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Article

Accessing dental services in Slovenia: A quantitative study

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Abstract: This research focuses on patients' perceptions regarding the accessibility of dental services in Slovenia across four dimensions: financial accessibility, time accessibility, geographical accessibility, and service quality. We observed how specific factors impact accessibility dimensions of dental services in Slovenia, that patients perceive important. A cross-sectional quantitative survey was conducted using proportionate stratified sampling. Data was collected through an online questionnaire, and 599 completed responses were received from patients regarding their experiences and perceptions of accessibility to dental care. A SEM (structural equation model) approach was used to examine the data. The analysis revealed that patients perceive all four dimensions of accessibility: financial, time, geographical, and service quality important and they all constitute the perception of dental accessibility. The findings of this study can assist policymakers in developing a more accessible dental health system by considering the results proposed in our model.

Keywords: dentistry; access; quality service; SEM modeling; Slovenia

1. Introduction

Access to dental services is an essential component of dental care not only in Slovenia, but around the world. The most pressing barriers to accessibility, among others, are related to long waiting lists, affordability of dental services, proximity to the dentist of choice and the quality of the service provided, which are of great importance from the standpoint of the patients (Da Rosa et al., 2020; Huerta Munoz and Källestål, 2012; Joumard et al., 2004b; Lamarche et al., 2011; Silberman et al., 2000; Tanke and Ikkersheim, 2012; Zver, 2019). The COVID-19 pandemic has also changed the landscape, how dental care is provided and new modes of access were supported such as tele-dentistry, introducing remote access to dentistry services (Beltrán et al., 2022; Minervini et al., 2022; Ostrc et al., 2021; Reddy et al., 2022; Soegyanto et al., 2022). Furthermore, the rise and encouragement of social media usage among kids and adults is having a major effect on the search for oral health information (Di Stasio et al., 2018, Di Spirito et al., 2022).

Our quantitative study was performed in January 2020 right at the beginning of the pandemic and therefore it focuses on non-remote access and distinguishes between time accessibility, geographic accessibility, financial accessibility and the quality of the dental care provided to patients, which we will refer to as the four dimensions of accessibility. These dimensions of accessibility to dental services can be influenced by various factors, such as the public funds available for dental services, the proportion of private funding (out-of-pocket funding), the legislative framework, the availability

and qualifications of the staff, as well as the organization of the dental sector (Albreht et al., 2021; Friedman and Mathu-Muju, 2014; Heaton et al., 2004; Richter et al., 2016; Verheire et al., 2018). We researched the characteristics of main accessibility dimensions that patients perceive important in providing dental care services.

One of the key shortcomings of the Slovenian dental system is the current range of services available to a patient under insurance payment, as the selection is based on a thirty years old determination method which no longer meets the current needs and requirements of providers and patients (Albreht et al., 2021). Dental care used to be part of the package of basic rights or was included in the basket of publicly funded services. For this reason, citizens are accustomed to paying for services out of the health budget or compulsory (and supplementary) health insurance, regardless of the provider, rather than paying out-of-pocket, which is certainly reflected in their perception of the accessibility of services (Albreht et al., 2021; Albreht and Klazinga, 2009). For example, the current range of covered services does not include modern technologies, procedures and materials used in dentistry. New health technologies have significantly improved in time and expertise required to treat a patient. As a result, the quality of services has improved, resulting in a range of prices for the services given. While some services cost less, others are more expensive due to the use of different materials and treatments. Prices calculated according to an outdated methodology thus in many cases do not reflect the real cost of services, either in relative or absolute terms. The health insurance system also does not guarantee optimal accessibility, as the expansion of the services increases waiting times due to a lack of human resources. To summarize, all health systems are essentially based on four dimensions that are most involved in assuring accessibility: financial dimension, time dimension, geographical dimension, and service quality dimension. A number of factors determine accessibility dimensions, including financing, regulation, staffing, and dentistry sector organization.

