

Review Article

Architectural Accessibility of Patients with Reduced Mobility in Dakar (Senegal) Dental Clinics: An Action Research

Diouf Massamba*, Diop Mbatio, Kanouté Aida, Sandi Loubna, Cissé Daouda, Lo Cheikh, and Faye

Department of Public Health, Cheikh Anta Diop University Dakar, Senegal

***Corresponding author**

Diouf Massamba, Department of Public Health, Cheikh Anta Diop University Dakar, Senegal, Tel: (+221)776550106/706578628; Email: dioufmass78@yahoo.fr

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Keywords

- Architectural accessibility
- Mobility limitations
- Dental offices

Abstract

Introduction: Reduced mobility is a situation of disability due to a reduction in the ability to move in the public space of a person, temporarily or permanently. The aim of this work was to study the architectural accessibility of people with reduced mobility in private dental clinics in Dakar through a research-action.

Method: This action research involved one hundred people with reduced mobility, fifty dental clinics and fifty dental surgeons.

The purpose was to describe the clinics environment, to administer questionnaire to patients with reduced mobility (PRM) and to provide dentists with disability information documents. Secondly, a questionnaire was submitted to them for self-administration. Information included variables related to architectural accessibility, satisfaction with office accessibility and dentist attitudes after information.

Results: More than 3/4 of the clinics did not have elevators and 92% did not have adapted toilets. More than one fifth of dentists had lost sight of PRM. PRM were not satisfied with toilets (74%), comfort (73%) and stairs (59%).

After awareness, more than 4/5 of the dentists were ready to make home visits to the PRM and 70% had a move for better accessibility.

Conclusion: Dental surgeons must then ensure the establishment of adapted places for people with disabilities and reserved for their use, accessible communication devices, and access to all parts and equipment of the dental office independently, translating more satisfactorily the reality of an inclusive society.

INTRODUCTION

Reduced mobility is a situation of disability due to a decrease in the ability to move in the public space of a person, temporarily or permanently [1]. This can be linked to prenatal deficiencies

or illnesses, accidents or more generally to aging, but also to specific situations, such as pregnant women, people with children (with or without stroller), or those with heavy luggage [2]. Generally, this situation impacts the use of care because of the accessibility difficulties that arise. With special attention in several states and communities, the United Nations finally adopted, on December 13, 2006, the International Convention on the rights of persons with disabilities and its optional protocol for better living conditions for this potentially vulnerable layer. The potential vulnerability of persons with reduced mobility on an oral level is increased with regard to the incidence and prevalence of relatively high dental caries and periodontal diseases, but also to renunciation related to a form of marginalization or discrimination of which they may be victims, especially in developing countries [3]. Many European, American and Asian

studies have addressed the issue of reduced mobility and dental care because of its nature as a major public health problem in terms of its size, severity and existence of consequences on the quality of life [4]. WHO estimates that 2/3 of the population with reduced mobility does not have access to care [5]. In Europe, particularly in France, in a comparative study of a group of children living with a disability and another free, it appears that the need for oral treatment was very important in the group with a disability [6]. In the United Kingdom, although more than 77% of dentists considered that they were accessible for people in wheelchairs, only 7% said they had toilets adapted for this type of disability. These same observations by Lyana et al. [7], in Brazil. In India, a study on the health needs of people with disabilities and barriers to accessing health services has shown that people with disabilities have many more barriers to accessing health services than people living with disabilities, people without disabilities [8]. In Africa, architectural achievements and studies that take into account people with reduced mobility (PRM) are almost non-existent. Nevertheless, some initiatives announce a paradigm shift in the way of designing and occupying space (because of

the diversity of users) in order to facilitate the mobility of people with disabilities [9]. In Senegal, studies on the accessibility of oral health services to people with reduced mobility (PMR) are rare or non-existent. Yet the prevalence of disability at the national level is 5.9%. In other words, 59 out of 1000 Senegalese suffer from some form of disability [10]. Females are the most concerned with 87 men per 100 women. In addition, the most common form of disability is difficulty walking and seeing. The architecture of the dental practices that are establishments receiving the public of the 5th category must be in conformity to allow any person, whatever his capacities, to have an easy and autonomous access to the services offered to the populations. This is why a study on the level of architectural compliance of dental practices that can accommodate people with reduced mobility is necessary. The aim of this work was to study the architectural accessibility of people with reduced mobility in private dental services in Dakar through a research-action.

