%	**< 0.001**
	Yes	31	48,4%	68	78,2%	
Communication and motivation about the importance of oral hygiene	No	1	1,5%	0	0,0%	0.248
	Yes	64	98,5%	86	100,0%	
Motivation for periodic follow-up	No	1	1,5%	0	0,0%	0.248
	Yes	64	98,5%	86	100,0%	
Motivation about the relationship between oral health and general health	No	1	1,5%	0	0,0%	0.246
	Yes	64	98,5%	87	100,0%	
Creation and development of research projects	No	33	51,6%	46	52,9%	0.873
	Yes	31	48,4%	41	47,1%	

Clinical duties

The first major difference between the two study countries appeared when asked about the handling of impression material. The results suggest that 84.4% of Portuguese dental hygienists handle such a practice, in Italy, this practice is performed by 42.5% ($p < 0.001$).

The application and removal of periodontal medication in the two countries showed another significant difference. In Portugal, 23.4% of participants apply and remove periodontal medications, and 53.5% of hygienists in Italy do the same ($p < 0.001$).

The detection of overflowing fillings is a task for 100% of Italian study participants and 95.4% of participants from Portugal ($p = 0.041$).

Regarding the elaboration of the treatment plan, there is a statistically significant difference between the two countries. In Portugal, 86.2% state that they deal with the drafting of a treatment plan to be carried out by the patient, in Italy the percentage of is 65.5% ($p = 0.004$).

Finally, among the significant differences found between the clinical tasks, the performance of local anesthesia plays an important role. In Portugal, 25% of participants perform local anesthesia while in Italy reach the 8.1% ($p < 0.005$).(Table 16).

Table 16. Differences in *Clinical duties data* between Portugal and Italy.

Clinical duties		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P -value**
Receiving, sitting, preparing and dismissing the patient	No	2	3,1%	4	4,6%	0.634
	Yes	63	96,9%	83	95,4%	
Handling of impression material	No	10	15,6%	50	57,5%	**< 0.001**
	Yes	54	84,4%	37	42,5%	
Preparation, disinfection and sterilization of instruments and other materials	No	31	48,4%	37	42,5%	0.471
	Yes	33	51,6%	50	57,5%	
Application and removal of periodontal medications	No	49	76,6%	40	46,5%	**< 0.001**
	Yes	15	23,4%	46	53,5%	
Detection of deteriorated fillings	No	3	4,6%	0	0,0%	**0.041**
	Yes	62	95,4%	89	100,0%	
Care and maintenance of dental equipment and accessories	No	28	43,8%	38	43,7%	0.993
	Yes	36	56,3%	49	56,3%	
Elaboration of treatment plan	No	9	13,8%	30	34,5%	**0.004**
	Yes	56	86,2%	57	65,5%	
Execution of local anesthesia	No	48	75,0%	79	91,9%	**0.005**
	Yes	16	25,0%	7	8,1%	
Collection and recording of photographic documentation	No	22	34,4%	19	22,1%	0.095
	Yes	42	65,6%	67	77,9%	
Referral to other healthcare professionals	No	1	1,5%	6	6,9%	0.119
	Yes	64	98,5%	81	93,1%	

Additional knowledge

The first difference emerges in the analysis of knowledge of enterprise organization. In Italy, this is knowledge applied by 52.3% of the population, in Portugal, 24.6% of the participating population claim to have such knowledge ($p < 0.001$).Afterwards, the participants' knowledge of team management and leadership was examined. The results suggest that in Italy is an essential competence for 45.3% of the participant population, in Portugal, 26.6% claim to possess this knowledge ($p = 0.019$).

Further knowledge is needed in innovation, be it clinical, instrumentation, or methodological innovations. Italian participants declaring themselves competent are 71.3% and 51.6% in Portugal ($p = 0.013$).Finally, relevant to this paragraph is the difference that exists between the two countries regarding knowing the relational area. Italy registers 75.9% of adhesions, in Portugal 59.4% ($p = 0.031$). (Table 17).

Table 17. Differences in *Additional knowledge data* between Portugal and Italy.

Additional knowledge		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P-value**
Knowledge of the English language	No	16	24,6%	13	14,9%	0.133
	Yes	49	75,4%	74	85,1%	
Computer skills	No	15	23,1%	17	19,5%	0.597
	Yes	50	76,9%	70	80,5%	
Knowledge of labour law	No	28	43,1%	26	29,9%	0.093
	Yes	37	56,9%	61	70,1%	
Knowledge of business organization	No	49	75,4%	41	47,7%	**< 0.001**
	Yes	16	24,6%	45	52,3%	
Management and leadership skills	No	47	73,4%	47	54,7%	**0.019**
	Yes	17	26,6%	39	45,3%	
Knowledge of innovation	No	31	48,4%	25	28,7%	**0.013**
	Yes	33	51,6%	62	71,3%	
Knowledge in the relational area	No	26	40,6%	21	24,1%	**0.031**
	Yes	38	59,4%	66	75,9%	
Knowledge in the field of scientific research	No	15	23,1%	18	20,9%	0.752
	Yes	50	76,9%	68	79,1%	

5.2.5 Safety and Security

Only one question appears to be of statistical interest, and that is about the existence of safety measures to avoid accidents and injuries in the working environment. Respondents' answers to this question show the presence of such safety measures for 92.9% of Italian hygienists and 79.4% of Portuguese dental hygienists ($p < 0.016$). (Table 18).

Table 18. Differences in *Safety and Security data* between Portugal and Italy.

		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Accident related to safety at work	No	56	87,5%	75	89,3%	0.736
	Yes	8	12,5%	9	10,7%	
Availability of all personal protective equipment (PPE) at the health centre	No	5	7,8%	2	2,4%	0.123
	Yes	59	92,2%	82	97,6%	
Existence of safety measures in the healthcare establishment to prevent accidents and injuries	No	13	20,6%	6	7,1%	**0.016**
	Yes	50	79,4%	78	92,9%	
Training on protocols to ensure personal and patient safety	No	22	35,5%	21	25,0%	0.170
	Yes	40	64,5%	63	75,0%	

5.2.6 Teamwork

One aspect to be assessed is the influence that interpersonal relationships can negatively have on group work, the data on this appeared to be statistically significant ($p < 0.001$).

In Portugal, most of the population (33.3%) indicated that interpersonal relationships "Sometimes" negatively impact teamwork, in Italy, the majority (47.6%) reported this occurs "Many times". The second highest frequency for Portugal was "Rarely" at 30.2%, in Italy it was "Always" at 44%. Furthermore, 7.9% of Portuguese stated that negative influences "Never" occur, and 1.2% of Italians. (Table 19).

Table 19. Differences in occurrence frequencies of teamwork data between Portugal and Italy.

		Country where the professional activity is carried out				
		Portugal		Italy		
		Count	N %	Count	N %	**P- value**
Existence of communication and collaboration between the HOs and the team	Never	0	0,0%	0	0,0%	0.145
	Rarely	0	0,0%	5	6,0%	
	Sometimes	15	23,8%	13	15,5%	
	Often	28	44,4%	35	41,7%	
	Always	20	31,7%	31	36,9%	
Well-structured team, with a functional organization model that makes teamwork productive	Never	0	0,0%	1	1,2%	0.300
	Rarely	2	3,2%	7	8,2%	
	Sometimes	16	25,4%	14	16,5%	
	Often	31	49,2%	37	43,5%	
	Always	14	22,2%	26	30,6%	
Interpersonal relationships have a negative impact on the quality of teamwork	Never	5	7,9%	1	1,2%	**< 0.001**
	Rarely	19	30,2%	0	0,0%	
	Sometimes	21	33,3%	6	7,1%	
	Often	11	17,5%	40	47,6%	
	Always	7	11,1%	37	44,0%	
Frequency of conflicts in the workplace	Never	5	7,9%	16	19,0%	0.293
	Rarely	31	49,2%	31	36,9%	
	Sometimes	21	33,3%	27	32,1%	
	Often	5	7,9%	7	8,3%	
	Always	1	1,6%	3	3,6%	

5.3 Satisfaction

The questions on satisfaction were made at the end of each section of the professional profile data.

The difference between Italy and Portugal is statistically significant concerning the evaluation of legislation supporting continuing training and professional development.

The average satisfaction is 3.20 in Italy, indicating a tendency to satisfaction and 2.70 in Portugal, indicating a trend towards dissatisfaction ($p = 0.003$).

The question that reported statistically significant results in salary concerns the DHs' perceived level of satisfaction with opportunities for salary growth and professional progression in oral hygiene field. The mean satisfaction is 2.35 in Portugal, in Italy, the mean is 2.91 ($p = 0.001$).

The mean satisfaction score is 3.81 in Italy and 3.35 in Portugal ($p = 0.003$) in the level of satisfaction with the overall quality of academic training programmes.

The mean satisfaction with an academic education that has fully and adequately provided the required skills for the DH profession is 3.21 in Portugal and in Italy, it is 3.72 (p=0.001).

There is a statistically significant difference between the two countries studied in terms of the participants' satisfaction with the general technical competencies provided to dental hygienists. The average response on this measure is 3.46 for Portugal and 3.13 for Italy ($p = 0.040$).

The analysis of the significant results concerns the level of satisfaction with one's own competencies in the workplace compared to all the competencies normally granted to dental hygienists. In Portugal, the average response has a score of 4.02, in Italy is 3.66 (p=0.041).

Statistical significance appears from the question investigating safety at radiation exposure. The average value indicates Italian answers with a rate of 3.89 and 3.55 for Portuguese responses ($p = 0.025$).

The degree of satisfaction with their position in the teamwork shows a relevant difference between the two countries. The average value confirms this trend since it is 4.12 in Portugal and 3.77 in Italy (p=0.030). (Table 20).