The financial dimension of accessibility is one of the most important aspects of accessibility, as out-of-pocket payments are a limiting factor in financial accessibility, and in most countries, financial reasons are the main reason for unmet needs for health services (Lagarde and Palmer, 2018; Vojvodic et al., 2022; Zver, 2019). Waiting periods and waiting lists are the primary indicators of time accessibility, which has deteriorated over the COVID-19 epidemic period (Albreht et al., 2021; Murray and Berwick, 2003). To improve the time capacity of health systems and to reduce waiting times and the timely delivery of health services, two main pathways are recommended to meet the needs and expectations of the public: providing more financial resources and better organization of the health system (Lamarche et al., 2011). The geographical accessibility dimension also has a substantial impact on improving primary health care. It can accelerate the achievement of better development goals and improve the accessibility factor. Good coverage of the existing network of primary healthcare facilities provides better accessibility (Apparicio et al., 2008; Huerta Munoz and Källestål, 2012). The most important approaches for determining the geographical accessibility of health services are based on the distance or travel time to the service provider (Apparicio et al., 2008). The fourth important dimension is quality (Donabedian, 1990; Hunt and Ojha, 2017; Tanke and Ikkersheim, 2012). Health providers need to consider patients' preferences when assessing and ensuring quality.

Health care is classified into seven pillars that determine the characteristics of health care and it's quality e.g., efficiency as the ability of the care to best improve health; effectiveness as the rate of achieving achievable health improvements; efficiency as the ability to achieve the greatest health improvement at the lowest cost; and optimality as the most favorable balancing of costs and benefits; acceptability as compliance with patient preferences regarding accessibility, patient-physician relationships, benefits, effects of care and costs of care; legitimacy as compliance with social preferences regarding all of the above; equity in the distribution of care and its effects on health.

Several factors influence the accessibility of dental care, including financial, geographical, and human resource concerns. The most commonly mentioned financial factors are health insurance and its provision of services. Geographical variables concern the network of providers, whereas human resource factors concern the amount and qualifications of employees. Other problems include a lack of dental insurance, an inability to pay for dental care, transportation, a low level of health literacy, patient skepticism, and sick leave policies (Albreht and Klazinga, 2009; Albreht et al., 2021; Guo et al., 2014; Zver, 2019).

Research gap

In our study we analyze the four dimensions of accessibility (financial, time, geographical, and service quality) in Slovenia that were extracted after extensive literature review. This framework is unique and was deduced from several literature that focuses on dental accessibility. For example, the main factors that play crucial roles in determining access to dental services are family condition, cultural aspects, health demands, affordability, availability, socio-environmental influences, and geographical distance (Ghanbarzadegan et al., 2021). Furthermore, the impact of income, frequency of dental visits, and the provision of Universal Health Coverage (UHC) are essential dimensions in dental service utilization (Han, 2023). In terms of quality, patient satisfaction, influenced by factors like empathy, responsiveness, and thorough explanation of treatment options, is crucial in ensuring high-quality dental care services (Dewi et al., 2011). To get a broader outlook, the implementation of policies that promote oral health and improve access to dental services is vital for addressing disparities in dental care utilization (Lelyana, 2023).

In Slovenia specifically, stakeholders have identified inadequate human resources, insufficient health insurance, and payment issues as critical barriers to optimal accessibility to dental services (Forjanic et al., 2019). However, no other studies exist that analyses the condition and accessibility to dental services in Slovenia—a rationale for this study. In addition, there is a lack of comparative studies that examine main dimensions across different countries or healthcare systems.

Most studies on accessibility focuses on specific age groups e.g. children (Alcalá et al., 2022; Friedman and Mathu-Muju, 2014; Gigli and Graaf, 2023, Nash et al., 2015) or elderly (Andrade et al., 2020; Beltrán et al., 2022; Shen and Listl, 2018; Vojvodic et al., 2022), children (Ummer-Christian et al., 2018), special needs (Gigli and Graaf, 2023), pregnant women (Riggs et al., 2016), specific regional coverage e.g., urban and rural areas (Akinlotan et al., 2023; Heaton et al., 2004; Patel et al., 2021), or methods of services deployed mobile dentistry, tele-dentistry etc. (Beltrán et al., 2022; Di

Spirito et al., 2022; Minervini et al., 2022; Soegyanto et al., 2022). Others give emphasis to untreated dental issues on employment and the benefits associated with expanding access to dental care (Halasa-Rappel et al., 2019). Previous studies used mostly descriptive approach, while our study uses advanced statistical model. This research is unique in the way it provides insight on systemic level, how a representative number of adults perceive access to dental care in the context of Slovenia.