METHOD

It was an action research on people with reduced mobility, dental practices and dental surgeons who practice there. Framework and study population Senegal has 338 dental surgeons in 260 dental offices recognized by the order and the ministry of health. The Dakar region (study framework) has 152 private dental offices according to the oral health division of the ministry of health and social action in 2014. Our investigation focused on patients with reduced mobility who came for consultation or care on the one hand, dental services and dental surgeons on the other.

Sample size and sampling

The sample size can be determined by the following formula: $n = (\epsilon \alpha)^2 pq / I^2$ $\epsilon = 1.96 =$ reduced gap; $\alpha = 0.05 =$ risk of error; $p =$ theoretical prevalence = 50%; $q = 1 - P$; $I =$ accuracy = 10%. The application of these parameters gave a size of 96 patients which was increased to 100 to avoid lost or damaged cards. One hundred patients were therefore needed for the study. They should be selected from 152 private dental offices. Systematic random sampling was chosen. The first step was to establish a sampling rate equal to the ratio of the total number of dental services or patients to the number of patients or the number of dental surgeries required, a step of 2. This meant that two patients had to be selected in each chosen dental office. Fifty dental services were randomly selected for the 100 patients. On the list or directory of the national order of dentists in Senegal, a first dental service is first drawn. Then the definite step made it possible to progress until obtaining the 50 necessary cabinets. Finally, at each selected office, probabilistic sampling was used to recruit 2 patients with reduced mobility. Which, in total, made it possible to obtain the hundred patients to be interviewed. As for dentists, the recruitment concerned those practicing in the dental services randomly selected and having received a copy of the national act of social orientation and the documents on the vulnerability of the PRM during the first passage of the investigator.

Selection criteria

To be included in the study, patients had reduced mobility recognized (physical or motor impaired, blind or visually

impaired, obese, pregnant, sick or senile) and agreed to answer questions. The dentists selected in the study were promoted to the rank of doctor, enrolled in the order of dentists, and practiced dentistry in Senegal.

Data collection and variables

The data were collected using a validated survey form [11,12] and adapted to the context of the study. Prior to the implementation of the final survey, a pre-test was performed at the oral health service of the social hygiene institute (public service) located on the floor to correct the data collection forms. The collection was carried out by a student in a dental surgery thesis year previously calibrated to avoid information bias. The aim was to visit the offices concerned, describe the external and internal environment (observation), and administer the survey sheets to patients with reduced mobility. For dentist, during the investigator's first visit, in addition to interviews on the issue of disability, they had received a copy of the national social orientation act and information documents on the vulnerability of PRM for better awareness. Three months later, at the investigator's second visit, a questionnaire was filed for self-administration. The information collected concerned the gender of patients and dentists; variables related to architectural accessibility (capacity scale, office room type, the level of satisfaction of PRM with respect to the accessibility of practices and the attitudes of dentists after sensitization. Collection was conducted in February for the first pass and in June 2017 for the second pass.

Ethical considerations

The information in the survey form did not identify the dentist and / or the patient who chooses to consent or not to answer the questions. Responses were treated confidentially. The study has also been submitted to some ethics committee in human research.

Data analysis

The data were captured and used with the Stata software and the results expressed in numbers and percentages with their confidence intervals for the qualitative and average variables followed by their standard deviations for the quantitative variables. The proportions were compared with the Chi-square test and the averages with Student's *t*-test. The null hypothesis is that characteristics of dental offices are not different about the PRM. The statistical significance level was set at 5%.

