Original Research

Factors Associated with Preferences for Ambience and Human Resources Among Adult Patients During Dental Office Care: A Logistic Regression Study

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Abstract

Aim: Focussing on adult patients, this study evaluated the factors associated with preferences for ambience and human resources when receiving care at dental offices in Peru. **Materials and Methods:** We conducted an observational, retrospective, and analytical analysis of data previously obtained through an anonymous survey among Peruvian patients (n = 618) who visited an American Dental Center in Lima, Peru between 2018 and 2020. The statistical analyses were conducted using the frequencies and percentages of each preference, whereas a χ^2 test and logistic regression were used to identify the factors associated with patient preferences (significance determined at $P < 0.05$). **Results:** Preferences were expressed at a rate of 80.9%, with the highest frequencies found for appointment time (91.7%), the delegation of certain functions to assistant personnel (89%), and environmental privacy (89%). Further, the logistic regression model showed that only age influenced the day of the week on which respondents preferred to receive care (odds ratio = 0.97, confidence interval: 0.95–0.98, $P < 0.001$). **Conclusion:** Respondents reported strong preferences for several elements related to ambience and human resources while receiving care at dental offices, including the professional ratings/genders of service providers and available amenities.

Keywords: Dental Ambience, Dental Office, Human Resource, Preference

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Introduction

Studies have shown evidence of continual advancements in several areas of the dental profession, including the overall number of dentists, participation of women in dental unionization, specialization among dental surgeons,[1] environmental arrangements of dental facilities,[2] the general level of business competitiveness, and the application of business tools. In this regard, some issues are directly related to oral health, including the choice of dentist, satisfaction among dental patients, and acceptance/completion of comprehensive dental treatments.[3] This makes it important to consider whether the preferences of patients are related to increased performance and satisfaction, especially regarding factors that are associated with the dental office.[4]

While previous studies have attempted to understand how patient preferences are influenced via the dental office by taking exploratory approaches in different settings,[5] there is still a lack of definitive evidence showing what preferences are most important and how they are influenced.[6]

Marketing research has shown that business sustainability implies both the ability to identify the power wielded by the customer and the willingness to directly explain

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products and services, thereby satisfying the special needs of target audiences.[7] Focussing on the health services delivery environment, studies have therefore investigated how patients express their desire for certain options and the extent to which these preferences influence clinical decision-making.[8]

Preferences usually develop through interactions between many associated factors that are related to both the patient and health service.[8] This becomes multidimensionally evident when they are deciding which professional and/or health center to do business with and includes factors such as willingness to pay, satisfaction with received health services, and follow-ups on therapeutic recommendations.[9]

Thus, this study evaluated the factors associated with preferences for ambience and human resources among adult patients when receiving care at dental offices in Peru.

Materials and Methods

Study design

In this analytical, retrospective study, we conducted a secondary analysis of anonymous data (entire population; *n*=618) obtained during a management survey conducted at the American Dental Center in Lima, Peru between 2018 and 2020. This study evaluated the total population, so it was not necessary to carry out a sampling technique. This manuscript was written following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

For analysis purposes, the survey inclusion criteria stipulated that those respondents must be at least 18 years of age and complete all items (i.e., age, gender, and items related to their preferences). In relation to the exclusion criteria, those patients whose data record was incomplete were separated.

Data collection

We first gained permission to use the survey data from the dental center, which had created a digital database containing all medical records. In this regard, confidentiality was guaranteed for each respondent. Specific areas of data included gender, age of the oral health professional, size of the dental center, environmental privacy where care was given, degree to which functions were delegated to assistant staff members, and the dates/times/durations of appointments. This questionnaire only performed a content validation with a kappa coefficient of 0.78 because only specific data were collected according to dental care through the data collection sheet.

Ethics statement

The study was reviewed and approved by the Institutional Committee for Research Ethics of the UCSUR (Southern Scientific University) with registration no. 40-CIEI-Científica-2020.

Statistical analysis

Statistical analyses were performed using the IBM SPSS statistical software (version 19.0; IBM, Armonk, NY, USA); frequencies/percentages for each variable and their degrees of association were determined using the χ^2 test (significance determined at $P < 0.05$), whereas a logistic regression [odds ratio (OR)] was conducted to identify any associated factors that influenced the preferences expressed by patients who had received dental care.