Several studies studied barriers and determinants related to accessibility of dental services (Bersell, 2017; Castillo et al., 2023; Friedman and Mathu-Muju, 2014; Mertl, 2010; Palm et al., 2021; Verheire et al., 2018). Our study defines how accessibility factors identified by other scholars (including barriers and determinants) influence dimensions of accessibility using a structural equation model in the context of Slovenian dental system. There was no comparable study done on the accessibility dimensions and accessibility factors in Slovenia or elsewhere in this context.

The study on patients' perceptions of dental service accessibility in Slovenia is crucial for various stakeholders. Findings on access to dental care, including geographical accessibility, financial barriers, waiting times, and service quality, the study offers valuable insights for policymakers, healthcare providers, patients, healthcare institutions and researchers of dental field to develop targeted interventions and strategies to enhance access to dental services. Furthermore, this research underscores the critical barriers to dental service accessibility, including long waiting lists, affordability concerns, proximity to preferred dentists, and service quality—as main barriers to access and offers recommendations for system improvements.

In this article, we will concentrate on the patients' perspectives, as depicted in **Figure 1**, in terms of how they define accessibility to dental care and what (factors) influences their perceptions on dental services.

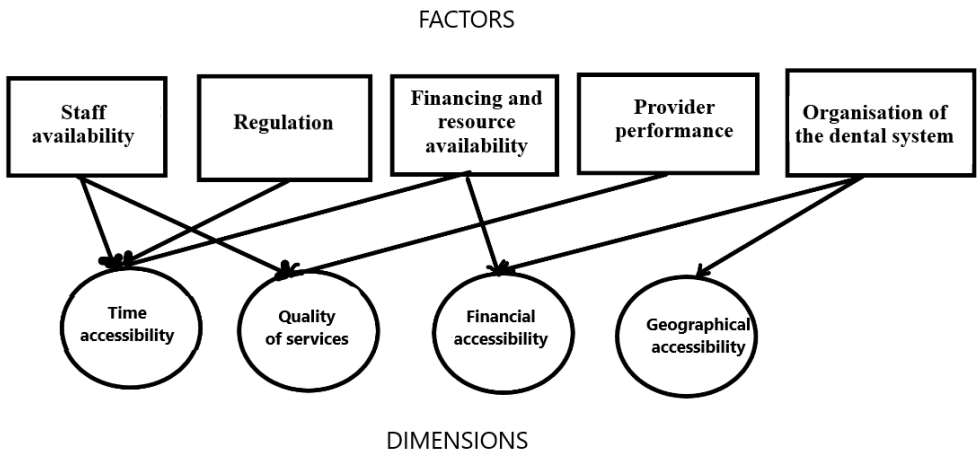

Figure 1. Conceptual model of access to dental services.

Based on the research problem, we set two research questions to guide our research:

1) How do patients perceive the accessibility of dental services in Slovenia in regard to the four dimensions?
2) How do patients perceive the importance of individual factors of accessibility of dental services in Slovenia that influence the four dimensions?

2. Materials and methods

Patients were asked about the dimensions and factors of accessibility using a questionnaire designed from the literature review. We used a quantitative methodology to test our research questions and to research how patients define accessibility and what factors influences them.

We were able to get a permission from the Health Insurance Institute of Slovenia (HIIS) to distribute our questionnaire from their database, on insured persons and in regards to regional units (RU). The questionnaire was sent to all insured persons from the HIIS unit in January 2020. We deployed a proportional stratified sampling technique to achieve a sufficient percentage of representation in the sample across all Slovenian Units. By employing proportional stratified sampling, we aimed to reduce the likelihood of underrepresentation or overrepresentation of certain groups within the sample. This means that we considered RUs as strata, meaning if the RU had a 10% representation of insured persons in Slovenia, then 10% of the sample size needed to be collected from this specific RU. We have implemented randomization techniques within each stratum to further reduce bias and increase the sample's representativeness. Random selection within strata mitigated the risk of selection bias and ensures that each individual within the population has an equal chance of being included in the study. Additionally, the we calculated that sample size of 385 are needed for a 95% confidence level and 5% margin of error. Altogether we have gathered 868 survey responses, however 269 responses were only partially completed and had to be omitted from the additional statistical analysis. Remaining 599 responses were fully completed and appropriate for analysis.