Table 20. Differences in Satisfaction in the professional profile dimensions

			Country where the professional activity is carried out		
			Portugal	Italy	
Sections			**Mean (s.d.)**	**Mean (s.d.)**	**P-value***
Legislation	Level of satisfaction with aspect of legislation that affect the profession	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	2.97 (1.02)	2.71 (0.87)	0.079
	Level of satisfaction with continuing training and professional development supported by current legislation	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	2.70 (1.07)	3.20 (0.87)	**0.003**
Salary	Level of satisfaction with HO salary	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.00 (1.00)	3.19 (0.99)	0.217
	Level of satisfaction with salary opportunities for professional growth and progression	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	2.35 (0.82)	2.91 (1.09)	**0.001**
	Competitive salary compared to other Dental Hygienists	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.26 (0.82)	3.08 (0.97)	0.343
	Competitive salary compared to other professionals	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	2.85 (1.14)	3.07 (1.10)	0.195
Academic education	Level of satisfaction with the overall quality of the academic training program	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.35 (1.04)	3.81 (1.01)	**0.003**
	Level of satisfaction with the academic training that fully and adequately covered the skills required for their profession	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.21 (1.04)	3.72 (1.05)	**0.001**
	Level of satisfaction with the academic training that contributed to the development of the skills needed to interact effectively with patients	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.68 (0.92)	3.75 (1.00)	0.324
	Level of satisfaction of the opportunity you had during the training to experience and deepen all the practical and theoretical aspects fundamental to professional practice	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.37 (1.00)	3.48 (1.18)	0.225

Competencies	Level of satisfaction with the technical competencies granted to DHs	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.46 (0.92)	3.13 (0.99)	**0.040**
	Level of satisfaction with their own competencies at the place where they work, compared to all the skills recognised for dental hygienists	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	4.02 (0.72)	3.66 (0.99)	**0.041**
	Level of satisfaction with the competencies in the assessment and management of patients' oral health conditions	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	4.06 (0.70)	3.86 (0.91)	0.232
Safety and Security	Safety against Exposure to Contaminants	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.92 (0.87)	3.88 (0.86)	0.751
	Safety against exposure to diseases and infections	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.98 (0.87)	3.83 (0.83)	0.191
	Safety against Radiation Exposure	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.55 (0.99)	3.89 (0.92)	**0.025**
	Safety against exposure to dangerous conditions	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.98 (0.79)	4.00 (0.78)	0.908
	Status of equipment and protective devices	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.83 (0.90)	4.06 (0.81)	0.117
	Preparation to deal with emergency situations	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.59 (0.75)	3.65 (0.88)	0.620
	Quality and adequacy of the training received to ensure safety in daily activities	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.78 (0.83)	3.76 (0.92)	0.998
	Level of satisfaction with occupational health and safety	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.60 (0.93)	3.80 (0.80)	0.201

Teamwork	Level of satisfaction of teamwork in the clinic where you work	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.91 (0.68)	3.83 (0.83)	0.818
	Degree of satisfaction with their position in the work team	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	4.12 (0.60)	3.77 (0.92)	**0.030**
	Satisfaction in conflict management in the team	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.70 (0.75)	3.52 (0.96)	0.286
Workplace	Management of cleaning and maintenance of dental equipment and instruments	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.97 (0.93)	4.07 (0.77)	0.664
	The physical conditions of the working environment	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.86 (0.91)	3.98 (0.87)	0.496
	Availability of material resources	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.89 (0.82)	3.95 (0.97)	0.423
	The level of modernity and innovation of the clinic	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.75 (0.98)	3.78 (1.04)	0.798
	The level of comfort and well-being perceived in the place where you work	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.90 (0.84)	3.93 (0.91)	0.810
	Possibilidade de crescimento e desenvolvimento profissional no local do trabalho	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.42 (1.08)	3.66 (1.13)	0.148
					***Mann- Whitney U test**

The satisfaction analysis section ends with a general question. Professionals were asked about their level of satisfaction with the **quality of life that their job as a dental hygienist allows them.** In Italy 57.6% of participants are "Satisfied" and 45.3% for Portugal. Additionally, 14.1% of participants in Italy reported being "Totally Satisfied", and 7.8% of Portuguese participants reported the same. (p = 0.032). No differences were found between countries concerning the level of satisfaction with the service provided daily or the level of satisfaction with the choice of the profession. (Table 21).

Table 21. Differences in *Satisfaction wit General satisfaction* between Portugal and Italy.

			Country where the professional activity is carried out		
			Portugal	Italy	
Sections			**Mean (s.d.)**	**Mean (s.d.)**	**P-value***
General	Level of satisfaction with the quality of life that HO's work allows	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.42 (0.91)	3.69 (0.95)	**0.032**
	Level of satisfaction with the service you provide daily	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	4.19 (0.59)	4.14 (0.74)	0.996
	Level of satisfaction with the choice of profession of oral hygienist	Totally dissatisfied Unsatisfied Neutral Satisfied Fully satisfied	3.94 (0.90)	4.08 (0.90)	0.225
					***Mann- Whitney U test**

6. Discussion

The research was based on the following question: "What are the differences between the professional profiles of Dental hygienists in Portugal and Italy?" examining specifically legislation, salary, academic education, competencies, safety and security, teamwork and satisfaction and the results, in general, point to several similarities as well as differences.

6.1 Sociodemographic

The geographical distribution is uneven for both countries but is different in the division by areas (north - center - south) when comparing Portugal and Italy. In Portugal the participants' answers show a higher predominance in the center of the country which does not represent the real situation of their distribution, with the highest share of hygienists working at the south (Lisbon, Alentejo e Algarve).[39,40] In Italy, dental hygienists practice predominantly in the North, and the distribution varies from region to region. Lombardia, Veneto (north) and Lazio (center) are the regions with the largest number of members.[38]

It is a population of young professionals, about 69% are under 40 years old [39] in Italy and 70,6% in Portugal [40] as most of the participants in this study.

Regarding gender, in Italy, women have predominantly practiced the profession for several years. However, according to a newspaper article on healthcare in 2021, 24% of the profession is practiced by male professionals[39]. The predominance of the female gender is also a reality for Portugal[41], as confirmed by Johannsen et al.[15]

The study population differs according to the education level: in Italy, it is significantly more common to take a one-year specialized course (Master's course) than in Portugal, where the rate of attendance at postgraduate academic degrees (Master's degree and PhD) is higher.

Dental hygienists practice their professional activities in both public and private healthcare in a varied of settings.[42,43] In Italy, the most common area of employment at present is in the private sector, as a clinician in medical and dental practices.[43] The dental hygienist is a health professional currently almost absent in the Italian public service however territorial assistance is among the primary objectives of the National Recovery and Resilience Plan (PNRR). [39] As evidence of this, 96.6% of study participants claim to work in the private sector. In Portugal, working in private practice is still the most popular path for dental hygienists, although dental hygienists have other alternative career paths to choose from, such as, working in enterprises, research, education, management and entrepreneurship.[42] However, a great emphasis of the profession has been on the community aspect with the implementation of oral public health strategies, to promote oral health in schools, which is still the main function of the 108 oral hygienists integrated into the SNS (National Health Service - *Serviço Nacional de Saúde*). The key role of this professional group in health promotion and the prevention and control of oral diseases among the population, and their extensive experience in primary health care, reinforce the importance of an increased presence of these professionals in the SNS.[37]

The dental hygienist may find himself in the position of working as an employee or freelancer. This option depends on the type of contract the practitioner accepts and the specific needs and organisation of the workplace. In the two countries studied, there appears to be a clear difference in the concentration of dental hygienists between the two forms of employment relationship. In Italy, this division is marked, with 91% of DHs working as freelancers. In an interview on 4 February 2019 with the president of AIDI (Italian Dental Hygienists Association), it was highlighted that dental hygienists work mainly as freelancers and only to a small extent as public employees. It is precisely in the SSN (National Health Service) that

this figure would find its rightful place, considering the high incidence of caries and periodontal diseases.[44]

In Portugal, the division of dental hygienists between employee and freelance positions is quite balanced. These data show a slight overlap in the answers since being a freelancer does not exclude the possibility of also working as an employee, and vice versa. This means that it is common for a proportion of dental hygienists in Portugal to work simultaneously as employees and freelancers. Despite this, it is evident that a small majority are mainly subject to a relationship of dependency.

6.2 Legislation

In both countries, almost all professionals work in teams with a dentist in their clinical practice. However, this collaboration does not necessarily imply an obligation of direct supervision by the dentist. Most dental hygienists in both countries declare their independence in practice. However, there is a considerable difference in the response rates regarding this subject. In Portugal, dental hygienists are generally subject to greater subordination to dentists than in Italy, where the professional autonomy of dental hygienists is more widely recognized.

Confronting the results of the present study with the legislation it seems differently: in Portugal, Article 4 of the Code of Ethics states that “the dental hygienist performs his or her duties under the supervision of the doctor or dentist, or another person to be designated when there is an established institutional technical hierarchy”.[45]

In the same way as in Portugal, the Italian law regulating the profession of dental hygienist, paragraph 3 of Article 4 of Law 362 of 8 November 1991, states "the dental hygienist performs his professional activity on the instructions of dentists and surgeons authorized to practice dentistry." This clarifies that the dental hygienist must work on the indication and under the supervision of the dentist.[46]

Accordingly, it is clear from Italian law that the professional activity of the dental hygienist consists of the performance of “tasks” on the “indication” of the dentist, subject, however, to control and verification, in the presence of the dentist. However, this supervision, and consequently the necessary presence of the dentist in the clinic, does not undermine the operational autonomy of dental hygienists in carrying out their practice; on the contrary, could presuppose multidisciplinary collaboration.

According to the president of the Italian Dental Hygienists' Commission Caterina di Marco, “there is no such limit for the legitimacy of the work of the Dental Hygienist compared to the Dentist, but rather there is a fruitful and equal synergy in the interest of the person assisted, the indication being an element that precedes and does not interfere in the performance of all our typical and reserved competencies constituting the “proper field” that connotes our professional autonomy and responsibility”.[47] They may be a minority who are unaware of their rights since, from the court of Messina of 2023, it appears that it does not constitute an abusive exercise of the profession if the dental hygienist performs services within his competence, independently, without the co-presence of the dentist. [48]

Likewise for Portugal, where the National Dental Hygienists Association (APHO) specifies that the professional must exercise full professional responsibility and technical autonomy, in the framework of the competencies defined by current legislation, within an interdisciplinary team.[49] This interdependence of professionals should be a convergence of knowledge and multidisciplinary work between pairs, with respect for professional autonomy, creating an integrated model of oral health care provision. In this model, there is no room for restrictive supervision requirements, but rather for collaborative practice.[37]

Based on these premises, an examination of the possibilities for dental hygienists to establish their own practices was conducted. In Italy, the national CAO (Coordination of the Associations of Dentists) reiterates that "the activity of the dental hygienist cannot disregard the therapeutic indication of the dentist and, therefore, the opening of an independent professional practice by the hygienist is unacceptable, as sanctioned by Council of State ruling No. 1703/2020″.[50] Although the current regulations state this, most Italian professionals who participated in the study are convinced of the possibility of opening their own practice independently. This misconception of the Italian population stems from the fact that, in recent years, the possibility for dental hygienists to open independent professional practices has been controversial.

This debate involved the Council of State, which ruled on 9 March 2020 and September 2023, and the Ministry of Health, which had given a favorable opinion in 2013 but subsequently implemented the Presidential Decree of 19 February 2024.

The National CAO finally gave its opinion on the independent opening of a dental hygiene practice on 19 July 2024: “Definitive no” on setting up autonomous dental hygiene practices.[46]

In Portugal, on the other hand, the participants in the study are more aware of this prohibition, reaffirmed in detail in Ordinance no. 99/2024/1, of 13 March, imposing that the activity of the clinic or dental practice implies the physical presence of the clinical director, to guarantee the quality of the treatments and the supervision of the activity carried out. As the clinical director of a particular practice, the dentist must ensure that the technical, ethical and deontological principles of dentistry are upheld and complied with, both on his part and by those who work with him (e.g. dentists, dental hygienists, dental technicians and assistants and dental assistants). [51]

Concerning the existence of a National Health Programme for the promotion of oral health, almost all Portuguese dental hygienists participating in the study affirm the active presence of such a programme, as in contrast to Italy where only half of the population expresses a positive opinion. Although both countries have a SNS (National Health System) with initiatives in oral health promotion, the effectiveness and action of the programmes themselves show significant differences between Portugal and Italy, as well as the involvement of dental hygienists in such programmes.

