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Cultural and Spiritual Impact on ICU Family Decision-Making

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Introduction

Admission to the intensive care unit (ICU) is highly stressful for families, who often must act as surrogate decision-makers when patients cannot speak for themselves (Davidson et al., 2017). This role carries a real psychological cost: family members whose actual decision-making role does not match their preferred role report significantly higher anxiety and depression than those whose roles align (Fang et al., 2022). Difficulties in this process are not merely a communication problem; they affect family wellbeing and can compromise the timeliness and quality of decisions. International guidelines now treat families as care partners rather than visitors, recommending structured

communication and active engagement in decision-making (Davidson et al., 2017).

These guidelines say less about how culture, religion, and spirituality shape the decisions themselves. The three concepts differ: culture is shared social practice, such as who is expected to speak for a patient; religion is formal doctrine; spirituality is personal meaning, which may or may not be tied to organized religion. Together they shape who holds legitimate authority to decide — the patient or the family — and how disclosure, suffering, and treatment withdrawal are understood (Alfahmi, 2022a). Evidence from Muslim populations cautions against treating this as a single, uniform pattern: preferences for disclosure and family involvement vary across contexts, and even within the same faith tradition (Tareen, 2025).

Saudi Arabia illustrates this variability directly. Family authority over a competent patient's care is a recurring, and ethically contested, feature of local practice: relatives frequently request that diagnoses be withheld to protect the patient, creating conflict with clinicians' duty to disclose (Alfahmi, 2022a). Physicians report resolving this tension case by case, weighing truth-telling against family-based cultural norms rather than following a fixed rule (Muaygil et al., 2025). Even where family involvement is broadly valued, models of family-centered care in Saudi units are still described as actively negotiated rather than standardized (Althomali, 2025; Alfahmi, 2022b). This body of work shows that Saudi Arabia cannot be treated as interchangeable with other Arab or Muslim-majority settings; its specific legal and clinical

culture around disclosure and surrogate authority requires local evidence rather than extrapolation.

Makkah adds a further layer of complexity. As the site of the annual Hajj pilgrimage, its hospitals routinely treat patients and families from dozens of nationalities, languages, and faiths, often converging within short, high-demand periods. This diversity has direct clinical consequences: physicians working in Makkah emergency departments report that language and communication barriers actively compromise patient care, forcing reliance on interpreters and translation tools to communicate with non-Arabic-speaking families (Bakhsh et al., 2024). In the ICU, where urgent and nuanced conversations about prognosis are routine, this combination of linguistic, cultural, and religious diversity is likely to create decision-making challenges distinct from those documented elsewhere.

No identified study has examined how cultural and spiritual beliefs shape ICU family decision-making specifically in Makkah. Existing evidence falls short in two ways: studies from Western settings capture racial rather than religious or national diversity, and studies from other Saudi or Arab settings draw on more linguistically and nationally homogeneous samples than those typical of Makkah. Because Saudi surrogate-decision culture, Islamic bioethical reasoning, and Makkah's population diversity each shape decision-making independently, their combination in a single setting remains unexamined.

This study therefore examines how cultural and spiritual beliefs influence family decision-making among family members of critically ill ICU patients at Saudi German Hospital, Makkah, with the aim of identifying factors associated with family satisfaction and decision-making experience to inform culturally sensitive ICU practice.

Methods

Study Design

This study used a cross-sectional design to examine cultural and spiritual care, decision-making support, and family satisfaction among family members of critically ill patients in the intensive care unit (ICU).

Setting and Population

The study was conducted in the adult ICU at Saudi German Hospital, Makkah, Saudi Arabia. The population comprised family members of critically ill patients admitted to the ICU.

Sampling and Recruitment

Family members were recruited using purposive sampling to ensure representation across nationalities, languages, and religious backgrounds. Inclusion criteria required participants to be family members of critically ill ICU patients and at least 18 years of age; individuals with communication or learning difficulties that would preclude questionnaire completion were excluded. A total of 120 family members were enrolled; 100 (83.3%)

provided complete data on all analysis variables and were retained via listwise deletion, while 20 (16.7%) were excluded due to missing responses.

Ethical Considerations

This study was approved by the Institutional Review Board (IRB) of Saudi German Hospital, approval number **ECC-2025-66**. Written informed consent was obtained from all participants prior to data collection. Participants were informed that participation was voluntary and that declining or withdrawing would not affect the clinical care provided to their family member. All data were de-identified, coded, and stored in a password-protected file accessible only to the study team.