We used multivariate statistical analysis for data analyses, as we were interested how identified factors impact the dimensions of accessibility. The structural equation modeling (SEM) method was applied, and it was carried out using the R software program. We were inspired by past work of other scholars while implementing the methodologies (Gefen et al., 2000; Hox and Bechger, 1998; Marshall and Russell, n.d.; Merenda, 1997; Milfelner, 2006; Schumaker et al., 2022; Weston and Gore, 2006). SEM is a combination of factor analysis and regression or path analysis. SEM is based on the use of covariance structures between observed variables, which is why SEM is alternatively called covariance structure modelling.

Model fit indices such as RMSEA (root mean square error of approximation), PGFI (parsimony goodness of fit index), PNFI (parsimony normed fit index), CFI (comparative fit index), SRMR (standardised root mean square residual) and NNFI (non-normed fit index) were used to assess the suitability of the structural model. Among these indices, $\chi 2$/df, RMSEA, and PNFI fitted the conditions which we find adequate to proceed.

Validity and reliability of data

The questionnaire's content validity was tested by distributing it to chosen experts and dental care providers, who evaluated the questions in terms of the professional content of the accessibility dimensions and accessibility criteria. We created the final questionnaire based on their comments and ideas, which was then distributed to dental patients.

Cronbach's alpha was used to assess the reliability of all data gathered from the questionnaire; the number must be more than 0.7 to verify that the data are suitably reliable. Cronbach's alpha is 0.90 in our situation. Based on this, we may conclude that our questionnaire is reliable.

3. Results

The demographic characteristics of the respondents are shown in **Table 1**. The respondents were mostly female, with more than two-thirds being female (70.6% female and 29.4% male); the majority of respondents were under 30 (30%), with at least a high or university education (58%).

Table 1. Descriptive statistics.

		Frequency	% of valid answers
Gender	Male	176	29.4
	Female	423	70.6
	Total valid answers	599	100.0
Age	Up to 30	180	30.1
	From 30 to 40	112	18.7
	From 40 to 50	124	20.7
	From 50 to 60	136	22.7
	Over 60	46	7.7
	Total valid answers	598	100.0
Level of education	Primary and below	1	0.2
	Vocational education	33	5.5
	Secondary education	215	35.9
	Higher and university education, or above	350	58.4
	Total valid answers	599	100.0

Next, we inspect the definition of accessibility dimensions for patients according to the measurement model (**Table 2**).

3.1. Measurement model—Accessibility dimensions

The measurement model is made up of four accessibility dimensions. **Table 2** displays the manifest variables that define each accessibility dimension (latent variables). The factor weights in **Table 2** show how the manifest variables are related to the latent variable. The greater the component weight, the more connected the latent variable is to the manifest variable. Because the average factor weight is 0.81 and no weight is less than 0.5, all factor weights are adequate (Merenda, 1997).

CFA was used to examine the measurement model's reliability. Cronbach's alpha (α) is used, which measures the reliability of the latent variables (accessibility dimensions) used in the model. In general, if alpha is greater than 0.7, the latent variables are acceptable and the model is reliable. Reliability was further tested using McDonald's omega, which is similar to Cronbach's alpha. The main advantage of omega over alpha is that it considers the strength of the association between latent and

manifest variables. Both values are reported in **Table 2** next to the accessibility dimensions.

Table 2. Definition of accessibility dimensions for patients.

