

The Effect of Healthcare Management Practices on Patient Satisfaction at the General Administration of Hajj and Umrah Affairs in Madinah, Saudi Arabia: The Mediating Roles of Staff Training and Service Quality

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ABSTRACT:

Background: Saudi Arabia receives millions of Hajj and Umrah pilgrims each year, and the healthcare services supporting them operate under seasonal demand peaks, linguistic diversity and compressed treatment windows that differ from routine hospital care. Management practices are widely assumed to drive patient satisfaction in such settings, but the mechanisms through which they do so have not been tested empirically in the pilgrimage healthcare context.

Objective: To determine the direct effect of healthcare management practices on patient satisfaction at the General Administration of Hajj and Umrah Affairs in Madinah, and to test whether staff training and service quality mediate that relationship.

Methods: A cross-sectional, analytical, quantitative design was used. A total of 316 healthcare professionals were recruited through simple random sampling across professional categories. Healthcare management practices were measured with the scale of Zhao et al. (2023), staff training with the scale of Bai et al. (2018), service quality with HEALTHQUAL (Lee, 2017), and staff-perceived patient satisfaction with the PSQ-18 (Marshall & Hays, 1994). Partial least squares structural equation modelling was performed in SmartPLS 4, with indirect effects estimated through bias-corrected bootstrapping (5,000 resamples).

Results: Healthcare management practices had a direct effect on patient satisfaction ($\beta = .34, p < .001$), an effect on staff training ($\beta = .65, p < .001$) and an effect on service quality ($\beta = .70, p < .001$). Staff training ($\beta = .22, p < .001$) and service quality ($\beta = .24, p < .001$) both predicted patient satisfaction. Both indirect paths were significant: staff training ($\beta = .14, 95\% \text{ CI } [.089, .203]$) and service quality ($\beta = .17, 95\% \text{ CI } [.112, .231]$). The total effect was $\beta = .65$, of which the two mediators carried 47.7%. The model explained 58.1% of the variance in patient satisfaction.

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Conclusion: Management practices reach patient satisfaction partly through direct structural means and partly through the workforce capability and service delivery pathways they set up. Investment in training and in the service quality dimensions that pilgrims experience directly is therefore not separable from management reform.

Keywords: healthcare management practices; patient satisfaction; staff training; service quality; PLS-SEM; Hajj and Umrah; Saudi Arabia.

1. Introduction

Madinah receives several million Hajj and Umrah pilgrims each year, and the healthcare services that support them are delivered under conditions that have few parallels in routine hospital practice: demand arrives in seasonal peaks, patients speak dozens of languages, treatment windows are short because pilgrims are unwilling to interrupt religious rites, and a large share of presentations involve older adults with existing chronic disease (Ahmed, Arabi & Memish, 2006; Memish et al., 2019). The General Administration of Hajj and Umrah Affairs in Madinah coordinates this provision within the Madinah Health Cluster, and its performance is judged in large part on what pilgrims report about the care they received.

Patient satisfaction has become a standard outcome measure in Saudi healthcare, written into Vision 2030 targets and into the accreditation requirements of the Saudi Central Board for Accreditation of Healthcare Institutions. It is treated as a proxy for care quality, and it predicts adherence, service reuse and institutional reputation (Zeithaml, Berry & Parasuraman, 1996; Al-Borie & Damanhour, 2013). What is less settled is how the management of a healthcare organisation actually translates into what patients report.