RESULTS

Profile of PRMs

More than half of the sample (59%) was female. The reduced mobility concerned older age followed by overweight or obesity and 73% of the sample had a capacity scale of between 4 and 6, i.e., an average capacity (Table 1).

Survey of Architectural Accessibility of Dental Services

Regarding the state of play of architectural accessibility (Table 2):

- In outside, 80% of dental practices did not have places for the disabled and 98% of cases had no ground markings.

Table 1: Characteristics of PRMs.

	Numbers	Percentage (%) [CI]	P
Gender			
Men	41	41 [36-49]	<0.001
Women	59	59 [46.1-68.4]	
Type of reduced mobility			
Advanced Age	36	36 [25-40]	<0.001
Joint disease	5	5 [2.3-10.5]	
Obesity	26	26 [18.1-34.8]	
View	17	17 [10-24.6]	
Pregnancy	5	5 [1.9-11.4]	
Drivetrain	11	11 [6.3-19.7]	
Capacity scale			
[0 - 4] Low	1	1 [0.1-29.9]	<0.001
[4 - 7] Average	73	73 [65-86]	
[7 - 10] Good	26	26 [18-36]	

Table 2: Inventory of Architectural Accessibility of Private Dental Clinics in Dakar.

Variables	Answers	Numbers	Percentage (%) [CI]
Outside environment of dental clinic			
Office Room Type	Low house or ground floor	2	4 [1.4-9.4]
	Apartment	48	96 [90.5-101.4]
Room level	1st floor	32	66.7 [53.6-79.7]
	2nd floor	9	18.8 [7.9-29.5]
	3rd and above	7	14.5 [4.9-33.5]
Room for handicap for the cabinet	Yes	10	20 [8.9-31.1]
	No	40	80 [68.9-91.1]
Markings	Yes	1	2 [0.0-5.8]
	No	49	98 [94.1-101.8]
Facilities	Marches	46	92 [84.4-99.5]
	Holes	4	8 [17.3-30.5]
	Slopes	2	4 [0.4-15.5]
Intercom	Yes	8	16 [5.8-26.1]
	No	42	84 [73.8-74.1]
Lifts	Yes	12	24 [12.1-35.8]
	No	38	76 [64.1-87.8]
Indoor environment of dental clinic			
Character of the soil type	Unfurnished	37	74 [61.8-86.1]
	Non-slippery	38	76 [64.1-87.8]
	Non reflective	35	70 [57.3-82.7]
	Without obstacle to the wheel	4	8 [0.4-15.5]
Disabled toilets	Yes	4	8 [0.4-15.5]
	No	46	92 [84.4-99.5]

Doorway width compliance	Yes	33	66 [52.8-79.1]
	No	17	34 [20.8-47.1]
Armchair with space of use	Yes	23	46 [32.1-59.8]
	no	27	54 [40.2-67.8]
Impression of dentists on their dental clinic			
Norms	Yes	21	42 [28.3-55.6]
	No	29	58 [44.3-71.6]
Reproaches made by patients	Yes	15	30 [17.3-42.7]
	No	35	70 [57.3-82.7]
Loss of mobility impaired patients	Yes	11	22 [10.5-33.4]
	No	39	78 [66.5-89.4]
Knowledge of the national disability orientation act	Yes	13	26 [13.8-38.1]
	No	37	74 [61.8-86.1]

Only 4% had ramp developments while 76% did not have elevators.

- In the interior, 92% of the practices did not have adapted toilets and only 46% had armchairs with spaces of use for PMR. Twenty-two percent of the dentists had lost sight of mobility impaired patients.

Patient Satisfaction with Architectural Accessibility of Dental services

Patients were not satisfied with parking (86%), tracking (81%), toilets (74%), comfort (73%) and stairs (59%). Only 26% knew the social orientation law and yet 42% said they were in architectural standards, although 30% received comments from patients in the sense of improving architectural accessibility (Table 3).

Attitudes of dentists after awareness

Eighty-two percent were willing to talk to their patients and make home visits because of the situation in their clinics (96% were upstairs) and 70 had a move for better accessibility (Table 4).