Latent variables	Manifest variables	Designation	Factor weight (stat. signific.)
Time accessibility (α = 0.864. ω = 0.849)	Working hours of dental clinics	V27_a_access	0.946***
	Opening hours of dental clinics	V27_b_access	0.949***
	Waiting time in waiting rooms	V27_d_access	0.566***
	Speed of dental services	V27_e_access	0.572***
Quality of Service (α = 0.913. ω = 0.914)	Dental services are of high quality	V14_a_quality	0.814***
	Dental staff conduct is professional	V14_b_quality	0.882***
	The dental staff's behaviour is friendly	V14_c_quality	0.773***
	The dental staff is professional	V14_d_quality	0.897***
Financial accessibility (α = 0.929. ω = 0.931)	The rights in the set of services (basket of rights) are appropriate	V26_a_legal	0.821***
	A basic basket of services (a set of services) provides the care one needs	V26_b_legal	0.843***
	The health insurance system ensures accessibility in an adequate manner	V26_c_legal	0.888***
	National legislation in the provision of rights	V26_d_legal	0.842***
	EU legislation in the provision of rights	V26_e_legal	0.735***
Geographical accessibility (α = 0.919. ω = 0.910)	The density of the dental clinic network is adequate	V25_b_organization	0.906***
	The geographical distribution of the dental clinic network is correct	V25_c_organization	0.913***
	The number of dental programmes is sufficient	V25_d_organization	0.750***
	The scope of the programme adequately ensures access to services	V25_e_organization	0.781***

Note: Cronbach α and McDonald ω values are shown in parentheses; *** statistical significance < 0.001.

The time dimension is defined by four variables, namely working hours, opening hours of dental clinics, length of waiting time in waiting rooms and speed of service delivery. Opening hours have the largest factor weight, followed by working hours, speed of service, and finally waiting time in waiting rooms. This concept of accessibility in terms of time makes sense, as patients are primarily concerned with when and how soon they can use services.

The quality of service dimension is defined by the variables: dental staff conduct is professional, the dental service provided is of good quality, dental staff conduct is friendly and dental staff are professional. This definition is based on the assessment of the selected dentist, with the professionalism of the dental staff receiving the highest factor weight. It's worth noting that patients seem to correlate the quality of service offered with the friendliness of the professional team.

The financial dimension is defined by five variables derived from the legal regulation of the dental sector. The factor weights are as follows: the health insurance system, which adequately ensures accessibility; the basic basket of services, which represents the set of all services available; national legislation in the provision of rights; the adequacy of the rights in the set of services; and EU legislation in the provision of

rights. Financial accessibility is thus defined by its reliance on the Slovenian and European formal-legal framework that govern patients' rights.

The geographical dimension is defined by the density of the network of dental clinics, the regularity of the network's geographical distribution, the sufficiency of the number of dental care programs, and the size of the program. Geographic accessibility is thus determined by how the dental system is organized.

3.2. Conceptual model—Influence of factors on accessibility dimensions

In the conceptual model, we test the influence of factors on the dimensions of accessibility with SEM. We wanted to see if we could validate a conceptual model describing the factors influencing the individual dimensions of accessibility.

Table 3 gives the path coefficients (or the coefficient of determination) and the *p*-value indicating the statistically significant association of the factors with the accessibility dimension of the conceptual model. The value of the coefficient tells how much influence each accessibility factor has on the accessibility dimension.

Table 3. Impact of accessibility factors on accessibility dimensions.

Latent variable/dimensions of accessibility	Variable/accessibility factors	Accessibility factor category	Path coefficient	St. error	*p*-value
Time accessibility	Number of dentists performing dental practice in the country	Staff availability	0.063	0.045	0.163
	The impact of foreign staff—dentists from the former common country		−0.054	0.063	0.390
	Qualification of personnel in dental practice in the country		0.204	0.070	0.004***
	Qualification of foreign personnel in dental practice in the country		−0.036	0.069	0.602
	System for the education and training of dental practitioners		0.133	0.061	0.029**
	Rights from a set of services defined in a basket of services (a set of services)	Regulation	0.053	0.073	0.468
	Content of the basic service basket		−0.036	0.079	0.647
	Health insurance scheme—compulsory and supplementary insurance		0.068	0.073	0.346
	National legislation to ensure adequate rights		0.046	0.077	0.555
	EU legislation in the provision of rights		−0.072	0.070	0.303
	Coverage of compulsory and supplementary health insurance	Financing and availability of resources	0.083	0.048	0.084*

Table 3. (*Continued*).