In Portugal, in 2005, the National Programme for the Promotion of Oral Health (PNPSO) was launched, a strategy based on the promotion of healthy habits and behaviours and the prevention of oral diseases aimed at the school population. In 2008, the strategy of using dentist vouchers and referrals for oral hygiene consultations at health centers began, making the most of the capacity already installed in the private sector and avoiding additional costs for the public sector. In 2016, by means of Order No. 8591-B/2016, of 1 July, the Ministry of Health began to strengthen dentistry in the SNS, in primary healthcare, in a phased manner, through the development of pilot experiences, initially involving a total of thirteen health centers. Subsequently, this endeavor was extended to the whole country, covering around six dozen primary healthcare units.[52]

In Italy, unfortunately, when it concerns dental care, the National Health Service does not offer sufficient support, forcing almost all citizens to turn to a private dentist, incurring very high costs.[53] The national legislation on dental care consists mainly of Legislative Decree 502/1992 and subsequent amendments and supplements, which defines the criteria for determining the essential levels of care (L.E.A.). These national provisions stipulate that dental care paid for by the NHS is limited to programmes for the protection of dental health in the age of development (0-14 years) and certain categories of subjects in particularly vulnerable conditions.[54] To adopt nationwide uniform guidelines for the promotion of oral health and the

prevention of oral diseases, the Ministry of Health, starting in 2008, with contributions of DHs, has promoted the drafting and dissemination of several documents considering the indications contained in the National Guideline Plan (PNLG). [55]

Although there is misinformation from Italian participants, legislation reports that dental hygienists in both countries are required to have occupational accident insurance. In Italy, it is generally provided by INAIL (*Istituto Nazionale Assicurazione contro gli Infortuni sul Lavoro*). In the case of self-employed workers, it is their responsibility to take out an appropriate insurance policy to cover any occupational injuries or illnesses[56]. In Portugal, regulated by Law Decree nr 159/99 of May 11th, is required /obligatory the coverage of workplace accidents in the exercise of independent activity, even if cumulatively, with dependent work for others. [57]

An important difference between the two countries concerns the existence of "compulsory credits (points) for continuing education" acquired through accredited training courses to practice as a dental hygienist. In Italy, C.M.E. (Continuing Medical Education) credits are a measure of the commitment and time that each dental hygienist has devoted annually to updating and improving the quality level of their professionalism. Credit is awarded according to both the quality of the training activity and the time devoted to it. The national programme stipulates that C.M.E. must be monitored, verified and measurable. Furthermore, it must be encouraged, promoted, and organized by the national organizations and by the dental hygienist's Registers.[58]

The health worker must accrue the prescribed credits for the three-year training period, which amounts to 150 credits.[59]

In Portugal, there is currently no accreditation programme for the continuous training of health professionals, but Dental hygienists should always keep up to date, since knowledge in the field of medical and dental sciences is constantly evolving, leading to the continuous emergence of new practices, techniques, materials, and equipment.[60]

Regarding the documentation attesting to professional qualifications for exercising the profession of dental hygienist, almost unanimously the Portuguese participants affirmed the need for it, unlike the Italians. This probably derives from the fact that, in Italy, in order to exercise the profession of dental hygienist it is necessary to obtain a three-year degree in Dental Hygiene or to possess a qualification from the previous system recognised as equivalent or equivalent[61].

A duty for professionals, unanimously confirmed by the people of Portugal, is the obligation to keep patient data accurate and up to date at all times. It is justified by the Portuguese Health Regulatory Entity (ERS), according to which the personal data controller must be able to demonstrate at any time that it respects for data minimization and data accuracy principles.[62]

For Italy, there is no doubt that a well-filled medical record and written informed consent are considered key documents in the medical-legal sphere [63]. However, to date, there is no legislation requiring dental practices (and private medical practices in general) to keep medical records over time.[64]

The final question under discussion concerning the legislation of the two countries concerns whether hygienists have found themselves in a position to proceed against the existing legislation in their daily practice.

"In Italy, for instance, a dental hygienist was once accused of practicing unlawfully in the absence of a dentist but was subsequently acquitted. Dr. Di Marco, from the National Board of Dental Hygienists, remarked, “This ruling marks a historic moment for our profession, as it signifies a crucial acknowledgment of our complete professional autonomy”.[65]

In Portugal we can’t find any reference about this matter. To date, ACSS has not suspended any dental hygienists or received any complaints against dental hygienists. Some hygienists go beyond some competencies usually under the jurisdiction of the clinical director.

6.3 Salary

According to Yoon & Park[66], dentists and dental hygienists perceived income and working hours to be of priority importance for quality job conditions. Quality dental jobs are an important factor in keeping workers happy and maintaining an efficient practice. Dental practice owners need to pay attention to the quality of jobs required by the dental workforce and provide flexible working hours. A significant difference between the two countries appears when comparing the type of working schedule with more Italian hygienists claiming to work flexible hours.

Within the sphere of working schedule, another item of this aspect is analyzed, which is the possibility that the timetable depends on the presence or absence of patients on the agenda. Once again, more participants from Italy state that they are subject to this dependence.

The slight difference that exists in the percentages of the last two items studied, which sees the percentage rise from those who state that they have flexible hours to those who state that their hours are dependent on patients, could derive from the fact that in some clinics the situation could coexist whereby the schedule is fixed but appointments with patients are entered regularly and precisely by filling the diary at all times. A fixed timetable can be managed to respond to patients' appointments while maintaining a stable overall structure; this could create apparent flexibility within a structured programme.

The flexibility of the work schedule remains appealing to dental hygienists, who often schedule hours to meet family obligations or other personal interests. In the Hartley M's survey, just 47% of dental hygienists work 30 to 40 hours a week.[67]

The weekly workload and flexible working hours associated with this professional activity vary according to the labor context in which they work. In the public sector, oral hygienists work 35 hours a week, although there are special schemes of 42, 24 and 20 hours a week. In the private sector, working hours are usually more irregular and flexible, as they depend on factors such as the labor agreement between the professional and the employer or, in a liberal situation, the number of patients who use their services. As dual employment is common among these professionals, it's natural that most of them work a large number of hours a week.[60]

Regarding remunerations, according to data from the largest job search website, Indeed.com, the average rDH salary in 2023 is $45.37 per hour. However, it's essential to note that the dental hygienist's hourly rate may not directly translate to your earnings for a full-time workday. The remuneration can range depending on the type of workplace you are employed in [68] . The freelancer can be paid on a percentage basis, at an hourly rate, based on the number of patients treated per day or month, or by directly billing the patient.[69]

The dental hygiene profession is frequently adaptable. They may be able to work at different practices and alter their hours. Their compensation may be flexible depending on where they work, so it's crucial to understand how each operates. Many practices employ the daily or hourly rate since it is easy to calculate. You get paid the same amount regardless of your output. Hours worked include all the time an employee is required to be on duty, even if it is making phone calls to schedule hygiene patients or sharing in housekeeping duties of the dental practice. An hourly or salaried rate complies with Federal law and provides stability and income security. It gives them the flexibility to maximize their

earnings.[70]This type of remuneration is used more in Portugal than in Italy, showing a statistically significant difference between the two countries.

On the contrary, a "pay per patient" type of remuneration, when, the underlying assumption is that dental hygienists are paid a specific amount for each patient seen, is a common situation and widely used by most dental hygienists in both countries under study.

According to this remuneration type, the DH may be tempted to trade quality for quantity to keep production moving. They are also responsible for completing additional tasks for which you may not be compensated, such as sanitation, laundry, calling patients, and aiding coworkers.[70]

Related to employment, in Portugal, recruitment for jobs subject to the Labor Code, within the scope of the career of senior technician in the diagnostic and therapeutic areas (*"*Técnicos Superiores de Diagnôstico e Terapêutica"), including changes to higher categories [71], is carried out using a competitive procedure in compliance with the provisions of Article 7 of this Decree-Law [26].

The same situation emerges in Italy, although most Italian participants are not aware of it as evidenced in the responses to the questionnaire. The National Collective Labor Contract (CCNL) finds application throughout the freelance sector and applies to all employees and workers, employed or dependent, with any form of subordinate or para-subordinate employment relationship with a full-time or part-time contract of the professional practices of dentist's and dental health facilities. The contract is calibrated to dental practices with their peculiarities and applies to all figures in the field, from the Medical Director to Dental Assistants .[72]

6.4 Academic education

Comparison between the two countries at the level of academic training shows important differences regarding the presence of the final graduation examination and how the profession is licensed to practice.

In Italy, the Degree examination has the value of a state exam qualifying the profession. After having passed all the examinations stipulated in the study plan including those of internship, there is a final examination, which consists of two stages:

- Practical test with application value, with the value of the State Exam qualifying for the profession, aimed at assessing the achievement of the skills provided by the professional profile;

- Dissertation of a thesis developed by the student, the content of which must be relevant to issues closely related to the professional profile.[73]

In Portugal, there is no requirement as a degree examination (board exam) to enter the practice. In the curricular units of Applied Studies in Oral Hygiene, the assessment results in the discussion of the final work to be done during the examination periods.[74]

The recognition of the professional title is issued by the *Administração Central dos Serviços de Saúde* (ACSS) from the Ministry of Health. Once professional qualifications have been obtained in Portugal, it is possible to promptly request the professional license and proceed with registration in the public registry by completing the form provided on the official website.[75] The professional title is recognised through the issue of a card, according to a model to be approved by order of the Minister of Health.[76]

Finally, the difference in the number of compulsory hours to be dedicated to university internship activity is remarkable. In Italy, the internship lasts a total of 1,500 hours over the three years.[77,78] In Portugal, the final internship (clinic and community) lasts a total of 672 hours. However, during the other semesters, a total of 1176 hours were dedicated to different practical activities in the clinic and community.[79]

Differences arise with postgraduation education which is more common in Italy - Level I or II University Diploma will be awarded[80] whereas in Portugal degree conferring postgraduate either 2nd cycle, or 3rd cycle are more common. [81]

The layout of the master's degree *("Magistrale" or "Mestrado")* shows another difference between the two countries. In Italy, Dental Hygiene graduates can continue their university studies by choosing the Master's Degree in Science of Technical Healthcare Professions - Technical Care Area (class LM/SNT3)[82]. The so-called LM/SNT3 is the Class of degrees in TECHNICAL HEALTH CARE PROFESSIONS to which the following belong: Biomedical Laboratory Techniques, Orthopaedic Techniques, Dietetics, Audiometric Techniques, Medical radiology techniques for imaging and radiotherapy, Dental Hygiene, Neurophysiopathology Techniques, Audioprosthetic techniques, Cardiocirculatory pathophysiology and cardiovascular perfusion.[83] This means that master's degree is addressed for all professionals qualified in one of the above categories.

The situation is significantly different in Portugal, where exists a Master in Oral Hygiene (*Mestrado em Higiene Oral*) since 2020/2021 aimed specifically at dental hygienists who want to deepen skills in oral hygiene with practical aspects included. In addition, like in Italy, the training offered for academic master's is vast although not specific for Oral Hygiene professionals. All master's degrees open to other health professionals are also open to Oral Hygienists and cover the areas of Communication, Education, Management, Psychology, Public Health, Sociology, etc.[84]

6.5 Competencies

In the wide spectrum of competencies granted to dental hygienists, the practice of some of these produced mixed and confusing results.