DISCUSSION

This study allowed us to evaluate the architectural accessibility of private dental practices in Dakar. It involved fifty dental surgeons found in their respective dental offices and then one hundred patients attending these dental surgeries. Our results do not confirm the null hypothesis. More than 3/4 of the clinics did not have elevators and 92% did not have adapted toilets. More than one fifth of dentists had lost sight of PRM. PRM were not satisfied with toilets (74%), comfort (73%) and stairs (59%).

Profile of PRM

Patients The high proportion of women versus men in dental practices (Table 1) was most often reported in population-level studies in oral health care settings [13,14]. This can be explained by their penchant for aesthetics. The problems of reduced mobility or disability were more related to the advanced age of

Table 3: Satisfaction of Patient about Variables of Accessibility.

Variables	Satisfaction	Percentage (CI)
Parking	yes	14 [6.9-21.1]
	no	86 [67.8-100.0]
Tracking	yes	19 [10.6-27.3]
	no	81 [63.3-98.6]
Stairs	yes	41 [28.5-53.4]
	no	59 [44.0-74.0]
Welcome service	yes	53 [38.7-67.2]
	no	47 [33.6-60.3]
Comfort of the clinic	yes	27 [16.9-37.0]
	no	73 [56.2-89.7]
Bathroom	yes	26 [16.1-35.8]
	no	74 [57.1-90.8]
Quality of care provided by the dentist	Yes	56 [41.3-70.6]
	No	44 [31.0-56.9]
Overall architectural accessibility	yes	81 [63.3-98.6]
	No	19 [10.6-27.3]

Table 4: Attitudes of Dentists after Second Passage (Awareness).

Variables	Answers	Numbers	Percentage (%) [CI]
Architectural Accessibility Versus Cost of Care	More important	14	28 [15.5-40.4]
	Also important	30	60 [46.4-73.5]
	Less important	6	12 [2.9-21.0]
Difficulties of Bringing to the Standards	Infrastructure problem	31	62 [48.5-75.4]
	Information problem	19	38 [24.5-51.4]
	Financial coast	19	38 [24.5-51.4]
	Owner's refusal	9	18 [7.3-28.6]
Home visits to PRM	Yes	41	82 [71.3-92.6]
	No	9	18 [7.3-28.6]
Moving project the next years	Yes	35	70 [61.1-85.3]
	No	15	30 [21.8-47.6]

the patients and the overweight and / or obesity (Table 1). Our results are similar to those found by Popplewell et al [15]. In their study in England, adults with physical disabilities have difficult physical access in primary care settings compared to those who are not elderly. Just under three quarters of the sample (73%) reported that their capacity scales were average, i.e., between 4 and 6 (Table 1). These results seem even overestimated taking into account the advanced age of patients and the architecture of most dental services.

Architectural Accessibility of Private Dental Services in Dakar

According to the literature, people with disabilities or persons with reduced mobility seem to face difficulties in accessing health services, even though they know a lower level of health [16,17]. Specifically, they can present a bad state of oral health which is characterized by the development of pathologies (caries and periodontal diseases) in connection with many determinants or dietary habits, hygiene and life [18]. The renunciation of care