Latent variable/dimensions of accessibility	Variable/accessibility factors	Accessibility factor category	Path coefficient	St. error	*p*-value
Quality of service	Quality of the provision of dental services	Provider performance	0.072	0.038	0.056*
	Professional conduct of dental personnel		−0.022	0.051	0.676
	Friendly treatment by dental staff		−0.035	0.046	0.444
	Professionalism of dental personnel		0.061	0.048	0.198
	Number of dentists performing dental practice in the country	Staff availability	0.036	0.024	0.130
	The impact of foreign staff—dentists from the former common country		−0.004	0.028	0.882
	Qualification of personnel in dental practice in the country		0.114	0.033	0.001***
Financial accessibility	Contributions from basic health insurance	Financing and availability of resources	0.149	0.061	0.015**
	Contributions from supplementary health insurance		0.080	0.062	0.198
	The patients' out-of-pocket contributions		0.023	0.030	0.446
	Coverage of compulsory and supplementary health insurance		−0.025	0.054	0.645
	Allocation of financial resources between compulsory and supplementary health insurance		0.169	0.047	0.000***
	The number of dental programmes is sufficient	Organization of the dental system	0.096	0.038	0.013**
	The scope of the programme adequately ensures the accessibility of services		0.250	0.040	0.000***
Geographical accessibility	Density of the dental clinic network	Organization of the dental system	0.108	0.074	0.140
	Geographical distribution of the dental clinic network		0.315	0.075	0.000***
	Number of dental programmes		0.063	0.070	0.365
	Programme scope per provider		0.089	0.061	0.143

Note: * statistical significance < 0.1; ** statistical significance < 0.05; *** statistical significance < 0.01.

Table 3 shows that three factors have a positive and significant impact on time accessibility according to patients, namely: i) Staff availability: Qualification of personnel in dental practice in the country ($\beta = 0.20$, $p < 0.01$). ii) Staff availability: Education and training system for dental professionals ($\beta = 0.13$, $p < 0.05$). iii) Financing and financial resources: Coverage of compulsory and supplementary health insurance ($\beta = 0.08$, $p < 0.1$).

Two factors have a statistically significant impact on the quality of service provided, according to patients: i) Staff availability: Qualification of personnel in dental practice in the country ($\beta = 0.20$, $p < 0.01$) and ii) Provider performance: Quality

of dental service delivery ($\beta = 0.07$, $p < 0.1$).

The financial dimension is statistically significantly influenced by four factors, in order of importance: i) Organisation of the dental health system: The size of the programme adequately ensures access to services ($\beta = 0.25$, $p < 0.05$). ii) Financing and availability of resources: Distribution of financial resources between compulsory and supplementary health insurance ($\beta = 0.17$, $p < 0.01$). iii) Financing and availability of resources: Level of primary health insurance contributions ($\beta = 0.15$, $p < 0.05$). iv) Organisation of the dental health system: The number of dental programmes is sufficient ($\beta = 0.10$, $p < 0.01$).

The analysis of our model showed that only the geographical distribution of the network of clinics ($\beta = 0.315$, $p < 0.01$) providing dental care is relevant for our health system or health service patients.

4. Discussion

The results of our survey on accessibility to dental care indicate how patients perceived the accessibility of dental services in Slovenia.

Based on extensive literature review, we formed unique theoretical model that fitted a representative sample of patients in Slovenia. We used four accessibility dimensions (time, financial, geographical and quality of service). Similarly, Ummer-Christian et al. (2018) theoretical framework contains dimensions, covering accessibility (physical-geographical access), availability (type and volume of services), accommodations (dental system organization-waiting times), affordability (cost-financial access) and acceptability (knowledge and skills of dental teams—quality of service). In contrast, several studies focus on a main accessibility dimension either geographic, physical, financial, time or quality related accessibility (Apparicio et al., 2008; Han, 2023; Joumard et al., 2004; Shubayr et al., 2022; Siciliani et al., 2014; Silberman et al., 2000; Tanke and Ikkersheim, 2012; Verheire et al., 2018).