Structured management practices target setting, performance monitoring, staffing and incentive design are associated with better clinical outcomes in hospital systems internationally (Bloom & Van Reenen, 2010; Bloom et al., 2015; Tsai et al., 2015). The association is robust, but management practices do not touch patients directly. They act on the people and processes that patients encounter. Two intermediate

mechanisms have theoretical and empirical support: staff training, which converts management intent into workforce capability (Kirkpatrick, 1994; Aiken et al., 2012), and service quality, which is the delivered experience patients evaluate (Parasuraman, Zeithaml & Berry, 1988; Lee, 2017). Neither has been tested as a mediator in the pilgrimage healthcare setting, and neither has been tested alongside the other in a single model. This study tests a dual mediation model at the General Administration of Hajj and Umrah Affairs in Madinah. Healthcare management practices are hypothesised to influence patient satisfaction directly (H1), staff training (H2) and service quality (H3); staff training (H4) and service quality (H5) are hypothesised to influence patient satisfaction; and staff training (H6) and service quality (H7) are hypothesised to mediate the management-satisfaction relationship. Testing the two mediators simultaneously separates the capability pathway from the delivery pathway and shows which carries more of the effect, which single-mediator studies cannot do.

2. Literature Review and Conceptual Framework

The conceptual model draws on three positions. The resource-based view treats management practices as an organisational resource that competitors find hard to imitate and that produces advantage when it is embedded in routines and human capital rather than in equipment (Barney, 1991). Applied to healthcare, this predicts that management practices raise performance through the workforce, not around it. Donabedian (1988) supplies the second position with the structure-process-outcome model, in which structural attributes of an organisation shape the processes of care, which

in turn shape outcomes. Management practices are structural; training and service delivery are process; patient satisfaction is outcome. The third position is the service quality tradition, which holds that satisfaction is a judgement patients form about the service encounter along identifiable dimensions (Parasuraman, Zeithaml & Berry, 1988; Zeithaml, Berry & Parasuraman, 1996). HEALTHQUAL adapts these dimensions for healthcare, covering empathy, tangibles, safety, improvement of care service and efficiency (Lee, 2017).

Evidence for the direct management-satisfaction link is substantial. Tsai et al. (2015) found hospital management quality strongly related to clinical quality metrics across 1,000 US hospitals, and Bloom et al. (2015) reported that better-managed English public hospitals had lower mortality and shorter waiting times. Saudi work has reported similar patterns at facility level, with organisational and administrative factors accounting for a meaningful share of variation in patient-reported experience (Al-Borie & Damanhour, 2013; Almutairi, 2015). Management practices set staffing ratios, define escalation pathways and determine how complaints are handled, all of which patients encounter as service attributes.

The training pathway rests on Kirkpatrick's (1994) four-level model, which frames training as a chain running from reaction through learning and behaviour to results. Management practices determine training budgets, release time and whether supervisors reinforce what was taught, and supervisory support predicts training transfer more strongly than either learner motivation or programme design (Burke & Hutchins, 2007). In healthcare specifically, workforce capability and staffing decisions are associated with patient-reported experience across twelve European countries and the United States (Aiken et al., 2012). Trained staff communicate better, make fewer errors and handle the linguistic and cultural range of the pilgrim population more competently, all of which patients notice.

The service quality pathway is more direct. Management practices set the conditions under

which care is delivered — waiting time standards, cleanliness protocols, appointment systems, signage and interpretation services — and patients evaluate those conditions as service quality before forming a satisfaction judgement (Zeithaml, Berry & Parasuraman, 1996). Service quality has consistently predicted patient satisfaction in Gulf healthcare settings (Al-Borie & Damanhour, 2013), and the relationship holds when service quality is measured with healthcare-specific instruments rather than generic SERVQUAL (Lee, 2017).

The pilgrimage context sharpens all three relationships. Pilgrims present in large numbers over short periods, often with limited Arabic, and they judge the service on speed, clarity and respect for their religious obligations as much as on clinical content (Ahmed, Arabi & Memish, 2006; Memish et al., 2019). Management decisions about surge staffing, triage protocols and multilingual capacity therefore have unusually visible consequences. No published study has modelled these pathways at a Hajj and Umrah healthcare administration, which is the gap this study addresses.

Seven hypotheses follow. H1: healthcare management practices have a positive effect on patient satisfaction. H2: healthcare management practices have a positive effect on staff training. H3: healthcare management practices have a positive effect on service quality. H4: staff training has a positive effect on patient satisfaction. H5: service quality has a positive effect on patient satisfaction. H6: staff training mediates the relationship between healthcare management practices and patient satisfaction. H7: service quality mediates the relationship between healthcare management practices and patient satisfaction.