would also be attributable to reduced mobility. Twenty-two per cent of dentists reported having lost their PRMs (Table 2). For the most part, the cabinets are located in apartments located on the first floor (66.7%) or on the second floor (18.8%) (Table 2). This situation militate against PRMs especially in an environment without facilities or devices facilitating their displacement. The outdoor environment of the dental offices visited does not have all the amenities for PRMs. It was found that 80% had no room for disability, 98% had no floor markings, 24% had elevators and only 4% had inclines to climb (Table 2). These results show the gaps between standards and what is achieved in practice. The standards require that the outside path be free of any obstacle with a minimum width of 1.20 m, and this to allow the crossing of a valid person with a person in a wheelchair or a person with cane or stroller [19]. However, 42% of dentists considered having standards-compliant practices (Table 2). These differences or discrepancies between the declarations and the international standards can be explained by a lack of knowledge or insufficiency of the norms or laws which govern the establishments of 5th category. Moreover, 74% of our sample declared that they did not know the law of national social orientation (Table 2). Stairs shall be provided with two-sided, continuous, rigid, height-appropriate, separately illuminated handrails. Elements of arousal and vigilance must be installed to prevent imminent danger [20]. The existence of an elevator is therefore obligatory for 5th category establishments. According to the work of Fukuda et al [21] on the self-reported results of dental surgeons, over a third of Nagasaki's dental offices were not easily accessible by people with a motor impairment due to a lack of adequate equipment. These data corroborate our results. Inside the offices, the results indicated that 92% of them did not have toilets for people living with a disability (Table 2). In a study by Baird et al. [22], although 77% of dental offices were considered by dentists to be accessible to someone who moves in a wheelchair, the observation shows that only 7% had a car park and appropriate toilets. Dental surgeons should understand the architectural and perceptual barriers faced by people with disabilities and / or living with reduced mobility and consider barrier-free models of practice for all patients. This is especially so since 70% of dentists say they have received comments from patients with reduced mobility in this direction (Table 2). Notwithstanding these remarks, 62% stated that they were limited to improve the general architectural conditions due to the structure of the already constructed premises (Table 2).

Patient satisfaction and secondary attitudes of dentists

Currently, every person seeking care for care is no longer simply a user in consultation, but a patient who is very considerate of his or her dignity and honor in relation to the quality of the service received. The patient is more attentive to the reception, the listening, to the comfort, to the transmitted information, and he considers the access to the health like a right. The relationship between the satisfaction felt and the care or services actually provided cover several types of variables. Given this diversity, overall patient satisfaction, while hard to reach, must be a major goal for all dental practices. Patients were not satisfied with parking (86%), walking (81%), toilets (74%), comfort (73%) and stairs (59%) (Table 3). In the Gautheron et al. [23] study, it appears

that 11% of the surgeries had access for wheelchair users. This access involved parking, ramps and other devices for moving. In the context of this study, physician home visits were possible, allowing patients with disabilities to receive medical care when they can not move to the practice. In our study, the awareness and information available to dentists on the issue of first-time PMRs has allowed dentists to be more aware of the difficulty of PMRs to access their practices often on the second floor, without access device. In fact, 82% of the sample said they were willing to make home visits for PMRs who wish to provide care (Table 4). Access devices (ramps, slopes, etc.) should be mandatory in the absence of elevators for all high-level or upstairs practices, so that anyone with the need for consultation or care can benefit without difficulty. These measures would reduce social inequalities in health and promote equal opportunities. Dental surgeons must then ensure the establishment of one or more adapted parking spaces for the disabled and reserved for their use, the erection of a main entrance of the building on a gentle slope, fairly wide doors, devices accessible communication, and access to all parts and equipment of the dental office in an autonomous way, reflecting more satisfactorily the reality of an inclusive society. The order and the ministry of health must make known and respect the law of social orientation which governs the institutions of character of care. The development of information materials, the holding of disability simulation workshops and the introduction of the issue of RMCs in the training curricula for dentists, planners and architects could improve institutional architecture and in charge of people with reduced mobility.

This study may have some limitations. These sample sizes may appear small and limit the power of the study. However, due to the relatively low professional and structural demographics, these sizes can provide acceptable power for statistical inference of results on a larger scale. The random selection by random selection of the statistical units by means of a systematic sampling also makes it possible to hope for a good representation.

CONCLUSION

According to this study, dental surgeons must then ensure the establishment of adapted places for people with disabilities and reserved for their use, accessible communication devices, and access to all parts and equipment of the dental office independently, translating more satisfactorily the reality of an inclusive society.

The information of dentists and the strict application of the law of social orientation especially at the level of health care facilities can contribute to fight against inequity, inequality and discrimination.

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