Our primary goal was to provide new information of the current state of dental access for patients and expose the weaknesses of existing dental service system in Slovenia. The first research question was how do patients perceive the accessibility of dental services in Slovenia in terms of the four dimensions of accessibility? The analysis found that patients perceive the accessibility of dental services in terms of all four dimensions of accessibility: time, financial, geographical and quality of service. Patients consider the opening or working hours, the speed of service delivery, and the duration of waiting time in waiting rooms to be the most essential time dimensions. These findings are also in line with other research (Joumard et al., 2004a; Lamarche et al., 2011; Murray and Berwick, 2003; Romanow, 2002). Patients view the competencies of the dental staff to have an impact on waiting times, hence the quality of service dimension is inextricably linked with the time dimension. Patients relate dental care waiting times with the quality of the staff and their qualifications, as well as whether they are entitled to the service at a specific time under mandatory and supplementary insurance. The financial dimension is perceived mainly through the health insurance system, which is supposed to provide a basic basket of services. This finding is more specific to the Slovenian context because at systemic level the mutual health insurance system provides free access to public providers. The finding that

patients believe that financial accessibility is only one of the most important factors of the Slovenian healthcare system is important. The dental care services are considerably costly and require additional financial resources if the patients decide to use dental services from private providers (Albreht and Klazinga, 2009; Silberman et al., 2000). According to the survey, patients see the geographical component of accessibility as the spread and density of the network of dental clinics. This finding is supported by other research (Huerta Munoz and Källestål, 2012; Heaton et al., 2004; Peters et al., 2008).

The second research question: "How do patients perceive the importance of individual factors of accessibility of dental services in Slovenia that influence the dimensions of accessibility?" We focused on the factors that influence accessibility dimensions. The most significant impact on the time dimension is the reduction of queues and delays (Albreht et al., 2021; Murray and Berwick, 2003). Waiting times are a pressing problem in all healthcare systems (Heaton et al., 2004; Murray and Berwick, 2003). Because it is too often affected by factors such as prolonged waiting times, functioning inefficiencies, healthcare coordination and organization or financial shortcomings (Bersell, 2017; Robida et al., 2006). In our case, we find that factors in the categories of availability of staff and allocation of financial resources show a statistically significant positive impact on accessibility on time, which is in line with the experience of practitioners and relevant literature (Joumard et al., 2004a; Lamarche et al., 2011; Vojvodic et al., 2022). The model showed that the most important influence on time availability is the training system and staff qualification for dentists, and the scope of entitlements in the basic basket of services. Staff qualifications, as well as their education and training, have an impact on the efficiency of practitioners' work, which patients view as having a significant impact on accessibility in time. Several aspects influence the quality of healthcare services, including performance, safety, timeliness, efficiency, equity, and patient-centeredness (Hunt and Ojha, 2017). Quality health care is based on quality delivery of health care (Donabedian, 1990; Tanke and Ikkersheim, 2012). Quality service demands quality dental employees and, most importantly, quality dental service delivery, which is mirrored in practice. We can see in the structural model that the qualifications of the employees have a statistically significant influence on the availability of time and the quality of the service supplied. The competency of the staff is critical for dental service and is directly tied to the quality of the service offered, which leads to patient satisfaction with the service. We find that how individuals and households finance and obtain the necessary resources to pay all health expenditures has the greatest influence on the financial dimension (Lagarde and Palmer, 2018). The forms and efficacy of financial mechanisms to increase access to care in low-income and middle-income countries are determined by patients' social and private insurance systems (Vojvodic et al., 2022). The financing of healthcare is determined by the economic and political systems of individual countries. According to our survey results, the level of contributions available from basic insurance and the distribution of funds between compulsory and supplementary health insurance, as well as the organization of the dental health care system, which includes the number of programs and the size of the program for carrying out dental activities, have a statistically significant influence on financial affordability. Geographical accessibility is concerned with spatial coverage, which

considers the location and maximum coverage capacity of each health facility, the geographical distribution of the population, the landscape through which the patient must traverse, and the means of transportation (Castillo et al., 2023; Huerta Munoz and Källestål, 2012). A good and effective public health service network is required to adequately frame the requirements of the community and to ensure equal access to health services. From the patient's perspective, the number of dental clinics is consequently critical in determining the geographical accessibility of dental services.