Results

It was found that the male sex was the most predominant with 61.2%, whereas the female sex was only present in 38.8%. In relation to age, most patients were young adults <30 years, composed of 76.4% [Table 1].

Regarding the survey section related to patient preferences for human resources in dentistry, 56.4% preferred that their dental care be provided by one dentist and one dental assistant, whereas 14.0% had no preferences; meanwhile, smaller percentages expressed preferences for several dentists and several dental assistants (12.3%), only one dentist (working alone) (12.3%), and one dentist working with several assistants (4.8%) [Table 2].

When asked about the degree of delegation when providing care, 79.1% of the respondents said they preferred that the dentist performs all treatments, whereas 9.8% said they were comfortable with assistant personnel performing simple procedures. The remaining 11% answered "don't know/don't think" [Table 2].

As for the gender of the dentist, 44.5% of the respondents said they preferred to be treated by women, followed by 39.97% who did not indicate any such preferences and 15.5% who preferred to be treated by men. Notably, respondents under 30 years of age statistically and significantly tended to prefer being treated by dentists who were women ($P = 0.029$) [Table 2].

Regarding the age of the treating dentist, 55.3% said they preferred a dentist between 30 and 50 years of age, whereas 21.3% preferred those under 30 and 2.4% preferred those over 50. In contrast, 20.8% had no preferences about

Table 1: Sociodemographic characteristics of the population adult patients during dental office care

Variable	Group	*n*	%
Gender	Female	240	38.8
	Male	378	61.2
Age	<30 years	472	76.4
	>30 years	146	23.6

Table 2: Preferences of the respondents regarding the human resources of the dental center, according to gender and age

Formation of the human team	Patient gender				Age of the patient				Total	
	Male		Female		< 30 years		> 30 years			
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Dentist only	36	15.0	40	10.5	50	10.5	26	17.8	76	12.3
1 dentist and 1 assistant	127	52.9	222	58.7	265	56.1	84	57.5	349	56.4
1 dentist and several assistants	13	5.4	17	4.5	26	5.5	4	2.7	30	4.8
Several dentists and several assistants	28	11.6	48	12.7	64	13.5	12	8.2	76	12.3
Don't know/don't think	36	15.0	51	13.4	67	14.1	20	13.7	87	14.0
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.312				0.058					
Degree of delegation of functions										
All treatment is done by the dentist	184	76.6	305	80.6	371	78.6	118	80.8	489	79.1
Have simple procedures performed by the wizard	27	11.2	34	8.9	51	10.8	10	6.8	61	9.8
Don't know/don't think	29	12.0	39	10.3	50	10.5	18	12.3	68	11.0
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.479				0.343					
Gender of the dentist										
Male	41	17.0	55	14.5	69	14.6	27	18.4	96	15.5
Female	100	41.6	175	46.3	224	47.4	51	34.9	275	44.5
Don't know/don't think	99	41.2	148	39.1	179	37.9	68	46.5	247	39.9
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.270				0.029					
Age of the dentist										
<30 years old	59	24.5	73	19.3	114	24.1	18	12.3	132	21.3
30–50 years	123	51.2	219	57.9	255	54.0	87	59.5	342	55.3
Over 50 years old	9	3.7	6	1.5	8	1.6	7	4.7	15	2.4
Don't know/don't think	49	20.4	80	21.1	95	20.1	34	23.2	129	20.8
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.113				0.005					

age. We also found that respondents over 30 years of age statistically and significantly tended to prefer dentists between 30 and 50 years of age ($P = 0.005$) [Table 2].

As for the physical resources and arrangements of dental offices, 40.9% of the respondents preferred medium sizes with two to three chairs, whereas 17.9% preferred small sizes with one armchair and 13.4% preferred large sizes with more than three armchairs. Regarding privacy in the clinical environment, 80.1% of the respondents said they preferred total privacy, whereas 8.9% were satisfied with shared spaces and 11% answered "don't know/don't think" [Table 3].

Finally, respondents gave their opinions on time management issues in terms of scheduling and appointment duration. In this regard, 38.8% and 38.3% of the respondents preferred to be attended Monday–Friday and Saturday, respectively, while only 8.9% preferred Sunday. On the contrary, 13.9% had no preferences. Here, respondents older than 30 years of age statistically and significantly preferred the Monday–Friday timeframe ($P = 0.002$) [Table 4].