Instrumentation and Data Preparation

Data were collected using a 15-item ICU Family Decision-Making and Care Questionnaire, comprising three subscales: Care and Communication (Items 1–5), Decision-Making Support (Items 6–10), and Cultural and Spiritual Care (Items 11–15). Items were scored on a 5-point Likert scale and linearly transformed to a 0–100 metric using the formula: Transformed Score = (Raw Score − 1) × 25. Domain scores were computed as the mean of each subscale's transformed items for participants with complete data via listwise deletion.

An additional composite, Overall ICU Decision & Care Satisfaction, was calculated as the mean of all 15 transformed items. Because this composite is arithmetically derived from the same three domains, it was not used as a

dependent variable in any regression or mediation model that also included those domains as predictors, in order to avoid criterion contamination (an inflated association arising from mathematical overlap between predictor and outcome rather than a genuine empirical relationship). It is reported descriptively and used only in group-comparison analyses (Table 5), which do not involve this contamination.

To test the association between Cultural and Spiritual Care and families' broader satisfaction with the care process independent of this overlap, a second composite — Care Process Satisfaction — was constructed as the mean of Care and Communication and Decision-Making Support only, explicitly excluding Cultural and Spiritual Care. This composite served as the outcome for the analyses addressing H2 and the moderation analysis below**.**

Study Aims and Hypotheses

Aim 1: To explore the impact of cultural and spiritual beliefs on family decision-making in the ICU**.**

Aim 2: To identify key factors influencing family satisfaction with care and decision-making, in order to inform recommendations for culturally sensitive ICU practice.

H1: Cultural and spiritual care is significantly associated with family decision-making support in the ICU.

H2: Families who perceive their cultural and spiritual needs as being met report greater satisfaction with the ICU care process.

Data Analysis

All statistical analyses were conducted using IBM SPSS Statistics (Version 20/28, as applicable) and the PROCESS macro (Version 4.2; Hayes, 2022).

Internal consistency reliability for each subscale was evaluated using Cronbach's α, with coefficients ≥ .70 considered acceptable and ≥ .80 considered good. Continuous domain scores were summarized using means (*M*) and standard deviations (*SD*); categorical demographic variables were summarized using frequencies (*n*) and percentages (%).

Missing-data mechanism was evaluated using Little's MCAR test, supplemented by a sensitivity comparison of expectation-maximization (EM)-estimated means against observed complete-case means.

Shapiro-Wilk tests were used to assess normality of domain-level scores. Three of the four domain distributions departed significantly from normality; non-parametric tests (Spearman's ρ, Mann-Whitney U, Kruskal-Wallis H) were therefore used for domain-level bivariate correlations and group comparisons. Where an omnibus Kruskal-Wallis test was significant for a group comparison with more than two categories, Bonferroni-adjusted pairwise post hoc comparisons were conducted.

Testing H1. The association between Cultural and Spiritual Care and Decision-Making Support was tested via Spearman correlation. To examine the mechanism underlying this relationship, a bootstrapped mediation analysis (PROCESS Model 4, 5,000 resamples) tested whether Decision-Making Support mediated the relationship between Cultural and Spiritual Care (X) and Care and Communication (Y) — three independently scored subscales with no shared items, avoiding the criterion-contamination issue described above.

Testing H2. Because Overall ICU Satisfaction could not serve as an independent outcome (see Instrumentation, above), H2 was tested using the non-circular Care Process Satisfaction composite. The association between Cultural and Spiritual Care and Care Process Satisfaction was tested via Spearman correlation and a bootstrapped simple linear regression (2,000 resamples).

Exploratory moderation. An exploratory, post hoc analysis (PROCESS Model 1, 5,000 resamples) tested whether nationality recoded into a binary grouping (Saudi/local and non-Saudi/international), moderated the association between Cultural and Spiritual Care and Care Process Satisfaction.

Differences in domain scores by gender, age group, nationality, marital status, and education level were tested using Mann-Whitney U (two-group) and Kruskal-Wallis H (multi-group) tests.

Results

Of 120 family members initially enrolled, 100 (83.3%) provided complete responses across all analysis variables and were retained via listwise deletion; the remaining 20 (16.7%) were excluded due to missing data. The retained sample skewed toward Saudi nationals (64.0%), married individuals (71.0%), and women (58.0%), with the modal age band being 40–49 years (46.0%) and just over half holding at least a bachelor's degree (60.0% combined bachelor's/postgraduate).

Table 1. Sociodemographic Characteristics of the Sample (N = 100)

Variable	Category	n	%
Age	18–29	9	9.0
	30–39	32	32.0
	40–49	46	46.0
	>50	13	13.0
Nationality	Saudi	64	64.0
	Pakistani	9	9.0
	Indonesian	9	9.0
	Egyptian	8	8.0
	Turkish	10	10.0
Marital status	Single	19	19.0
	Married	71	71.0
	Divorced	5	5.0
	Widowed	5	5.0
Education	High school	11	11.0
	Diploma	29	29.0

Variable	Category	n	%
	Bachelor's	35	35.0
	Postgraduate	25	25.0
Gender	Male	42	42.0
	Female	58	58.0

Note. Of 120 enrolled family members, 100 (83.3%) had complete data and were retained for analysis (listwise deletion, 16.7% missing).