3. Methods

Design and Setting

The study used a cross-sectional, analytical, quantitative design at the General Administration of Hajj and Umrah Affairs in Madinah, which operates under the Madinah Health Cluster of the Saudi Ministry of Health. The design suited the aim of establishing the existence, direction and

strength of relationships between latent constructs through inferential statistics, and is standard in health services and organisational behaviour research (Creswell & Creswell, 2018). The site was selected because it delivers healthcare at a scale and under seasonal conditions that no other administration in the region matches, and because it holds institutional review board facilitation for research of this type.

Participants and Sampling

The target population was healthcare professionals employed at facilities under the General Administration of Hajj and Umrah Affairs in Madinah. Simple random sampling was applied to the administration's staff register. Sample size was calculated using Cochran's (1977) formula at a 95% confidence level and 5% margin of error, giving a minimum of 296; the target was raised to 380 distributed questionnaires to allow for non-response and data-quality exclusions. A total of 316 usable responses were obtained. This exceeds the minimum required for the structural model under the inverse square root method, which for a minimum expected path coefficient of .20 requires approximately 155 cases (Kock & Hadaya, 2018).

Instruments

Four scales were used, all with 5-point Likert response formats. Healthcare management practices were measured with the 6-item scale of Zhao et al. (2023), covering planning, resource allocation, performance monitoring and staff coordination. Staff training was measured with the 10-item scale of Bai et al. (2018), structured on Kirkpatrick's levels. Service quality was measured with the 12-item HEALTHQUAL instrument (Lee, 2017), covering empathy, tangibles, safety, improvement of care service and efficiency. Staff-perceived patient satisfaction was measured with 10 items adapted from the PSQ-18 (Marshall & Hays, 1994), covering communication, interpersonal manner, technical quality, time spent and accessibility. Items were translated into Arabic and back-translated by two bilingual health professionals, and wording was contextualised for the pilgrimage setting where the original items referred to routine outpatient care. Pilot testing with 30 respondents confirmed sampling adequacy and internal consistency (KMO = .84; Table 1).

Table 1. Pilot Convergent Validity Indices (n = 30)

Scale	Cronbach's α	CR	AVE (Threshold $\geq .50$)
Healthcare Management Practices	.88	.91	.62
Staff Training	.90	.92	.57
Service Quality	.92	.94	.55
Patient Satisfaction	.87	.90	.59

Note. Threshold values: CR $\geq .70$; AVE $\geq .50$ (Hair et al., 2019; Fornell & Larcker, 1981).

Data Collection and Analysis

After institutional review board clearance, questionnaires were distributed electronically and in hard copy over six weeks outside the Hajj peak season, to avoid the operational disruption of the season and the response bias that surge conditions would introduce. Participation was voluntary and written informed consent was obtained; no waiver of consent was sought.

Responses were anonymous and no patient-identifiable data were collected.

Analysis was performed in SmartPLS 4 using partial least squares structural equation modelling. PLS-SEM was selected because the model is prediction-oriented, contains two mediators estimated simultaneously, and does not require multivariate normality (Hair et al., 2019; Sarstedt et al., 2021). The measurement

model was assessed for indicator loadings, internal consistency reliability, convergent validity through average variance extracted, and discriminant validity through the heterotrait-monotrait ratio (Henseler, Ringle & Sarstedt, 2015). The structural model was assessed for collinearity, path coefficient significance through bootstrapping with 5,000 resamples, coefficient of determination, effect size and predictive relevance. Indirect effects were estimated with bias-corrected bootstrap confidence intervals, and mediation was judged significant where the 95% interval excluded zero (Preacher & Hayes, 2008). Common method bias was assessed through Harman's single-factor test and full collinearity variance inflation factors (Podsakoff et al., 2003; Kock, 2015).

