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SURGICAL CONSULTATION QUALITY THROUGH TIME EFFICIENCY, EYE CONTACT, AND PATIENT TIME-SATISFACTION: A CROSS-SECTIONAL STUDY

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Abstract

Introduction: Outpatient consultations in surgical settings are crucial for enhancing outcomes in the surgical field. This study aims to assess the quality of these consultations by analysing consultation length, conversation time, and eye contact in comparison to other medical consultaions. Patient satisfaction with the consultation time was also included as an additional dimension of quality assessment. **Methods:** This was a cross-sectional comparative study conducted in a Moroccan secondary-level hospital (Feb–Nov 2024). The participants were 42 physicians (21 surgeons, 21 medical specialists) and 191 surgical patients. The main outcomes were consultation duration, conversation time, eye contact, and surgical patient satisfaction (4-point Likert scale). The time variables were recorded in real time by a trained observer. Nonparametric tests were applied for group comparisons. Ethical approval was obtained, and written informed consent was secured from all participants. **Results:** The median consultation length was significantly shorter for surgical consultations (2.6 min) than for medical consultations (4.9 min), (*p* < 0.001; r = -0.670). The conversation time was also significantly shorter in surgery (*p* < 0.001; r = -0.516). Surgeons maintained eye contact for 54.26% (95% CI: 52.07% - 56.45%) of the conversations, whereas medical consultants maintained eye contact for 47.85% (95% CI: 45.42% - 50.28%) of the conversations. With respect to patient satisfaction, 33.5% (64/191) of surgical patients expressed dissatisfaction with the time allocated during their consultation. **Conclusions:** Surgical consultations were markedly shorter with less conversation time than medical specialties did; however, surgeons demonstrated greater visual engagement. Despite this behavioral adaptation, one-third of surgical patients reported time dissatisfaction, highlighting systemic challenges in meeting patient needs within severe time constraints.

Keywords: Communication; Consultation length; Eye contact; Patient satisfaction; Surgical consultation.

Introduction

High-quality outpatient care depends not only on clinical expertise but also on the conditions under which medical consultations are conducted. Among these conditions, the duration of the consultation plays a central role, as it directly influences the effectiveness of clinical encounters and the overall experience of care [1,2]. A substantial body of literature has emphasized the importance of consultation length as a determinant of consultation quality [3-7]. In recognition of its relevance, the World Health Organization (WHO) and the International Network for the Rational Use of Drugs (INRUD) have both included consultation duration among their recommended indicators for evaluating health service performance [8].

Consultation time affects several core components of clinician–patient interaction, including verbal communication, nonverbal cues, and the clinician's ability to conduct a comprehensive assessment [8-13]. When sufficient time is available, physicians can provide clearer explanations, engage in shared decision-making, address patients' emotions and concerns, and ultimately strengthen patient trust [14,15]. This contributes to greater patient satisfaction and improved health outcomes across diverse populations [8,9,13,14,16-18].

Nonverbal behaviors, particularly eye contact, are also essential markers of meaningful clinical engagement. Evidence suggests that maintaining eye contact for more than a quarter of the interaction is associated with better quality communication and stronger physician patient rapport [19,20]. Ensuring that consultations are allocated adequate time is

therefore fundamental to achieving these communication standards [1].

Although international guidelines suggest that outpatient visits should ideally last 10–15 minutes [8,12], consultation duration varies widely across countries. In many low-resource health systems, half of the world's population experiences median consultation lengths of five minutes or less [21], particularly in settings under high service pressure [6,8]. Marked differences are also observed across specialties: surgeons tend to conduct shorter and more focused consultations than general practitioners and nonsurgical specialists [8,22]. Furthermore, multi-variate analyses have demonstrated that consultation length is shaped by both visit characteristics and physician demographics, with longer encounters more frequently reported among older clinicians and female physicians [23].