As shown in Table 5, the logistic regression revealed that respondent age was associated with preferences for attending dental consultations on particular days of the week [OR = 0.97, confidence interval (CI) = 0.95–0.98; $P < 0.001$], but neither age nor gender was associated with other patient preferences.

Discussion

In this study, findings confirmed the results of previous research showing that dental patients had specific preferences regarding the structure of human resources[10] and physical/management resources implemented at dental centers, particularly for issues such as appointment scheduling.[11] At the same time, these preferences are variously expressed based on influences from different factors.[12] As no previous studies have examined the relevance of and relationships between the various factors investigated in this study, our results should contribute to the establishment of new hypotheses aimed at gaining a deeper understanding of the perceptions and preferences dental patients hold toward specific factors related to dentistry.

It is interesting to note the relevance of time management aspects for most patients, especially in terms of the days, specific times, and durations of scheduled appointments.[13]

Table 3: Respondents' preferences regarding the physical resources of the dental center, according to sex and age

Dental center size	Patient gender				Age of the patient				Total	
	Male		Female		< 30 years		> 30 years			
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Small (1 armchair)	42	17.5	69	18.2	80	16.9	31	21.2	111	17.9
Medium (2–3 chairs)	96	40.0	157	41.5	196	41.5	57	39.0	253	40.9
Large (more than 3 armchairs)	33	13.7	50	13.2	69	14.6	14	9.5	83	13.4
Don't know/don't think	69	28.7	102	26.9	127	26.9	44	30.1	171	27.6
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.955				0.281					
Privacy										
Private space	185	77.0	310	82.0	378	80.0	117	80.1	495	80.1
Shared space	23	9.5	32	8.4	42	8.9	13	8.9	55	8.9
Don't know/don't think	32	13.3	36	9.5	52	11.0	16	10.9	68	11.0
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.274				1.000					

Table 4: Respondents' preferences regarding the scheduling and duration of appointments, by sex and age

Weekday	Patient gender				Age of the patient				Total	
	Male		Female		< 30 years		> 30 years			
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Monday to Friday	86	35.8	154	40.7	181	38.3	59	40.4	240	38.8
Saturday	91	37.9	146	38.6	194	41.1	43	29.4	237	38.3
Sunday	26	10.8	29	7.6	44	9.3	11	7.5	55	8.9
Don't know/don't think	37	15.4	49	12.9	53	11.2	33	22.6	86	13.9
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.360				0.002					
Time of day										
From 6:00 a.m. to 9:00 a.m.	7	2.9	12	3.1	15	3.1	4	2.7	19	3.0
From 9:00 a.m. to 12:00 p.m.	72	30.0	108	28.5	142	30.0	38	26.0	180	29.1
From 12:00 p.m. to 15:00 p.m.	13	5.4	20	5.2	27	5.7	6	4.1	33	5.3
From 3:00 p.m. to 6:00 p.m.	58	24.1	119	31.4	130	27.5	47	32.1	177	28.6
After 6:00 p.m.	64	26.6	94	24.8	122	25.8	36	24.6	158	25.5
Don't know/don't think	26	10.8	25	6.6	36	7.6	15	10.2	51	8.2
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.284				0.686					
Duration of appointments										
Short	144	60.0	246	65.0	303	64.1	87	59.5	390	63.1
Long	29	12.0	44	11.6	49	10.3	24	16.4	73	11.8
Don't know/don't think	67	27.9	88	23.2	120	25.4	35	23.9	155	25.1
Total	240	100.0	378	100.0	472	100.0	146	100.0	618	100.0
P-value	0.390				0.140					

In this regard, there are clear preferences for specific care shifts, which are often adapted based on personal schedules. At the same time, increased patient age is associated with decreased preferences for visiting dental offices on specific weekdays. This creates a management challenge for dental centers, which must organize efficient appointment systems that can adapt to the preferences expressed by patients while reflecting their own work capacities. Specifically, we found a high preference for the Saturday morning shift. In contrast, many patients also preferred various appointment times between Monday and Friday.