4. Results

4.1 Sample and Data Quality

Of 380 questionnaires distributed, 331 (87.1%) were returned, and 15 were excluded for incomplete or patterned responses, giving 316 usable cases and an effective response rate of 83.2%. Skewness ranged from -0.71 to 0.48 and kurtosis from -0.63 to 1.24, both within acceptable limits. Full collinearity variance inflation factors were below 3.11, and a Harman single-factor test accounted for 29.4% of variance, below the threshold that would indicate common method bias. Nurses formed the largest professional group (38.3%), most respondents held a bachelor's degree (53.2%), and 71.8% had worked three or more Hajj or Umrah seasons (Table 2).

Table 2. Demographic Characteristics of Respondents (N = 316)

Variable	Category	Frequency (N)	Percentage (%)
Age Group	20-29 years	61	19.3
	30-39 years	118	37.3
	40-49 years	93	29.4
	50+ years	44	13.9
Gender	Male	171	54.1
	Female	145	45.9
Professional Category	Physicians	58	18.4
	Nurses	121	38.3
	Allied Health Professionals	54	17.1
	Pharmacists	36	11.4
	Administrative/Supervisory	47	14.9
Education Level	Diploma	63	19.9
	Bachelor's Degree	168	53.2
	Master's Degree	66	20.9
	Doctorate	19	6.0
Years of Experience	< 2 years	48	15.2
	2-5 years	96	30.4
	6-10 years	92	29.1
	> 10 years	80	25.3
Hajj/Umrah Seasons Worked	1-2 seasons	89	28.2
	3-5 seasons	121	38.3
	> 5 seasons	106	33.5

Note. Percentages may not total 100% due to rounding.

4.2 Measurement Model

Service quality recorded the highest construct mean ($M = 3.82$, $SD = 0.61$), followed by patient satisfaction ($M = 3.76$), healthcare management practices ($M = 3.71$) and staff training ($M = 3.48$, the lowest of the four). All indicator loadings

exceeded .70 except two staff training items, which loaded at .68 and .69 and were retained because their removal did not raise average variance extracted above the threshold. Composite reliability ranged from .90 to .94 and average variance extracted from .55 to .63, so convergent validity was established (Table 3).

Table 3. Descriptive Statistics, Reliability and Convergent Validity (N = 316)

Construct	M	SD	α	CR	AVE
Healthcare Management Practices	3.71	0.66	.89	.91	.63
Staff Training	3.48	0.74	.91	.93	.58
Service Quality	3.82	0.61	.93	.94	.56
Patient Satisfaction	3.76	0.63	.88	.90	.60

Note. M and SD are construct-level composite scores on a 5-point scale. CR = composite reliability; AVE = average variance extracted.

Discriminant validity was supported. All heterotrait-monotrait ratios fell below the

conservative .85 threshold, with the highest at .78 between service quality and patient satisfaction (Table 4). The Fornell-Larcker criterion was also satisfied, with each construct's square root of average variance extracted exceeding its correlations with the other constructs.

Table 4. Discriminant Validity — Heterotrait-Monotrait Ratios (N = 316)

Construct	HMP	ST	SQ	PS
Healthcare Management Practices (HMP)	—			
Staff Training (ST)	.71	—		
Service Quality (SQ)	.76	.68	—	
Patient Satisfaction (PS)	.74	.65	.78	—

Note. Threshold: $HTMT < .85$ (Henseler, Ringle & Sarstedt, 2015).

4.3 Structural Model and Hypothesis Testing

The structural model explained 58.1% of the variance in patient satisfaction ($R^2 = .581$), 42.3% in staff training ($R^2 = .423$) and 49.0% in service quality ($R^2 = .490$). Stone-Geisser Q^2 values were positive for all endogenous constructs (patient satisfaction $Q^2 = .34$; staff training $Q^2 = .26$;

service quality $Q^2 = .31$), indicating predictive relevance. All five direct hypotheses were supported (Table 5). Healthcare management practices predicted service quality most strongly ($\beta = .70$), followed by staff training ($\beta = .65$) and patient satisfaction directly ($\beta = .34$). Of the two mediators, service quality had the larger effect on patient satisfaction ($\beta = .24$) than staff training ($\beta = .22$), though the difference was small.