At the anamnesis stage, the practices that yield differences were intra-oral examination and examination of occlusion. In Italy, the dental hygienist is responsible for filling out a form, containing the patient's data regarding his or her state of health and oral hygiene, data collected through an objective intra-oral examination and a periodontal examination, carried out with the aid of basic instrumentation[85]. As well as the assessment of the patient's occlusion is an important clinical parameter that every dental hygienist is expected to know and consider during their daily clinical practice[86].

In Portugal the Dental hygienist exercise their profession by performing suitable clinical techniques for the prevention and control of gingivitis, periodontitis and caries, namely by collecting clinical information through the evaluation of the register of the patient's medical, dental and dietary history, medication, evaluation and registration of vital signs, head and neck and intra-oral examinations, observation, registration and evaluation of the health of the periodontium, evaluation of oral hygiene, examination of dentition and occlusion, results of intra-oral radiographic examinations, recognition of emergency situations and taking dental impressions to obtain study models[87].

A significant and clear distinction between the anamnestic examinations performed in the two countries concerns radiology. Bozia *et al*.[25] conducted a study involving all national dental hygiene associations that were members of the International Federation of Dental Hygienists (IFDH) or European Dental Hygiene Federation (EDHF), as the target group. Of the 31 countries, 26 (84%) responded to the questionnaire. Italy and Portugal are part of the study. In 77% of the countries, DHs are allowed to take radiographs, whereas, in 6 countries (ie, Austria,

Czech Republic, Italy, Japan, Russia, and Slovakia), DHs are not allowed to take radiographs. In 42% of the countries, the DH can indicate a radiograph (Portugal is one of them, while Italy is not).

At the end of the collection of anamnestic data, it becomes possible for these professionals to make diagnoses. The difference between Italy and Portugal is clear: In Portugal, Dental hygienists are professionals specialised in oral health diagnosis and therapy, so when faced with a case of periodontal disease, they are the first-line professionals to detect, warn and inform the patient.[88] They carry out a dental assessment and the diagnosis includes the detection of teeth that are present, missing, with cavities or restorations, as well as prostheses and assessment of the patient's oral hygiene, based on the performance of plaque indices and an evaluation of the patient's diet and health habits and attitudes.[60] Dental hygienists must act in conformity with the clinical information, pre-diagnosis, diagnosis and investigation or identification process, being responsible for designing, planning, organizing, applying, evaluating, and validating the work process within the scope of their respective profession, with the purpose of promoting health, prevention, diagnosis, treatment, rehabilitation and reinsertion[71].

In Italy, the operational plan of the hygienist should not include the provision of the "diagnosis". it is definitive that the hygienist should work on the dentist's prescription, and the general setting of "what needs to be done" should be the dentist's responsibility. Following diagnosis, prognosis, treatment plan set by the dentist, the hygienist will carry out what has been suggested/prescribed to him. The hygienist must always try to detect caries, reporting it clearly to the dentist, who will be responsible for making a definite diagnosis of a carious lesion[89].

A further study by Bozia et al.[90] showed that in 23% of countries, the dental hygienist may diagnose a carious lesion but not treat it. In Europe, it is permitted in the Netherlands, Portugal, Sweden and Switzerland.

In the previous Bozia *et al* [25]. study, in 50% of countries the DH is allowed to make a diagnosis from a radiograph, precisely, in Portugal the DH can make diagnosis of cariology and periodontology. Only 31% of the countries a DH can do both, and Portugal is one of these countries. However, it is important to clarify that when assessing periodontal health using indices such as periodontal probing and radiographic evaluation, the clinical diagnosis of periodontal disease falls under the responsibilities of Italian dental hygienists[91].

The Dental hygienists in both countries perform and evaluate the efficiency of common task removal of supra and subgingival calculus manually and by ultrasound, root planing, polishing of crowns and amalgams, as well as the topical application of various

prophylactic means. [92,93]

In the context of professional competencies, there is a competence that showed inconsistency among the study participants. In fact, they do not give unanimous answers when asked whether periodontal probing is applied in daily practice. Periodontal probing is a fundamental clinical procedure and makes it possible to know whether gingivitis, or worse, periodontitis, is present and to understand how serious the situation is.[94]

Additionally, other competencies, namely lasers, application areas orthodontics, implantology and paediatrics. In Portugal, oral hygiene trends and challenges are constantly evolving, driven by technological advances and a growing awareness of the importance of oral health. Examples include the integration of technologies such as digital impressions, 3D printing, dental telemedicine, lasers and advanced materials with innovative and promising technologies that are shaping the future of dentistry and oral hygiene, providing better results for patients and professionals[95]. As well as in Italy, where auxiliary technologies such as lasers, photodynamic therapy (PDT) and optical magnification systems are already in use.[91]

Numerous articles in the literature report the role of the dental hygienist integrated with that of other dental professionals to achieve an effective result in the patient's mouth.

In both countries, the dental hygienist's is fundamental for the prevention of oral diseases and for the maintenance of treatments carried out by dentists, namely implantology, orthodontics, periodontology, and pediatric.[91,96]

Regarding prevention and information between Portugal and Italy, some conflicting variables in the questionnaire's answers among the participants need to be confirmed in the literature. Health education related to promoting and maintaining oral health is another important component of these professionals' work, as they are responsible for alerting and motivating patients to take care of their mouths, particularly regarding oral hygiene[60].

In Italy, the dental hygienist works in the field of health education as follows: DH performs a screening aimed at intercepting dental defects or other oral health disorders and invites the patient to see the dentist, if necessary. Instructs on home oral hygiene aids and techniques to control oral disease. Indicates the rules of proper rational nutrition for the protection of oral health. Motivates individuals in different age groups. Sensitizes parents of pediatric subjects

to the application of sealants and fluor prophylaxis. Carries out counselling for the cessation of tobacco use and voluptuous habits, emphasizing the importance of correct lifestyles. It defines programmes for the dissemination of adequate motivation for regular check-ups, home hygiene, oral and food self-control. It also works in public health programmes through community dentistry, identifying dental problems through the collection and processing of epidemiological data. It draws up carious pathology prevention programmes in nursery, primary and secondary schools. It plans prevention interventions in institutionalized and non-institutionalized special-needs patients, in elderly patients accommodated in the R.S.A. and in patients from disadvantaged communities.[97]

Also in Portuguese practice, oral hygienists teach the most appropriate way to brush teeth, the timing and frequency of brushing and the use of other means of decontaminating the oral cavity according to the patient's needs and skills. In addition, they encourage preventive habits such as regular visits for routine check-ups and advise on eating habits (for example, in relation to foods that should be eaten, avoided, or consumed on a small scale, based on their effects on oral health).[60] In terms of smoking, the oral hygienist can also play an important role, advising on measures to improve oral hygiene, as well as on products that can help stop this addiction. Bearing in mind the impact of tobacco on your oral health can also be a great motivator.[98] Another area where these professionals work is in the community, where they collaborate in restoring and maintaining oral health in at-risk groups such as pre-school and school-age children, teenagers, the elderly, pregnant women, people with disabilities and people with medical problems. In this area, they are also responsible for assessing the oral health conditions of the population and developing programmes to prevent oral diseases, making people aware of the importance of maintaining correct oral hygiene habits.[60] Despite these functions are clear it seems that they are not fully done by Portuguese Hygienists as presented in the results section.

Other clinical duties are investigated, for example, it’s confirmed that, in both countries, Dental Hygienists are qualified to take impressions to obtain study models.[99] Therefore, it is not the act, that is, the taking of the impression, but the purpose that legitimises the Dental Hygienist, for procedures within his competence. The taking of impressions is not exclusively linked to the rehabilitative function, as some would like to assert, but also at the disposal of preventive and motivational activities.[100]

Among the clinical duties, is the detection of decay around the fillings, a competence exercised by DH in both countries as a prevention method and evidence of traumatic injuries induced by inappropriate prosthetic artefacts[101,102].

In both countries, the DH is not authorized to purchase, own anesthetic material, or administer local anesthesia. The only difference is that in Italy, the use of topical anesthetic is allowed, while in Portugal the author couldn't find any reference to this procedure. [90]

Under investigation is the possibility for dental hygienists to stipulate a treatment plan to the patient. Once the diagnosis has been made, a skill that Portuguese professionals rather than Italians recognize, DH also draw up a treatment plan, through which they define the interventions to be carried out. However, some pathologies require interventions that are not limited to dental hygienists and in these situations, it is up to these professionals to refer the patient to a dentist or other doctor specializing in the pathology in question.[60] Therefore, the approach of oral hygienists in Portugal is based on an intervention cycle that includes diagnosis, planning, intervention, assessment, and referral. As part of their training, oral hygienists are also qualified to perform clinical duties as part of multidisciplinary teams where they diagnose, establish treatment plans, and carry out treatments in different areas of dentistry.[37]

In Italy, after the dentist has diagnosed the patient regarding the treatment plan, the dental hygienist will be able to prepare his or her own work plan: motivation-instrumentation-advice. The most important aspect of the relationship that binds the hygienist to the patient is that this starts immediately after the diagnosis by the dentist and will continue during active treatment and later also in maintenance.[103]Therefore, he is not allowed to diagnose other specializations and choose which branch to refer. In the elaboration of the oral hygiene treatment plan, after receiving the diagnosis to identify the clinical problem and receiving the indications on the treatment plan, he makes an evaluation and analysis of the health information, observes the documentation and complete recording of the data. He then actively listens to the needs of the assisted person, plans, and selects preventive interventions and schedules follow-ups to monitor the effectiveness of the treatment plan.[104]

As part of the additional competences to complete the professional profile of the two countries, it is the responsibility of the professional to have experience in business organization, innovation, leadership, and interpersonal skills. Indeed, it is crucial to highlight the importance of these fields, as outlined below.

To succeed in an increasingly competitive labor market, professionals must have a high level of adaptability to keep up with constant evolution and an entrepreneurial ability to explore new spheres of action. Moreover, oral hygienists are highly qualified professionals who carry out their professional activity with a high degree of technical and scientific autonomy, in an increasingly complex context, determined by the exponential evolution of the sciences they incorporate and technological advances, which determines a framework of high responsibility and accountability.[105]

Effective leadership is highly valued in family-centered healthcare and in the practice of a dental hygienist. It is seen as an instrument of communication, motivation, inspiration and change in society, and is directly related to excellent practice.[106]

6.6 Safety and security

Another no less important aspect is the extreme danger, which is still underestimated, of this profession, in which, in addition to the biological risk of the agents involved there is the chemical risk of the toxicity of dental materials and the physical-mechanical risk associated, for example, with X-rays, noise and vibrations, and finally the psychological and stress-dependent problems that are so recurrent, especially in recent years. Hence the need to draw up a series of dossiers listing and describing those protocols that are the basis of scientific and safe work and to which dentists, dental hygienists, chairside assistants, and laboratory technicians must refer for internal work organisation.[107]

In Italy, risk assessment in the workplace, including the dental practice, is regulated in Article 17(1)(a) of Legislative Decree 81/08. The objective is to assess the risks present in the workplace and draw up a programme to adopt the necessary procedures to prevent and avoid them. Analyses and prevention procedures, but also indications on the procedures and behaviour that workers must adopt to work safely, must then be indicated by the owner of the firm in the Risk Assessment Document (DVR).[108]

In Portugal, occupational health and safety legislation establishes that every professional and entrepreneur is responsible for their own integrity and that of the workers in their charge. Dentists must be aware of the importance of guaranteeing their own safety, that of the patient and that of the team.[109]

Despite this acknowledgment of risks, participants of this survey indicate the non-existence of protocols being this aspect is more common in Portugal.