Our results also supported the current literature,[14] in that respondents placed high importance on dental services that were provided directly by the dentist in private care settings. This contributed to better dentist–patient relationships while increasing the sense of confidentiality. In similar regard, many respondents also preferred to receive support and indirect care from assistant staff and therefore visited medium or large facilities that offered several chairs. On the contrary, very few respondents stated a preference for receiving care from one dentist who worked alone (i.e., without assistant personnel and only one dental chair).

Table 5: Factors associated with the preference for dental care

Variable	OR	CI		*P*-value
Prefer some day of the week				
Age	0.97	0.95	0.98	<0.001†
Gender (female)	1.11	0.69	1.79	0.641
Prefers some time of the day				
Age	0.98	0.97	1.00	0.238
Gender (female)	1.65	0.93	2.95	0.086
Dentist gender preference				
Age	0.99	0.98	1.00	0.140
Gender (female)	1.06	0.76	1.48	0.711
Age preference of the dentist				
Age	0.99	0.98	1.01	0.804
Gender (female)	0.95	0.63	1.42	0.806
Dental center size preference				
Age	0.99	0.98	1.01	0.616
Gender (female)	1.08	0.75	1.55	0.670
Dental staff preference				
Age	1.00	0.98	1.02	0.696
Gender (female)	1.14	0.71	1.81	0.575
Appointment length preference				
Age	1.00	0.99	1.01	0.612
Gender (female)	1.28	0.88	1.86	0.181
Preference over delegation				
Age	1.00	0.98	1.01	0.999
Gender (female)	1.19	0.71	1.99	0.497
Preference for privacy in the dental office				
Age	0.99	0.98	1.01	0.900
Gender (female)	1.45	0.87	2.42	0.147

OR = odds ratio, CI = confidence intervals

†Statistically significant odds ratio (P <0.05)

Compared with other survey categories, most respondents did not have strong preferences about the gender of their dentist. However, some respondents expressed a preference for women, which supports previous studies[15,16] in which female dentists were thought to have better communication skills and oral self-care habits. It should be noted that this factor may also influence the level of continuity between the patient and their professional, as patients tend to change more after being cared for by female dentists.[17]

We also found that respondents preferred younger dental professionals, which was previously reported by both Furnham and Swami[3] and Brennan and Spencer,[12] who noted that younger dentists tend to offer higher-level diagnostic and preventive services when compared with older dentists.[18] These findings suggest that care teams should be structured to contain a predominance of middle-aged and female professionals. This also shows that a comprehensive understanding of multiple factors results in a better picture of what patients generally prefer. Above all, it is important to remember that these preferences influence whether patients are willing to receive/pay for certain dental services, revisit the same professionals, and complete comprehensive dental treatments, thus impacting oral health throughout the general population.[19]

Conclusion

Patients who require dental care tend to have specific preferences about the environmental ambience and human resources offered at dental facilities. Notably, patient age was the only significant factor associated with these preferences.

Future scope/clinical significance

In this study, we were able to gain insights about the different commercial activities and environmental arrangements offered to clients at the same dental center, thus providing a better understanding of what they specifically preferred during their visits. These preferences are often developed based on a variety of factors that modulate their expectations for dental care and determine whether they are satisfied with their treatments. Here, specific factors include the professionalism of the dentist,[20] duration and management of waiting times at the dental center,[21] pain control during dental care and the level of dental fees,[22] and the level of patient participation in the decision-making process.[23] This knowledge provides dentists and dental managers with a better foundation for developing intelligent business practices and efficiently allocating their dental resources,[24] which is especially important in dental markets with an oversupply of professionals.[25]

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Conflicts of interest

The authors have no conflicts of interest.

Authors' contribution

Study conception (JOI, LEAG), data collection (JOI, LEAG), data collection and analysis (JOI, LEAG), data interpretation (FMT, LEAG), and manuscript writing (FMT, JOI, LEAG).

Ethical policy and institutional review board statement

The research was approved by the Institutional Research Ethics Committee (No. 40-CIEI-Científica-2020).

Declaration of patient consent

Not applicable because it worked with a secondary database.

Data availability statement

All data that support the study results are available from the corresponding author (Dr. Frank Mayta-Tovalino, e-mail: fmaytat@cientifica.edu.pe) on request.

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