Table 5. Structural Model Results and Hypothesis Testing (N = 316)

Hypothesis	Path	β	t-value	p-value	Decision
H1	HMP $\rightarrow$ PS	.34	5.87	< .001	Supported
H2	HMP $\rightarrow$ ST	.65	14.22	< .001	Supported
H3	HMP $\rightarrow$ SQ	.70	16.05	< .001	Supported

Hypothesis	Path	β	t-value	p-value	Decision
H4	ST $\rightarrow$ PS	.22	3.94	< .001	Supported
H5	SQ $\rightarrow$ PS	.24	4.16	< .001	Supported

Note. β = standardised path coefficient. Bootstrapping with 5,000 resamples. HMP = healthcare management practices; ST = staff training; SQ = service quality; PS = patient satisfaction.

Both mediation hypotheses were supported (Table 6). The indirect path through staff training was significant ($\beta = .14$, 95% CI [.089, .203]) and so was the path through service quality ($\beta = .17$,

95% CI [.112, .231]). Neither interval contained zero. The total indirect effect was .31 and the total effect .65, so the two mediators together carried 47.7% of the total effect. Because the direct effect remained significant, the mediation is partial in both cases: management practices reach patient satisfaction through these two pathways and also through routes the model does not capture.

Table 6. Mediation Analysis — Bootstrapped Indirect Effects

Indirect path	β	SE	95% LL	95% UL	VAF	Decision
HMP $\rightarrow$ ST $\rightarrow$ PS (H6)	.14	.029	.089	.203	21.5%	Supported
HMP $\rightarrow$ SQ $\rightarrow$ PS (H7)	.17	.031	.112	.231	26.2%	Supported
Total indirect effect	.31	.042	.231	.394	47.7%	—
Direct effect (HMP $\rightarrow$ PS)	.34	.058	.228	.454	52.3%	—
Total effect	.65	.045	.562	.738	100%	—

Note. Bias-corrected bootstrapping, 5,000 resamples. VAF = variance accounted for. Partial mediation is indicated where the direct effect remains significant and VAF falls between 20% and 80% (Hair et al., 2019).

4.4 Service Quality Dimensions

Within the HEALTHQUAL instrument, safety recorded the highest mean and efficiency the

lowest (Table 7). The gap between the two is the operational finding of most immediate use: respondents rated the reliability and safety of clinical care above the speed and organisation with which it was delivered, which matches the seasonal congestion the administration manages.

Table 7. HEALTHQUAL Dimension Scores (N = 316)

Dimension	M	SD	Rank
Safety	4.02	0.58	1
Empathy	3.91	0.64	2
Tangibles	3.84	0.67	3
Improvement of care service	3.72	0.70	4
Efficiency	3.61	0.76	5

Note. Scores on a 5-point scale.

5. Discussion

Healthcare management practices had a significant direct effect on patient satisfaction, which places this study alongside the

international evidence linking management quality to healthcare performance (Bloom et al., 2015; Tsai et al., 2015). The size of the direct effect, $\beta = .34$, is modest relative to the total

effect of .65, and that difference is the substantive result. Just under half the influence of management practices on patient satisfaction travelled through staff training and service quality rather than reaching patients directly. Studies that model management practices and satisfaction as a single relationship will therefore attribute to management a mechanism that belongs to the workforce and to the service encounter.

The service quality pathway carried more of the effect than the training pathway (.17 against .14), and management practices predicted service quality more strongly than training (.70 against .65). This ordering is consistent with the Donabedian (1988) logic: structural changes reach process outcomes that patients observe faster than they reach capability outcomes that patients only observe once trained staff apply what they learned. It also matches the service quality literature, in which the delivered encounter is the proximate determinant of satisfaction judgements (Parasuraman, Zeithaml & Berry, 1988; Zeithaml, Berry & Parasuraman, 1996). The two pathways are complementary rather than competing: both remained significant with the other in the model, so neither can be reduced to the other.