6.7 Teamwork

When asked about the frequency with which interpersonal relationships negatively influence job quality, Italian participants tend to place themselves more in the higher frequency categories than Portuguese participants.

According to Leitão, Fortunato and Freitas[110] the emotional side of the human being is fundamental for each person to be able to establish healthy interpersonal relationships, since man does not live in isolation, but needs to establish social relationships. It is therefore vitally important that the emotional side is resolved so that it doesn't interfere with inter- and intra-organisational relationships. As stated by Powell[111] the performance of a network of people promotes an exchange of knowledge and conditions that help us to understand each other in the face of various challenges.

Finally, is fundamental to maintain a cooperative and collaborative relationship with co-workers in the oral health field as well as with professionals from other areas; establish professional interpersonal relationships that are honest and responsible; promote mutually beneficial human relationships, including those with other health professionals and maintaining relationships of trust and cooperation, for the benefit of clients.[112]

6.8 Satisfaction

The results of this research show significant differences in the levels of satisfaction with certain aspects of the professional profile examined between Italian and Portuguese participants.

6.8.1 Legislation

A difference appears in the level of satisfaction of the participants with legislation supporting continuing training and professional development between countries ($p = 0.003$) and a higher prevalence in the "Totally dissatisfied" category among Portuguese hygienists. These findings suggests that while the Portuguese may have a greater propensity to express dissatisfaction, the Italians seem more inclined to see positive aspects in the current legislation.

The average satisfaction score higher for Italy is supported by the accreditation model to support continuing education (C.M.E - Continuing Medical Education)[58] whereas in Portugal it is the practitioner's responsibility, without any legislation to require and verify compliance.[60]

Rederiene *et al*. [6] conducted a survey aimed at investigating a range of topics among dental hygienists in European countries, whose National Dental Hygienists Associations (NDHAs) were members of the EDHF (24 countries). It emerged that DH are expected to undertake continuing education in 18 countries, Italy is one of these. Four countries, including Portugal, neither expect in near future nor require continuing education for dental hygienists. The duration of mandatory continuing education was reported as varying between countries with the highest requirements in Italy, where 50 h/credits annually (150 hours/credits at the end of three years) of continuing education are obligatory for dental hygienists, followed by Belgium and Israel with 24 h per year, Hungary and Lithuania and the UK with 15 h per year, Latvia with 6 and Czechia with 4 h per year.

6.8.2 Salary

A significant difference between DH's satisfaction between the two countries is the opportunities for salary growth and professional progression in the oral hygiene field ($p = 0.001$). In Portugal, the data reveal strong dissatisfaction among dental hygienists. This indicates that although there is also a trend towards dissatisfaction in Italy (average of 2.91), it is less pronounced than in Portugal.

In Italy, the dental hygienist is a career that ensures an excellent career path: the employment rate is particularly high even for new graduates, with higher-than-average salaries right from the first work experience. It is a profession with excellent growth prospects, which can give much satisfaction to those who pursue this profession. The easiest way to succeed is to own one specialization in a particular field.[69]

In Portugal, Amaral *et al*.[113] conducted a study on DH's level of satisfaction in community health. It has been confirmed that dissatisfaction-related factors include salary, working conditions and recognition, personal growth, and career progression.

One of the factors that influences work is salary and the influence of remuneration was confirmed in a study carried out by Abbott *et al*.[114] to find out which factors influenced dental hygienists to choose a particular job opportunity, covering factors such as job characteristics, geographical regions, resources, and dedication. The results showed that 65 % of the participants mentioned salary as the most important factor when selecting a job.

Anyhow, according to Rederiene et al.[6] in countries like Italy and Portugal (but also Czech, Hungary, Ireland, Lithuania, Spain, Sweden), the annual payment for dental hygienists was reported lower than the national average.

6.8.3 Academic education

The statistically significant result on satisfaction with the overall quality of academic training program reveals interesting differences between dental hygienists in Italy and Portugal ($p = 0.003$) in favor of a higher level of appreciation in Italy.

Data shows that Italians have greater confidence in their educational system, a positive trend towards the fullness and adequacy of academic preparation in Italy and a higher perception of the quality of educational programmes, compared to their Portuguese colleagues, suggesting that the Portuguese educational system may be perceived as less effective in providing the necessary skills to practice the DH profession.

A particularly notable difference emerges in the "Neutral" answers. In Portugal, 27.4% of respondents selected this option, while in Italy, no one (0%) choose it. This discrepancy could indicate a greater contrast of opinions in Italy, where respondents tend to express more decisive judgements, both positive and negative, and thus clearly position themselves on one side or the other of satisfaction.

A survey that used data from 21 countries, mentioning education and years of study as one of the factors causing “discomfort” and reduce job satisfaction. However, it seems that in the context of these professionals, the higher the academic degree, the greater their recognition and, consequently, the greater the autonomy they are given thus supposedly influencing the level of professional satisfaction [115].

6.8.4. Competencies

The results reveal a statistically significant difference between the two countries regarding the participants' satisfaction with the general technical competencies provided to dental hygienists, underscoring disparities in how these competencies are perceived in both countries. This divergence suggests that while dissatisfaction exists in both countries, it is more pronounced in Italy.

Moreover, going into more detail in the satisfaction study, the participants are asked to compare their specific spectrum of competences in daily practice with the complete set of competences generally recognized for dental hygienists. This comparison thus refers to the difference between the skills they actually use in their daily work and all the skills that, according to legislation and training, are officially granted to the profession.

The higher average satisfaction score in Portugal (4.02) versus Italy (3.66) reinforces the notion that Portuguese dental hygienists feel more competent and supported in their professional roles.The lower levels of dissatisfaction in Portugal suggest that Portuguese dental hygienists may feel more competent and better prepared to meet the demands of their profession, probably due to the greater range of skills compared to Italian DHs that the results of this study revealed.

However, in a qualitative survey involving 89 IDs, active in the practices where AIDI Board members and Regional Presidents work, 70% considered their clinical-instrumental and communication-relational skills to be adequate.[116]

As already mentioned in Bozia et al.[25,90]'s studies, in Portugal hygienists are allowed to indicate and perform X-rays, while in Italy they are not. Furthermore, through periodontal evaluation examinations and X-ray analysis, it is possible in Portugal to make the diagnosis of carious lesions and periodontitis while in Italy is only possible for periodontal disease[91].

Finally, in Portugal, professionals outline the patient's treatment plan, through which they define the interventions to be carried out, and when some pathologies require interventions that are not limited to dental hygienists, they refer the patient to a dentist or other doctor specializing in the pathology in question.[60]This suggests that the Portuguese system of permissible skills provides greater professional fulfilment, with more dental hygienists feeling fully equipped to perform their role effectively, and consequently more satisfied.

6.8.5 Safety and security

Analysis of the results on satisfaction with safety in radiation exposure shows a significant difference between participants from Portugal and Italy. These data reflect a higher preoccupation and less satisfaction among Portuguese professionals regarding the safety of radiation exposure and suggest that Italian dental hygienists perceive the radiological safety measures applied in their working environment more positively than their Portuguese colleagues.

The current legislation in Italy on health protection of individuals against the dangers of ionising radiation related to medical exposure [117] as well as the introduction of measures to reduce the risk of exposure from ionising radiation in the workplace[118] and the obligatory CME credits on topics related to radiation protection[119] could explain this.

According to this legislation dental hygienists, ASOs and practice administrative staff are classified as “members of the Population” and consequently “not ‘exposed” since their duties do not include the use of X-ray equipment[120] and radiological protection is not part of their direct professional responsibilities, nor is specific training on the subject. This also explains why Italian professionals are generally more satisfied with this aspect: the responsibility for radiation protection lies with the dentist, who is obliged to attend specific training courses. As a matter of fact, there is neither an obligation nor a need for hygienists to expose themselves to X-rays, giving them greater job security in this area.

In Portugal, on the contrary, since dental hygienists are allowed to take X-rays, they are inevitably exposed to ionizing radiation. This entails the obligation to undergo specific training in radiation protection. Consequently, they are more exposed to the associated risk, which may result in greater professional dissatisfaction than other figures not directly involved. Furthermore, it is important to note that the figure of the Radiological Protection Officer has only recently been regulated by Decree-Law No. 139-D/2023 [121,122]. The entry into force of the new provisions is set for January 2025, marking a crucial milestone for the management of radiological safety, which before then was not fully defined for these professional figures, another reason for probable dissatisfaction.

Dental hygienists play an important role in the processing of imaging. According to European standards, all auxiliary personnel involved in exposures, such as in the development procedure, must complete a course as a of dental radio-diagnostic facilities.[123,124]

6.8.6 Teamwork

An interesting comparison appears between the levels of satisfaction with one's own role in teamwork in Portugal and Italy. The relevant statistical difference indicates that the perception of one's own position within teamwork varies significantly between the two countries ($p=0.030$) with a greater satisfaction in Portuguese dental hygienists

This suggests greater difficulty or misalignment in Italian work teams, where a significant proportion of respondents do not feel comfortable with their position in the group, and at the same time may indicate that the Portuguese work context offers better integration and more effective team management, allowing individuals to feel valued in their role.

In fact, a study conducted in a Portuguese clinic, shows that employees are less interested in factors unrelated to the objective performance of their professional duties, given the stability

of the working team, the acceptance of the institution's management model and, consequently, a positive daily relationship between professionals.[125]

On the other hand, the same study points to factors for which dissatisfaction with team cooperation in the working environment may arise.

The analysis of professionals with between 10- and 20-years' experience reveals the need to review the career progression and job satisfaction strategy, as an "impersonal" work environment, a lack of closeness to colleagues and identification with the strategy and organisational reality, factors hindering promotion and a feeling of a lack of competence can lead to professional stagnation. This situation can generate high levels of dissatisfaction and the possibility of retaining potentially 'toxic' professionals in work teams, catalysing a negative work environment. For this reason, the change could be to encourage training for professionals with greater seniority, to ensure the progression of skills, renewal of knowledge and maintenance of satisfaction levels among professionals with long work experience.[125]

In addition, it is to be expected that professionals working in private practice should have a higher level of support from the hierarchy, considering that they work in a company, most of which is relatively small, and that in professional practice there is teamwork that fosters the relationship between professionals, beyond the hierarchical level that may exist between them [126].

These factors could be the cause of the dissatisfaction of the DHs in Italy with teamwork, however, in a qualitative survey involving DHs, the majority consider the relationships within the practice to be optimal, report a very good relationship with the dentist and a very good relationship with assistants and with other DHs [116].