Despite the central role of consultation time in determining care quality, no prior research in Morocco has investigated surgical consultations using objective measures such as time efficiency and eye contact engagement, nor has any study examined patients' perceptions of whether the consultation time they receive is adequate. This lack of evidence highlights an important gap that the present study seeks to address.

While objective indicators such as consultation duration, communication patterns, and non-verbal behaviors provide valuable insight into the quality of clinical encounters [14, 18], patient satisfaction remains an essential and often underexplored—dimension. Yet little is known about how surgical patients in resource-limited Moroccan hospitals perceive the adequacy of the time devoted to their consultation, despite the potential risk of dissatisfaction associated with shorter visits.

This study aims to address this gap by examining how consultation length, clinician eye-contact engagement, and patients' perceptions of time adequacy collectively shape the quality of surgical consultations in Moroccan hospitals, compared with medical specialties. Using pre-intervention data from a before–after evaluation of electronic health record (EHR) implementation, the study analyzes consultation time, communication components (conversation time and eye contact), and patient satisfaction with time allocation. By comparing specialties within the same institutional context, the study provides essential evidence to inform improvements in outpatient care and contributes new data to the limited Moroccan literature on consultation quality.

Materials and Methods

Study Design

This study is a cross-sectional, descriptive, and comparative baseline assessment conducted prior to the implementation of an electronic health record (EHR) system. It represents the pre-EHR phase of a larger pre–post evaluation. The study involved direct observation of outpatient consultations among surgical and medical specialties between February and November 2024. Post consultation patient surveys assessing satisfaction were administered from September to December 2024.

Setting

The study took place in a Moroccan secondary-level hospital, which was selected by the Min-istry of Health as a pilot site for generalization of the national EHR implementation program. All data collection occurred within outpatient consultation settings.

Participants

Physicians: All surgeons and medical specialists practicing in the hospital's outpatient depart-ments were invited to participate. The study's purpose, methods, and tools were clearly ex-plained, and participation was voluntary. Physicians had the option to decline observation at any time. Each participating physician was observed during a full outpatient session (one ses-sion per week).

Patients: For the survey component, patient eligibility criteria included age (≥18 years), full consciousness, and having had a surgical consultation at the study hospital. All eligible pa-tients received study information and provided written informed consent before survey ad-ministration.

Variables

The main outcome variables included the following:

- Consultation duration (total time from patient entry to exit);
- Conversation time (time spent speaking/listening to the patient or family);
- Eye contact duration (the percentage of verbal interaction during which eye contact was maintained);
- Patient satisfaction with consultation time was measured via a single-item, 4-point Likert scale (Arabic version).

Data Sources and Measurement

A trained observer used the "Multichrono et Timer" mobile app to collect time-based data in real time.

Three components were recorded : total consultation duration, conversation time, and eye contact time.
Patient satisfaction was measured via a Likert scale: "I am satisfied with the time allocated for this consultation" (1 = Strongly disagree, 4 = Strongly agree). Satisfaction levels were later dichotomized for analysis, with scores of 3-4 classified as “Satisfied” and scores of 1-2 as “Dissatisfied”.

Bias

To reduce measurement bias, the same observer (a trained health professional bound by professional confidentiality) conducted all observations. The observer remained unobtrusive and exited the room if the physician or patient requested privacy, in which case no data were recorded.

Study size

This study included all consenting surgeons, medical specialists, and eligible patients encountered during the observation period. Owing to its descriptive, exploratory nature no formal sample size calculation was performed.

Quantitative Variables

All continuous variables (duration measures) were tested for normality using the Shapiro–Wilk and Kolmogorov–Smirnov tests. As the data were not normally distributed ($p < 0.05$), non-parametric analyses were used.