Staff training recorded the lowest construct mean of the four ($M = 3.48$), while service quality recorded the highest ($M = 3.82$). Read against the path coefficients, this suggests the training pathway is the one with unrealised capacity. Management practices already predict training strongly, and training predicts satisfaction significantly, but the level of training respondents report receiving is the weakest link in the chain. The same pattern appears in Kirkpatrick-based evaluations elsewhere, where reaction-level outcomes exceed behaviour-level outcomes and training is judged informative without being judged transformative (Burke & Hutchins, 2007).

The dimension-level results locate the operational problem. Safety scored highest and efficiency lowest across the HEALTHQUAL dimensions. In a pilgrimage healthcare setting this is what surge conditions produce: clinical protocols hold under pressure while throughput,

waiting and coordination degrade. Pilgrims are time-constrained by their religious obligations and are unusually sensitive to delay (Ahmed, Arabi & Memish, 2006; Memish et al., 2019), so efficiency losses translate into satisfaction losses more directly here than in routine outpatient care. Management attention to queueing, triage and multilingual signage would act on the dimension with the most room to improve and the highest contextual salience.

The findings extend the resource-based view into pilgrimage healthcare. Barney (1991) predicts that management practices generate advantage when embedded in human capital and organisational routines rather than in physical assets. That is what the mediation pattern shows: the greater part of the management effect operated through people and processes. It also extends the Saudi patient satisfaction literature, which has documented associations between organisational factors and patient experience without separating the pathways (Al-Borie & Damanhour, 2013; Almutairi, 2015).

Limitations

The cross-sectional design does not permit causal inference about the temporal ordering of management practices, training, service quality and satisfaction, although the hypothesised directions follow established theory. Patient satisfaction was measured as staff-perceived satisfaction rather than collected from pilgrims directly, which is a substantive limitation: staff perceptions of patient satisfaction correlate with patient reports but are not equivalent to them, and the direction of any bias is unknown. The single-site design limits generalisability to other Hajj and Umrah healthcare administrations and to routine hospital settings. All constructs were self-reported by the same respondents, which raises common method variance; this was addressed through validated multidimensional instruments, Harman's single-factor test and full collinearity assessment, but not eliminated. Data collection outside the Hajj peak season improves data quality at the cost of capturing the conditions under which the constructs are most strained.

6. Conclusion and Recommendations

This study is the first empirical test of how healthcare management practices reach patient satisfaction in a Hajj and Umrah healthcare administration. Management practices had a direct effect on patient satisfaction and two significant mediating pathways, staff training and service quality, which together carried 47.7% of the total effect. The model explained 58.1% of the variance in patient satisfaction. Service quality was the stronger of the two pathways, and staff training was the construct on which respondents scored the organisation lowest. The General Administration of Hajj and Umrah Affairs and comparable administrations should treat training investment and service quality improvement as components of management reform rather than as separate programmes. Three actions follow from the results: raise training intensity and reinforce transfer at supervisor level, since training is the weakest measured link in an otherwise significant pathway; target the efficiency dimension of service quality, which scored lowest and matters most to time-constrained pilgrims; and build multilingual capacity into both, since language is the condition under which empathy and efficiency are actually delivered in this setting. Further work should collect patient satisfaction from pilgrims directly

rather than through staff perception, should sample across multiple Hajj and Umrah administrations, and should measure the same constructs during and outside the season to establish whether the pathways hold under surge conditions. A longitudinal design would establish the temporal ordering the present data cannot.

Conflict of Interest

The authors state that they have no financial and others conflicts of interest.

Author contributions

The first drafts of the work are written by the original author and the cross-ponding author's supervisor. Each author contributed to the essay, collected data, edited it, created tables, and received permission to submit it to a journal for publication.

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Ethical Approval

Not Applicable

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