The different competencies of the team, while respecting their roles, must work in synergy, recognizing each one as an active part of the shared project to perform appropriate teamwork. Effective communication is an important tool for all team members and must be adapted to different situations and different roles and competencies with commitment and adaptability. Sharing different working methodologies and mental approaches must allow the team to remain cohesive to avoid stress that the patient would perceive as an unfavorable emotional condition. All team members must feel responsible and committed to the success of the treatment, each within the scope of his or her role, and live their profession with joy[127].

Crawford et al.[128] point out that some of the problems dental hygienists face at work are inadequate recognition and some conflicts over roles. According to their study, approximately 30% of dental hygienists who changed jobs were due to conflicts with their dentist.

6.8.7 Workplace

The context of the workplace/environment did not show significant differences in the perception of satisfaction among the participants in the study, which indicates that the situation is comparable between Italy and Portugal.

The results of a study about satisfaction work environment conducted in Sweden showed that the dental hygienists experienced their work environment as motivating and facilitating, but also trying. Motivating factors were good relationship with co-workers, managers, and patients, seeing the results of own work, having responsibility and making own decisions. The new, pleasant and modern clinics, good cooperation between co-workers and varying duties were described as facilitating factors. The trying factors, as described by the dental hygienists, were above all being controlled by time limits or by some elements of the work, such as teamwork. The dental hygienists also felt stress because appointments were too short. Additionally, a supportive work climate with a variety of tasks, and the participation in decision-making have been shown to be related to job satisfaction. [129]

6.8.8 General job satisfaction

In the section dedicated to the analysis of satisfaction, an interesting comparison emerges between the levels of satisfaction with the quality of life that working as a dental hygienist grant to study participants in Italy and Portugal ($p = 0.032$)

The data reveal that most participants in both countries declare themselves “Satisfied”, although the level of satisfaction is higher among Italian dental hygienists than among their Portuguese colleagues. This gap, although not excessive, suggests that some aspects of working conditions in Portugal could be improved to increase working well-being.

A particularly relevant finding is the significant difference in the “Neutral” responses, with a much higher percentage of neutrality in Portugal than in Italy. This result could indicate greater uncertainty or ambivalence among Portuguese professionals about their quality of life.

The results that emerged from the present study, in particular the difference between the levels of general satisfaction with the quality of life dependent on work between Italian and Portuguese dental hygienists, can be better understood considering the dynamics that influence job satisfaction in the health sector.
According to Deressa & Zeru most health professionals consider the factors affecting job satisfaction as something that comes from obtaining a prospective incentive, recognition and financial incentives as the main variables. Thus, improved performance and good team spirit improve health worker satisfaction and, consequently, patient satisfaction, job attachment and reduced service complaints[130].

Although many studies show high levels of professional satisfaction among dental hygienists, there are also studies that reveal dissatisfied professionals who choose to leave the profession. Boyer, in 1994, carried out a study with the aim of understanding the reasons that lead dental hygienists to consider or actually leave the profession and to determine whether these reasons are influenced by their job category. The author concluded that dental hygienists working as such were considering leaving the profession mainly due to psychological factors.[131]

In 1996, Calley, Bowen, Darby and Miller carried out a study with the aim of identifying specific factors that contribute to the retention of oral hygienists in private practice. One of the factors identified were the quality of the working environment, the time provided by management for good care (consultation time), effective management policies, career support, support in the working environment and the opportunity for variety in the profession. They concluded that the factors that influence oral hygienists to keep their jobs are the same as those that influence them to leave the profession[132].
Anyway in the literature consulted, most of the studies that report high levels of job satisfaction among dental hygienists involve practicing in private clinics[133–135].

Hae-Gyum e Ryu conducted a study to provide basic data on the relationship between the happiness and job satisfaction of dental hygienists. The happiness index, which was based on general characteristics, showed the greatest significant differences in life satisfaction among adults over 36 years of job experience, negative emotions among adults under 25 years of job experience, and negative emotions among adults with 4∼10 years of job experience. The factors that improved the job satisfaction of dental hygienists were life satisfaction, prime duty at the workplace, and a positive effect. On the contrary, negative emotions lowered the job

satisfaction. The happiness of the dental hygienist is an important factor not only for the improvement of the hygienist's personal quality of life, but also the patient's health. It is necessary for dental hygienists to maintain good relationships with coworkers during in the workplace, as well as employers, to have an administrative system that offers proper compensation, improvement of the work environment, and opportunities to improve professionalism at the workplace[136].

Nunes *et al*[137]. conducted a study where all active dental hygienists received a mailed questionnaire containing the shortened version of the World Health Organization instrument to measure quality of life (WHOQOL-Bref), demographic and job-related data, and questions about self-rated general health status and QoL. The WHOQOL-Bref instrument revealed that the Social Relationships domain had the highest mean score (70.56), followed by the Physical (65.49), Psychological (61.3) and Environment domains (56.25). Most of the dental hygienists had a high QoL in the Social Relationships domain and a low QoL in the Physical, Psychological and Environment domains. The conclusion is that a low QoL was common among the dental hygienists and has perceptible effects on their perceptions of their health status and QoL.

Cramer defines Quality of Life as a state of physical, mental and social well-being and not just the absence of illness or disability, and this concept is used as a synonym for the concept of health[138].
This is confirmed by Gill and Feinstein, where quality of life does not only include factors related to health, but also other factors such as work, family, friends and certain life circumstances[139].

7. Limitations

In the design of the study, it is possible to run into certain risks that could expose the study to weaknesses.

The sample of dental hygienists selected to participate in the study is not adequately representative of the entire population of dental hygienists in Portugal and Italy.

This is because, the sample population registered for the study was 2587, of whom only 155 completed the questionnaire.

It is also important to specify that the sample number (2587) represents the dental hygienists registered with the national associations, APHO for Portugal (805 members) and AIDI for Italy (1782 members), so there is a remainder of dental hygienists who are not registered with the associations and therefore it was impossible to make contact.

Furthermore, one Italian association (UNID) did not participate in the study and so did not provide information on the number of members and neither did it circulate the questionnaire.

Given this, the results may not be adaptable to the entire population and may not describe in a global manner the aspects of the professional profile under examination in the two countries under study.

Data gather by questionnaire needs to be careful designed to ensure that the standardized questions provide uniform data to be recorded to increase the reliability of the study. Additionally, the fact that the questionnaire was not pre-tested can bring less robust results. However, the good content and face validity may minimize this limitation.

The fact that the questionnaire was applied in two languages, despite in native language of the respondents, could lead to some misinterpretation of questions.

Dental hygienists' perceptions and opinions may vary, and consequently answers to the questionnaire may be influenced by subjective factors. These may be personal experience, viewpoints, professional knowledge, and behavioural characteristics.

8. Conclusion

This study explores the profession of DH in Portugal and Italy in terms of legislation, salary, academic education, competencies, safety and security, teamwork, workplace and satisfaction. No substantial differences were identified, except for the following ones.

The division of professionals between employees and freelancers shows a marked difference between Italy and Portugal. In Italy, the vast majority of dental hygienists (91%) work as freelancers, while only a minority work as employees. In contrast, in Portugal, the division is more balanced, with a slight prevalence of dependent relationships.

This difference can also be attributed to the distinct working conditions associated with each form of employment. Indeed, in Italy, the prevalent role of freelancers reflects a tendency for hourly flexibility and work autonomy, compared to Portugal. As does the possibility that the timetable depends on the presence or absence of patients on the agenda, once again, more participants from Italy state that they are subject to this dependence.

An important difference between the two countries concerns the existence of "compulsory credits (points) for continuing education" in Italy acquired through accredited training courses to practice as a dental hygienist. In Portugal, there is currently no accreditation programme for the continuous training of health professionals, but DHs should always keep up to date.

In Italy, the Degree examination has the value of a state exam qualifying for the profession, and, therefore represents the same recognition as the professional title. In Portugal, there is no requirement for a degree examination (state exam) to enter the practice.

Other differences arise with postgraduate education ("*pós-graduação*" in PT and "*master*" in ITA), which is more common in Italy and, unlike in Portugal, is awarded a Level I or II university diploma. At the same time, it is more usual in Portugal to award postgraduate 2nd cycle degrees ("*Mestrado"* in PT and "*Magistrale"* in ITA) or 3rd cycle degrees (PhD).

Among the relevant differences in the competences reserved for DHs, it is widely recognised that in Portugal, DHs are allowed to indicate and perform X-rays, whereas in Italy it is forbidden to do both. Furthermore, during their practice, only Portuguese dental hygienists are allowed to make caries diagnoses. In Portugal, it can be their responsibility to draw up the treatment plan, even for situations requiring intervention from other dental specialities, to which patients can be referred directly by them. On the contrary, in Italy, the treatment plan drawn up by dental hygienists only concerns treatments within their competence.

Italian dental hygienists are more satisfied than Portuguese ones in: continuing training and professional development supported by current legislation; salary opportunities for professional growth and progression; overall quality of the academic training program that fully and adequately covers the skills required for their profession and, safety against radiation exposure.

The only categories where Portuguese are more satisfied than Italians are: the technical competencies granted to DHs in general but also specifically their own competencies compared to all the skills recognised for dental hygienists and, the degree of satisfaction with their position in the work team.

Finally, regarding general satisfaction, which was assessed according to the level of satisfaction with the quality of life that HO work allows, once again Italian DHs express greater satisfaction than their Portuguese colleagues.

In conclusion, this study has contributed to filling information gaps regarding the professional profile of dental hygienists, with a specific focus on Italy and Portugal. It is essential to emphasise that although the analysis focuses on these two countries, the figure of the dental hygienist is not static and can vary internationally. The lack of data in other countries makes this professional profile a non-unique and evolving reality, highlighting the need for further research. Only through a more in-depth analysis and detailed study of the various national realities will it be possible to obtain a complete view of the profession worldwide.