Statistical methods

The data were analysed using SPSS version 26.
Group comparisons (surgical vs. medical specialties) were conducted via the Mann–Whitney U test. Rank-biserial correlation was used to assess the strength of the relationships between groups. The percentage of eye contact time (eye contact / total conversation time) was calculated and reported with 95% confidence intervals via normal approximation.
Prior to primary analysis, consultation metrics were compared between female and male surgeons within the surgical specialty using the Mann-Whitney U test to rule out sex as a major confounding factor.
Patient satisfaction responses were dichotomized (satisfied vs. dissatisfied) and aggregated at the group level to preserve confidentiality. A sensitivity analysis was performed using an alternative threshold where only 'Strongly agree' was considered 'Satisfied' to test the robust-ness of our findings to the choice of cut-off point.
The dataset was complete for all variables included in this analysis; therefore, no methods for handling missing data were needed.

Ethical considerations

The study was approved by University Hospital Ethics Committee (Approval No. 09/23, dated 12/12/2023). Written informed consent was obtained from all participating patients. Data confidentiality and anonymity were strictly maintained throughout the study.

Results

634 outpatient consultations were recorded from 42 participating physicians (73% acceptance rate), and surveys administered to surgical patients were completed by 191 individuals (58.5% response rate) (Table I). Among nonparticipating physicians, the main reasons given were a lack of time or discomfort with the observation process. Most eligible patients who did not complete the questionnaire, most refused due to a lack of time after the consultation or a lack of interest in the study.
Among the 634 outpatient consultations, follow-up visits made up the majority of consultations observed (62%). The same is true of consultations by surgeons and other specialists.
Furthermore, the number of physicians was evenly balanced between surgical (50%) and medical specialties (50%). The surgeons consisted of 7 specialties: four peadiatrics, five orthopaedists, four Viscerals, two vascular surgeons, three urological surgeons, two neurosurgeons, and one plastic surgeon. For medical specialties 6 were represented by six cardiologists, three hematologists, two nephrologists, four gynecologists, five radiation therapists and one specialist in nuclear medicine.
With respect to the age of the participating physicians, the majority are between 30 and 50 years old, with an almost equal distribution between surgeons and other specialists in the age groups of 30-40 years and 40-50 years.
Female physicians made up 50% of the observed physicians. In surgical specialties this percentage decreases to 23,8% with men accounting for the majority. The same ratio was reversed for medical specialties, with 23,8% being male.
To rule out surgeon sex as a potential confounder [24], metrics were compared between female and male surgeons. No statistically significant differences were found in consultation length ($p = 0.078$), conversation time ($p = 0.115$), or eye contact duration ($p = 0.396$) indicating that sex was not a source of bias in the subsequent analysis of specialties (Table II).

Table I: Overview of physician characteristics and consultation details for surgical and medical groups.

	All specialties	Surgical specialties	Medical specialties
Number of physicians	42	21	21
Male	21	16	5
Female	21	5	16
Age:			
[30-40]	20	09	11
[41-50]	19	10	09
More than 50	03	02	01
Specialties	13 specialties	(7) Pediatric surgery 0rthopedics Visceral surgery Vascular surgery Urology Neurosurgery Plastic surgery	(6) Cardiology Hematology Nephrology Gynecology and obstetrics Nuclear medecine Radiotherapy
Over all observation time (hh:mm:ss)	47:25:46	19:51:14	27:34:32
Number of consultations	634	366	268
First visits, n (%)	217 (38)	129 (35)	88 (33)
Follow-up visits, n (%)	417 (62)	237 (65)	180 (67)
Mean number of consultations per physician	13.70	16.28	11.12
Number of consultations not Observed	3	3	0

Table II: Comparison of consultation times between female and male surgeons

	Female surgeons: Median in seconds (IQR)	Male surgeons: Median in seconds (IQR)	U Mann Whitney (P value)	Correlation coefficient (r)
Consultation length	176 (128– 265)	156 (92–243)	***.078***	–
Conversation time	124(81–155)	104 (62–161)	***.115***	–
Eye contact duration	58 (35– 85)	55 (25–93)	***.396***	–

IQR: Interquartile Range, (r): The rank-biserial correlation coefficient

Consultation length

The data in (Table III) show that, for all types of visits, surgical specialties had significantly shorter consultation lengths than medical specialties did(161s–246 s). This difference was statistically significant ($p < 0.001$) and strongly negatively correlated ($r = - 0.670$). Similar patterns were observed for first visits and follow-up visits, with surgical specialties consistently having shorter consultation times than medical specialties did.