The study suggests system reforms to bring dental services closer to patients. Currently the cost of dental services is covered by HIIS. As a result, it would be expected that users are satisfied with the dental services provided. It seems, however, that without adequate satisfaction of all four mentioned dimensions of accessibility, the connection is not self-evident and that satisfaction depends on geographical access to dental services, as well as on the quality of services, waiting times and availability when the service is needed.

Our theoretical model provides evidence on how to effectively reorganize dental service to adults in Slovenia by placing importance to the identified dimensions and factors that have an extensive impact on the perceived value on accessibility to dental care. From our study a theoretical implication arises that several factors that impact accessibility may be further investigated by policy makers to improve the current dental system. Without adequate comprehensive access along all dimensions of the accessibility concept, the entire dental system is not efficient and user satisfaction is not high.

During the COVID-19 pandemic, significant changes were made to medical processes to limit contamination risks and assure patient safety (Cicciù et al., 2020; Di Spirito et al., 2022; Ostrc et al., 2021). In terms of accessibility, new modes of practice and service delivery have evolved that rely on the use of telemedicine, such as smart phones and apps, as useful instruments for rapid diagnosis and management (Cervino and Oteri, 2020; Minervini et al., 2022; Reddy et al., 2022). In the future, practitioners may find telemedicine and virtual patient management to be a beneficial resource (Reddy et al., 2022). Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be researched in the broadest context possible.

5. Conclusion

According to the survey results and our unique model deployed, patients place a high value on any form of accessibility to dental care. Patients link dental care waiting times with the quality and credentials of the dental workforce, as well as health insurance rights. This is certainly the case in Slovenia, as inefficiencies in the performance of dental professionals undoubtedly contribute to the increase in waiting times (Albreht et al, 2009; Murray and Berwick, 2003; Zver, 2019;). The results of this research nearly fully confirm the findings of other scholars that excellent service delivery necessitates quality employee competency and, most importantly, quality service (Beltrán et at., 2022; Hunt and Ojha, 2017; Joumard et al., 2004a; Tanke and Ikkersheim, 2012). The analysis of financial accessibility revealed that, in addition to

the effectiveness of financial instruments and mechanisms, the number of programs for activity implementation and the size of the program for activity implementation were among the financial accessibility factors highlighted by participants, which were not found relevant in the literature. In contrast, from the perspective of the patients, the number of dental clinics is the most essential factor in the geographical accessibility of dental services.

Slovenia's health insurance system does not assure ideal dental accessibility, as the expansion of service entitlements causes less accessibility in the form of increased waiting times due to staff shortages. The study also demonstrates that the payer (the State) inhibits providers' ability to deliver more services because of the outdated methodologies. This calls for system reforms that could bring dental services closer to patients and provide an inclusive and accessible dental care system. The accessibility characteristics listed are exclusive to dentistry accessibility in Slovenia, but future study could broaden the model to include the entire healthcare sector. In addition, future research could incorporate the viewpoints of all other stakeholders, such as the government and financial insurance companies. The emphasis can also be on how Covid-19 affected dental treatment accessibility and how dental services have altered since the pandemic.

Since we did not investigate the interdependence or cause-and-effect relationships between the individual factors of the accessibility of dental services, it would be beneficial to on this aspect in the future. Future research could also systematically analyze individual factors and directly related impacts on accessibility, or determine what the financial burdens are in relation to each dimension of accessibility.

Recognized accessibility deficiencies of the dental system in Slovenia provide insight into the intertwining of accessibility dimensions and accessibility factors. Our empirical model has identified areas in Slovenia's dental health system that require improvement and can thus provide useful guidance to policymakers in building an accessible dental health system. Dentistry development must be based on professional recommendations, guidelines and standards in the context of continuous development of the dental profession. A special challenge for policymakers is the transfer this research findings into practice. The findings can also be used by other stakeholders of the dental care system, but above all it provides a broader insight into the organization of the dental care system and the possibilities for its improvement.

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