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10. Annex

Annex 1 - Differences between the two countries highlighted by the unpublished scoping review:

	PORTUGAL	ITALY
EDUCATION		
Dental hygiene program starts	1984, 2,5 years course	1976 , 2 years course
Dental hygiene's University degree	1987-2001 3 years	1999 3 years
• Bachelor's degree (3 years) • 180 credits to obtain the degree	✓	✓
• "Mestrado" (PT) / "Magistrale" (ITA) Degree; **2 years** • 120 credits do obtain Mestrado/Magistrale degree	✓	✓
• "Master"(ITA) / "pós- graduações" (PT) degree **1 year** • 60 credits to obtain "Master"/ "pós- graduações" degree	✓	✓
• "Master"(ITA) I level **1 year** • "Master"(ITA) II level **1 year**	✗	✓
60 credits a year in university studies, acquired by the student by passing an examination or other form of profit verification.	✓	✓
• Research Doctorate 4 **years** • 240 credits for Research Doctorate	✓	✗
• Research Doctorate **3 years** • 180 credits for Research Doctorate	✗	✓
Obligatory knowledge of a European Union language other than one's national	**N/A**	✓
The assessment: • Grade in thirtieths for the examinations • Hundredths for the final examination, with honours if applicable.	**N/A**	✓
• Direct access to profession	✓	✗
The degree examination shall have the value of a State exam qualifying for the exercise of the profession.	**N/A**	✓
LEGISLATION		
Professional Classification		
DHs work in team with a dentist, under his supervision	✓	✓
DHs work in the **private** sector	✓	✓
DHs work in the public health care establishments	✓	✓
DHs work on a **salaried** basis	✓	✓

DHs work on a **freelance** basis	✓	✓
DHs freelance professional with his own independent practice	✗	✗
Obligation to register with the financial authorities for freelancers	✓	✓
Access to the career of Diagnostic and Therapeutic Technicians	✓	✗
Career of Technical, rehabilitation and prevention health professions.	✗	✓
Majority of oral healthcare is provided by the private sector	✓	✓
Remuneration and Recruitment		
Dental vouchers in the NHS	✓	✓
The remuneration of the freelance dental hygienist is left to the free negotiation of the parties	**N/A**	✓
Recruitment for posts are subject to the provisions of the Labour Code	✓	**N/A**
Remuneratory are established in a collective labour regulation instrument	✓	**N/A**
Professional qualifications and supporting documents for practice	✓	**N/A**
Conditions for recognition by an abroad applicant	✓	✓
Language knowledge for recognition of professional qualifications	✓	**N/A**
Professional register		
Professional register	✓	✓
The Dental Hygienist must regularly and promptly fulfil his financial obligations to the Order	✓	✓
Obligatory “ECM” (Continuing Medical Education)	**N/A**	✓
“ECM” credits can be acquired through training events accredited. The training courses can be residential (congresses, conventions, courses, etc.) or distance learning activities (FAD), via telematics or lectures.	**N/A**	✓
“ECM” system is structured in three-year periods of 150 credits	**N/A**	✓
Responsability and Duties		
Professional responsibility and technical autonomy	✓	✓
Act in conformity with the clinical information	✓	✓
Protecting, improving or maintaining the state and level of health.	✓	✓
Properly inform the patient to obtain *informed consent*	✓	✓
Maintain professional secrecy	✓	✓

Participate in multidisciplinary teams	✓	✓
Mandatory updating of knowledge and skills, personal and professional development	✗	✓
Dental hygienist is obliged to take out third-party liability insurance.	✓	✓
COMPETENCE		
Take Radiographs	✓	✗
Give local anesthesia	✗	✗
Temporary filling	✗	✗
Laser therapy	**N/A**	**N/A**
Perform and collect photographic documentation	**N/A**	✓
Diagnosi/ examination: Collecting clinical information • Dental and dietary history • Medication • Vital signs • Head and neck and intra-oral exams • Observations • Evaluation periodontium health • Evaluation oral health • Exams of dentition and occlusion • Intra-oral radiographic exam • Recognition on emergency situations (precancerous lesions)	✓	✓
***Treatments*:** Control of gingivitis, periodontitis and caries • Removal supra-sub gingival calculus manually and by ultrasound • Root planing • Polishing of crowns and amalgams • Application topical fluoride • Application of dams and sealant • Desensitization of hypersensitive teeth • Teeth whitening • Oral health promotion	✓	✓
Prevention/ information: • Oral Health instructions • Oral public health programs • Knowledge on the application of individual oral hygiene care • Diet counseling • Tobacco cessation • Communication (motivational) • Motivating for periodic follow-up • Link oral health to general health • Research/ developments projects	✓	✓

Clinical duties: • Receiving, seating ,preparing and dismissing the patient • Giving and receiving instruments between operator and assistant, • Handling impression materials, • Preparing, disinfecting and sterilising instruments and other materials, • Applying and removing periodontal dressings • Detecting decaying fillings • Caring for and maintaining dental equipment and accessories	✓	✓
Additional competences: • English • Informatics • Labour law • Business organization • Management area • Innovative area • Relational area • Research • Consultancy	**N/A**	✓

Annex 2 – Informed consent model

Partecipant Statement

I read and understood the information of the study. I had the opportunity to ask questions about the research and the answers were comprehensive.

☐ Yes ☐ No

I am aware that participating in this study includes the collection of information through a questionnaire filled in by me. I am aware that the information I provide will be used for research purposes. The data will be used in aggregate form for publications.

☐ Yes ☐ No

I am aware that participating in the study does not include any specific risks and that if I feel stressed I can stop the compilation and resume it at another time.

☐ Yes ☐ No

I understand that an online platform will be used for data collection, which will ensure the control and protection, confidentiality and security of the data provided by the participants. I am aware that the personal information collected about me will be anonymised and confidential.

☐ Yes ☐ No

I give my consent for the data collected in the questionnaires to be stored in the databases of the Faculty of Dental Medicine, Lisbon University, to be used for scientific purposes only.
I voluntarily agree to be a participant in this study.

☐ Yes ☐ No

Date _____ Signature of Participant _____

Annex 3 – Portuguese Questionnaire

O Higienista Oral em Portugal e em Itália: Questionário sobre as diferenças no perfil profissional

O presente questionário constitui parte de um projeto de investigação desenvolvido no Mestrado em Higiene Oral da Universidade de Lisboa.

O objetivo deste estudo observacional é avaliar as diferenças e semelhanças entre o perfil profissional dos higienistas orais em Portugal e Itália e perceber se as variáveis sociodemográficas e profissionais influenciam a satisfação profissional em cada um dois países. A investigação será levada a cabo para preencher a lacuna de informação existente na literatura atual, através da análise dos aspectos mais importantes que definem esta profissão. Poderá também ser uma fonte de inspiração e crescimento para os participantes.

O questionário é dirigido aos higienistas orais dos dois países em estudo, disponível em língua portuguesa e italiana, e será dividido em áreas de acordo com o domínio a analisar: *legislação, remuneração, formação académica, competências, segurança e proteção, trabalho em equipa, ambiente de trabalho e satisfação profissional.*

Obrigada pela sua participação.

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DADOS PESSOAIS E PROFISSIONAIS

1	Em que país exerce a sua atividade profissional?	…….			
2	Em que área geográfica exerce a sua atividade profissional?	Norte	Centro	Sul	
3	Quantos anos de experiência profissional tem?	< 1 ano	1-5 anos	6-10 anos	Mais de 10 anos
4	Qual o seu género?	Feminino	Masculino	Outro	
5	Qual a sua idade?	20-30	31-40	41-50	Mais de 50 anos
6	Exerce a sua atividade como higienista oral no sector privado?	SIM	NÃO		
7	Exerce a sua atividade como higienista oral num centro de saúde público?	SIM	NÃO		
8	Exerce a sua atividade principal por conta de outrem?	SIM	NÃO		
9	Exerce a atividade principal por conta própria?	SIM	NÃO		
10	A sua formação como higienista oral foi obtida através de:	Curso universitário	Curso profissional não universitário		

11	Qual a duração do seu curso de Higiene Oral:	☐1 ano ☐2 anos ☐3 anos ☐4 anos
12	Coloque um x de acordo com a sua formação atual:	☐Tenho um curso de pós-graduação (60 ou mais ECTS) ☐Estou atualmente a frequentar o curso de pós-graduação ☐ Não fiz uma pós-graduação
13	Coloque um x de acordo com a sua formação atual:	☐Tenho um Metsrado ☐Estou atualmente a frequentar um Mestrado ☐Não tenho Mestrado
14	Coloque um x de acordo com a sua formação atual:	☐Tenho um Doutoramento ☐Estou atualmente a frequentar um Doutoramento ☐Não sou estudante de Doutoramento

LEGISLAÇÃO

		SIM	**NÃO**
15	Trabalha em equipa com dentista?		
16	É obrigatório trabalhar sob a supervisão de um dentista/medico?		
17	Tem a possibilidade legal de abrir o seu próprio consultório?		
18	A maioria dos cuidados de saúde oral são prestada pelo sector privado?		
19	O Serviço Nacional de Saúde tem algum programa para acompanhamento da saúde oral?		
20	É obrigatório seguro de responsabilidade profissional		
21	É obrigatório seguro de acidentes de trabalho?		
	Registo profissional	**SIM**	**NÃO**
22	O Registo Profissional é obrigatório para Higienista Orais?		
23	É obrigatório pertencer a uma Associação profissional?		
24	Tem de adquirir "créditos (pontos) obrigatórios de Formação Contínua" para poder continuar a exercer ?		
25	Os créditos de formação continua podem ser adquiridos através de acções de formação acreditadas? ** Os cursos de formação podem ser residenciais (congressos, conferências, cursos, etc.) ou actividades de ensino à distância), através de telemática ou palestras presenciais.*		
26	Precisa de qualificações profissionais e documentos comprovativos para exercer a sua profissão?		
27	Um requerente estrangeiro necessita de condições de reconhecimento para exercer a profissão no seu país?		
28	Um requerente estrangeiro necessita de conhecimentos linguísticos para o reconhecimento das suas qualificações profissionais?		
	Responsabilidades e deveres	**SIM**	**NÃO**
29	Tem autonomia operacional para decidir as suas ações?		
30	Tem o dever de atuar em conformidade com as informações clínicas?		
31	Tem o dever de proteger, melhorar ou manter o seu estado e nível de saúde do paciente?		
32	Tem o dever de informar corretamente o doente para obter um consentimento informado?		

33	Tem um dever de sigilo profissional?		
34	Tem o dever de participar em equipas multidisciplinares?		
35	Tem o dever de atualizar os seus conhecimentos e competências, bem como o seu desenvolvimento pessoal e profissional?		
36	Tem o dever de manter registos adequados e actualizados sobre cada paciente?		
37	Tem o dever de compreender e aplicar os princípios éticos dos cuidados de saúde?		
38	Tem consciência de que tem uma responsabilidade profissional e de confiança?		
39	Tem o dever de conhecer o funcionamento do sistema de Saúde e legislação do país?		
40	Tem o dever de ter formação em suporte básico de vida?		
41	Alguma vez se viu na posição de ter de agir, na sua prática diária, contra a legislação existente?		

		Totalmente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
42	Em que medida está satisfeito com os aspetos da legislação que afetam a sua profissão?					
43	Em que medida considera que a formação contínua e o aperfeiçoamento profissional são adequadamente apoiados pela legislação atual?					

SALÁRIO

		SIM	**NÃO**
44	Enquanto trabalhador independente, tem a possibilidade de negociar livremente o seu próprio salário?		
45	È obrigatório o registo nas finançao quando se inicia uma carriera de trabalhador independente (freelancer)?		
46	A sua remuneração é fixada pela legislação?		
47	Tem um horário de trabalho:	☐ Fixo ☐ Flexível	
48	O seu horário de trabalho depende das consultas com os pacientes?		
49	Quantas horas trabalhadas por semana?	☐ 0-20 horas ☐ 21 -40 h. ☐ Mais de 40h	
50	É remunerado de acordo com as horas trabalhadas?		
51	É remunerado numa base percentual por cada serviço efectuado?		
52	Tem acesso a um plano de saúde ou a outros benefícios relacionados com o seu trabalho como HO?		
53	O seu emprego está sujeito ás disposiçœes do Código do Trabalho?		

		Totalmente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
54	Qual é a sua satisfação geral com o seu salário de HO?					

55	Qual é a sua perceção das oportunidades salariais de crescimento e progressão profissional?					
56	Em que medida considera que o seu salário é competitivo em relação ao de outros higienistas orais?					
57	Em que medida considera que o seu salário é competitivo em relação ao de outros profissionais?					