There was a notable difference between the first visit (240 s) and follow-up visits (137 s) in surgical consultations. For medical specialties, first visits (300 s) and follow-up visits (296 s) are similar in duration.

Table III : Comparison of consultation times across consultation length, duration of eye contact, and conversation time between surgical and medical specialties

	Surgical specialties : Median in seconds (IQR)	Medical specialties : Median in seconds (IQR)	U Mann Whitney *(P value)*	Correlation coefficient (r)
Consultation length				
All visits	161(103–246)	297(205–440)	***p < .001***	- 0.670
First visits	240 (157–316)	300 (241–428)	***p < .001***	- 0.386
Follow-up visits	137 (87–202)	296 (190–442)	***p < .001***	- 0.625
Conversation time				
All visits	107(64–160)	164(111–247)	***p <.001***	- 0.516
First visits	134 (96–193)	156 (113–224)	***.027***	- 0.177
Follow-up visits	89 (59–141)	168 (110–263)	***p <.001***	- 0.501
Eye contact duration				
All visits	56(28–91)	75(46–127)	***p < .001***	- 0.330
First visits	89 (50– 131)	84 (58–144)	***.476***	-
Follow-up visits	42 (24–72)	70 (41–122)	***p < .001***	- 0.319

IQR: Interquartile Range, (r): The rank-biserial correlation coefficient

Conversation time

For all visits, surgical consultations had a notably shorter duration than medical specialties did. This difference was statistically significant with p-value less than 0,001, and showed a moderate negative correlation (- 0,516).

Eye contact

In terms of the duration of eye contact (Table III), surgical consultations had shorter durations than medical specialties did at all visits. This difference was statistically significant ($p < 0.001$) and showed a weak negative correlation ($r = - 0.330$). However, for first visits, the difference in eye contact duration between surgical and medical consultations was not statistically significant ($p = 0.476$).

Table IV shows that the mean proportion of conversation time dedicated to eye contact was greater for surgical consultations than for medical consultations (54.26% - 47.85%). This pattern was observed for both, the first visit and the follow-up visit.

Table 4: Mean proportion of conversation time dedicated to eye contact (with 95% CI).

Visit type	Medical specialties, % (95% CI)	Surgical specialties, % (95% CI)
All visits	47.85(45.42-50.28)	54.26(52.07-56.45)
First visits	54.74(50.52-58.96)	59.00(55.48-62.51)
Follow-up visits	44.47(41.59-47.34)	51.89(49.14-54.64)

Patient satisfaction with consultation duration

It was assessed among surgical patients (n=191) and is presented in Table V. According to the primary dichotomization (agree + strongly agree vs. disagree + strongly disagree), 66.49% of patients were satisfied with the allocated time. However, a sensitivity analysis demonstrated that the result was highly sensitive to the definition of satisfaction: only 1.04% of patients provided a 'Strongly agree' top-box response. A total of 33.5% of patients expressed some level of dissatis-faction.

Table 5: Patient satisfaction with consultation duration (Surgical patients, n=191).

	Number	%
Strongly disagree	5	2.61
Disagree	59	30.89
Agree	125	65.44
Strongly agree	2	1.04

Discussion

Using both objective measures (total consultation length, conversation time, eye contact duration), and subjective measures (patient satisfaction with time allocation), three key findings emerged in this study that assessed the quality of surgical consultations.

First, regarding consultation length, surgical specialties had a median of consultation duration of 2.6 minutes, with first visits length (4 min) being almost twice as long as follow-up visits length. The results also revealed a significant difference in consultation length between surgical and medical specialties working under identical institutional conditions, with the former having a shorter duration (4.9 min). While physician characteristics such as age and sex influence consultation length [8,24], our physician participants showed similar age distributions across specialties, eliminating this confounder. Compared with their male counterparts, female surgeons (representing one-third of participants) presented nonsignificant differences in consultation and communication times, which is consistent with the findings of Deveugele et al. [25], who demonstrated that physician gender has no impact on consultation duration.

Second, the verbal conversation time in surgical consultations was significantly shorter than that in medical specialties working under identical institutional conditions. This result is logical as the time allocated for eye contact is linked to the duration of the conversation. Since the conversation time is shorter in surgical consultations, it naturally follows that the duration of eye contact is also shorter. However, the results showed that surgeons spend proportionally more time in their conversation with patients on eye contact (54.26%) than do medical specialists. This result indicates that surgeons engage in conversations with patients even when they are shorter.

Third, despite surgeons' proportionally high level of engagement through eye contact (54.3% of conversation time), patient satisfaction with consultation time was highly sensitive to measurement interpretation. While our primary analysis classified 66.5% of patients as satisfied, a substantial minority (33.5%) expressed dissatisfaction. Furthermore, a sensitivity analy-sis revealed that a mere 1.0% of patients provided the top-box rating ('Strongly agree'), suggesting that even among satisfied patients, there may be underlying reservations about consultation length. This finding indicates that efficient nonverbal engagement, while present, cannot fully compensate for perceived time constraints for a significant portion of patients, and that achieving a higher level of satisfaction may require addressing duration more directly.

Our findings align with those of previous studies documenting short surgical consultations. Ting et al. reported an average of 12.3 minutes for surgical consultations in Australia, with preoperative visits being longest [26], whereas Waghorn and McKee reported medians of 4.3 minutes for new patients and 3 minutes for follow-up surgical patients, raising concerns about the adequacy of these encounters [27].

In our context, the median of 2.6 minutes falls below Irving et al.'s 5-minute threshold associated with increased patient dissatisfaction [21], suggesting that such brief encounters may compromise communication quality and patient-centered care.

Consistent with Hajizadeh et al. [8], and White et al [22], our results confirm that surgeons communicate less with patients than medical specialists, with interactions primarily focused primarily on biomedical content and less on psychosocial or emotional dimensions. This limited scope may explain why one in three patients expressed dissatisfaction despite surgeons' proportional engagement through eye contact (54.3% of conversation time), an indicator of clinician involvement and patient-centered interaction [10].

A major strength of this study lies in its internal comparison between surgical and medical specialties operating under identical institutional conditions, which minimizes confounding related to hospital resources and workflows. Additionally, incorporating both objective measures (consultation length, conversation time, and eye contact) and patient-reported satis-faction provides a multidimensional perspective rarely documented in Moroccan healthcare settings.

However, several limitations must be acknowledged. The study was conducted in a single Moroccan hospital as part of a pre–post EHR impact evaluation, limiting generalizability be-yond this setting. Cultural factors, physician workload, and healthcare system organization may influence consultation dynamics in other contexts. The aggregation of patient data at the group level prevents surgeon-specific analysis but ensures confidentiality.

These findings raise an important question: can surgeons deliver high-quality consultations within such constrained time frames? The consistently short durations observed underscore the need for institutional strategies to allocate sufficient time for surgical consultations and promote communication training focusing on both verbal and nonverbal components. Future research should explore whether extending consultation time improves patient satisfaction, decision quality, and clinical outcomes in surgical care.

Conclusion

In this Moroccan hospital-based study, surgical consultations were substantially shorter than medical consultations were, with limited verbal communication despite high proportional eye contact engagement. These results highlight a potential risk for diminished patient-centeredness and satisfaction when consultation time is restricted below critical thresh-olds. Ensuring adequate time allocation and integrating structured communication strategies are essential steps to enhance the quality of surgeon–patient interactions.

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Conflicts of Interest: The authors declare no conflicts of interest.

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