FORMAĆÃO ACADEMICA

		SIM	NÃO
58	O **curso de licenciatura** em Higiene Oral permite a obtenção de: ☐ Menos de 180 créditos ☐ 180 créditos ☐ Mais de 180 créditos		
59	A aprovação dos créditos é feita através de exames?		
60	Existe um trabalho final de curso (tese de licenciatura)?		
61	Existe um exame final de licenciatura?		
62	Existe um exame de qualificação para o exercício da profissão?		
63	A classificação dos alunos nos exames envolve uma escala de avaliação?		
64	Existem horas de clínica e trabalho de campo obrigatórias durante a licenciatura?		
65	Quantas horas pratica (clínica e comunidade) teve a sua licenciatura?		
66	Existem **pos-graduações** para higienistas orais?		
67	A duração do pós-graduações é entre 6 meses e um ano?		
68	Existem pos-graduações de nível I e de nível II?		
69	A pós-graduação permite a obtenção de: ☐ Menos de 60 créditos ☐ 60 créditos ☐ Mais de 60 créditos		
70	Existe um **Mestrado** para higienistas orais?		
71	Trata-se de um mestrado especificamente dirigido a higienistas orais?		
73	O Mestrado em Higiene Oral tem uma duração de: ☐1 ano ☐2 anos ☐3 anos		
74	O Mestrado permite a obtenção de: ☐ Menos de 120 créditos ☐ 120 créditos ☐ Mais de 120 créditos		
75	Existem Mestrados académicos e profissionalizantes?		
76	Existem **Doutoramentos** para higienistas orais?		
77	O Doutoramento tem uma duração de: ☐2 anos ☐3 anos ☐4 anos		
78	O Doutoramento permite a obtenção de: ☐Menos de 180 créditos ☐180 créditos ☐240 créditos ☐Mais de 240		

		Totalmente insatisfeito	Insatisfeito	Neutro	Satisfeito	Totalemente satisfeito
79	Em que grau está satisfeito com a qualidade geral do programa de formação académica que seguiu para se tornar um higienista oral?					
80	Em que medida considera que a formação académica abrangeu de forma completa e adequada as competências necessárias à sua profissão?					
81	Em que medida é que a formação académica contribuiu para o desenvolvimento das competências necessárias para interagir eficazmente com os doentes?					
82	Como avalia a oportunidade que teve durante a formação de experimentar e aprofundar todos os aspectos práticos e teóricos fundamentais para o exercício profissional?					

COMPETÊNCIAS

*Atribua a cada competência enumerada um [X] na casa **"SIM"** se se tratar de uma ação que faz na sua prática clínica quotidiana e **"NÃO"** se não fizer parte da sua prática clínica quotidiana.*

		SIM	NÃO
83	Historial dos parâmetros vitais (frequência cardíaca, tensão arterial...)		
84	História alimentar e hábitos dietéticos		
85	História farmacológica		
86	Exame da cabeça e do pescoço		
87	Exame intra-oral		
88	Avaliação da saúde periodontal		
89	Exame da dentição		
90	Exame da oclusão		
91	Avaliação de lesões orais		
92	Identificar situações de emergência		
93	Deteção de obturações debordantes		
94	Tirar radiografias		
95	Interpretar radiografias		
96	Diagnóstico oral		
	Tratamentos	**SIM**	**NÃO**
97	Remoção manual de tártaro supragengival		
98	Remoção de tàrtaro subgengival com ultrassônicos		
99	Polimento de coroas e restaurações		
100	Sondagem periodontal		

101	Alisamento radicular		
102	Aplicação tópica de flúor e outros agentes tópicos		
103	Aplicação de dique de borracha		
104	Aplicação de selantes de fissura		
105	Tratamentos dessensibilizantes		
106	Branquenamento dentário		
107	Manutenção de implantes		
108	Obturação temporária		
109	Terapia laser		
110	Areas de intervenção especializadas em Ortodontia		
111	Areas de intervenção especializadas em Periodontologia		
112	Areas de intervenção especializadas em Dentisteria		
113	Areas de intervenção especializadas em Implantologia		
114	Areas de intervenção especializadas em Odontopediatria		
115	Áreas de intervenção em pacientes com necessidades especiais		
	Prevenção e informação	**SIM**	**NÃO**
116	Educação para a saúde oral		
117	Educação para a utilização de auxiliares de saúde oral em casa		
118	Programas de saúde pública (intervenções na comunidade, educação nas escolas etc.)		
119	Orientação dietética		
120	Programas de cessação tabágica		
121	Comunicação e motivação sobre a importância da higiene oral		
122	Motivação para o acompanhamento periódico		
123	Motivação sobre a relação entre saúde oral e saúde geral		
124	Criação e desenvolvimento projectos de investigação		
	Tarefas clínicas	**SIM**	**NÃO**
125	Receber, sentar, preparar e dispensar o doente		
126	Manuseamento do material de impressão		
127	Preparacao, desinfeção e esterilização de instrumentos e outros materiais		
128	Aplicação e remoção de pensos periodontais		
129	Cuidados e manutneção do equipamento e acessórios dentários		
130	Elaboração plano de tratamento		
131	Execução de anestesia local		
132	Recolha e registo de documentação fotográfica		
133	Encaminhamento para outros profissionais de saúde		
	Competências adicionais: *Durante a sua formação acadêmica teve:*	**SIM**	**NÃO**
134	Conhecimento da língua inglesa		
135	Conhecimento de informática (programas clínicos,power point,instagram,excel,etc.)		

136	Conhecimentos de direito do trabalho		
137	Conhecimento de organização empresarial		
138	Compêtencias de gestão e liderança		
139	Conhecimento de inovação (inovações clínicas, de equipamento e metodológicas)		
140	Conhecimento na área relacional		
141	Conhecimentos no domínio da investigação científica		

		Totalmente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
142	Em que medida está satisfeito com as competências técnicas concedidas ao higienista oral?					
143	Em que medida se sente satisfeito com as suas próprias competências no local em que trabalha, em comparação com todas as competências reconhecidas ao higienista oral?					
144	Até que ponto está satisfeito com as suas competências na avaliação e gestão das condições de saúde oral dos pacientes?					

SEGURANÇA E PROTEÇÃO

Considerando os principais riscos no seu sector, atribua um [X] de acordo com a satisfação de segurança que percepciona no seu local de trabalho:

		Totalmente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
145	Segurança contra a exposição a contaminantes					
146	Segurança contra a exposição a doenças e infecções					
147	Segurança contra a exposição à radiação					
148	Segurança contra a exposição a condições perigosas					
149	Estado do equipamento e dos dispositivos de proteção					
150	O seu grau de preparação para lidar com situações de emergência					
151	Qualidade e adequação da formação recebida para garantir a segurança nas actividades diárias					
152	Nível de satisfação com a saúde e segurança ocupacional					

		SIM	**NÃO**
153	Sofreu algum acidente relacionado com a segurança no trabalho?		
154	Dispõe de todo o material e equipamento de proteção individual (EPI) disponíveis na unidade de saúde onde trabalha?		

155	Existem medidas de segurança no estabelecimento de saúde onde trabalha para evitar acidentes e lesões?		
156	Recebeu formação sobre protocolos para garantir a segurança pessoal e dos pacientes?		

TRABALHO EM EQUIPA

		Nunca	**Raramente**	**Ás vezes**	**Muitas vezes**	**Sempre**
157	Existe comunicação e colaboração entre os HO e os outros membros da equipa?					
158	Considera che a sua equipa está bem estruturada com um modelo de organização funcional que torna o trabalho em equipa produtivo?					
159	As relações interpessoais têm impacto negativo na qualidade do trabalho em equipa?					
160	Com que frequência ocorrem conflitos no seu local de trabalho?					
		Totalemente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
161	Como definiria a satisfação do trabalho em equipa na clínica dentária onde trabalha?					
162	Como classificaria o seu grau de satisfação com a sua posição na equipa de trabalho?					
163	Como avalia a sua satisfação na gestão de conflitos na sua equipa?					

AMBIENTE DE TRABALHO

Atribua um [X] de acordo com o grau de satisfação com os seguintes aspectos do seu ambiente de trabalho:

		Totalemente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalemente satisfeito**
164	Gestão da limpeza e da manutenção do equipamento e dos instrumentos dentários					
165	A sua preocupação com as condições do ambiente de trabalho (iluminação, ventilação, cumprimento das normas ou disposição do local de trabalho)					
166	Disponibilidade de recursos materiais (Instrumentação, equipamento de higiene)					
167	O nível de modernidade e inovação da clínica					
168	O nível de conforto e bem-estar percebido no local onde trabalha					

169	Possibilidade de crescimento e desenvolvimento profissional no local do trabalho					

SATISFAÇÃO PROFISSIONAL

		Totalmente insatisfeito	**Insatisfeito**	**Neutro**	**Satisfeito**	**Totalmente satisfeito**
170	Como avalia a qualidade da vida que o seu trabalho lhe permite?					
171	Como avalia a sua satisfação com o serviço que presta diariamente? (produtividade e desempenho)					
172	Como classificaria a sua satisfação com a sua escolha da profissão de higienista oral?					

Annex 4 – Database

Sociodemographic data

1. Country of region	Italy (1) / Portugal (0)
2. Geographical location	North (1) / Center (2) / South (3)
3. Age	20-30 (1) / 31-40 (2) / 41-50 (3) / more than 50 (4)
4. Years of experience	<1 year (1) / 1-5 years (2) / 6-10 years (3) / more than 10 years (4)
5. Gender	Female (1) / Male (2) / Other (3)
6-7. Practice in the private or public sector	Yes (1) / No (0)
8-9. Independent practice or freelancer	Yes (1) / No (0)
10. Kind of education program	University course (1) non-university professional course (0)
11. Degree course duration	1 (1) / 2 (2) / 3 (3) / 4 (4)
12-13-14. Current academic education	I have a (master course-master's degree-PhD) (1) I am currently attending(…) (2) I do not have (...) (3)

Legislation

[15-41]	Yes (1) / No (0)
[42-43]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Salary

[44-46] [48] [50-53]	Yes (1) / No (0)
[47] [49]	Fixed (1) / Flexible (0) 0-20 h (1) / 21-40h (2) / more than 40h (3)
[54-57]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Academic education

[58]	Less than 180 credits (1) / 180 credits (2) / more than 180 credits (3)
[69]	Less than 60 credits (1) / 60 credits (2) / more than 60 credits (3)
[73]	1 year (1) / 2 years (2) / 3 years (3)
[74]	Less than 120 credits (1) / 120 credits (2) / more than 120 credits (3)
[77]	2 years (1) / 3 years (2) / 4 years (3)
[78]	Less than 180 credits (1) / 180 credits (2) / more than 240 credits (3)
[59-68] [70-71] [75-76]	Yes (1) / No (0)
[79-82]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Competencies

[83-141]	Yes (1) / No (0)

[14-144]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Safety and security

[145-152]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)
[153-156]	Yes (1) / No (0)

Teamwork

[157- 160]	Never (1) / Rarely (2) / Sometimes (3) Often (4) / Always (5)
[161-163]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Work environment

[164-169]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)

Job satisfaction

[170-172]	Tot. Dissatisfied (1) / Dissatisfied (2) / Neutral (3) / Satisfied (4) / Tot. Satisfied (5)