All three domain scales performed well psychometrically, with Cronbach's α ranging from .926 (Decision-Making Support) to .934 (Cultural & Spiritual Care), comfortably above the .80 threshold conventionally regarded as "good." Mean domain scores clustered closely together (68.4–69.8 on the 0–100 metric), suggesting families did not experience one domain of care as meaningfully stronger or weaker than the others on average. Shapiro-Wilk testing showed that Care & Communication, Decision-Making Support, and Cultural & Spiritual Care each departed significantly from a normal distribution ($p \leq .002$), which governed the choice of non-parametric methods for subsequent domain-level analyses; the Overall ICU Satisfaction composite alone approximated normality ($p = .155$). Regarding missing data, Little's MCAR test was not significant ($p = .523$), and expectation-maximization sensitivity checks showed minimal differences between observed and EM-estimated means, together supporting the assumption that data were missing completely at random and that listwise deletion did not introduce systematic bias into the analytic sample.

Table 2. Reliability and Descriptive Statistics of Study Domains (0–100 scale)

Domain	Items	α	M	SD	Median
Care & Communication	5	.927	69.80	19.86	75.00
Decision-Making Support	5	.926	69.40	18.21	70.00
Cultural & Spiritual Care	5	.934	68.40	16.62	70.00
Overall ICU Decision & Care Satisfaction	15	—	69.20	16.47	66.67

Note. All three subscales demonstrated excellent internal consistency (α > .92). The overall satisfaction score is a composite of the same three subscales above and is reported descriptively only; it was not used as an outcome in regression or mediation models involving those subscales (see Methods).

Table 3. Tests of Normality (Shapiro–Wilk)

Domain	Statistic	df	*p*
Care & Communication	.956	100	.002
Decision-Making Support	.953	100	.001
Cultural & Spiritual Care	.921	100	<.001
Overall ICU Satisfaction	.981	100	.155

Note. Three of four domains departed significantly from normality; non-parametric tests were used for domain-level associations and group comparisons accordingly.

Spearman correlations among Care & Communication, Decision-Making Support, and Cultural & Spiritual Care were all positive and statistically significant, ranging from ρ = .595 (Care & Communication–Cultural & Spiritual Care) to ρ = .765 (Care & Communication–Decision-Making Support)

— large effects by conventional benchmarks. This pattern indicates that families who rated one domain favorably tended to rate the others favorably as well, though the correlations were not so extreme as to suggest the three domains are measuring an identical underlying construct.

Table 4. Spearman Correlations Among the Three Independently Scored Domains

	1	2	3
1. Care & Communication	—		
2. Decision-Making Support	.765***	—	
3. Cultural & Spiritual Care	.595***	.722***	—

Note. ***p < .001. N = 100.

Cultural & Spiritual Care was significantly associated with Decision-Making Support (ρ = .722, p < .001), consistent with H1. To probe *how* this relationship translates into families' broader experience of communication, a bootstrapped mediation model was estimated with Cultural & Spiritual Care as the predictor, Decision-Making Support as the mediator, and Care & Communication as the outcome. Cultural & Spiritual Care significantly predicted Decision-Making Support (a = 0.823, SE = 0.073, p < .001), and Decision-Making Support in turn significantly predicted Care & Communication (b = 0.786, SE = 0.103, p < .001). Critically, once Decision-Making Support was accounted for, the direct effect of Cultural & Spiritual Care on Care & Communication dropped to non-significance (c' = 0.105, SE = 0.113, p = .358, 95% CI [−0.120, 0.329]), while the bootstrapped indirect

effect remained significant and excluded zero (0.647, 95% CI [0.464, 0.842], 5,000 resamples). This pattern — a significant indirect effect paired with a non-significant direct effect — constitutes full mediation: the association between cultural and spiritual care and families' experience of communication is not a direct effect at all, but operates entirely through the strength of decision-making support families receive.

Table 5. Mediation Analysis: Cultural & Spiritual Care → Decision-Making Support → Care & Communication

Path	B	SE	*t*	*p*	95% CI
Cultural & Spiritual Care → Decision-Making Support (*a* path)	0.823	0.073	11.27	<.001	[0.678, 0.968]
Decision-Making Support → Care & Communication, controlling for Cultural & Spiritual Care (*b* path)	0.786	0.103	7.61	<.001	[0.581, 0.991]
Cultural & Spiritual Care → Care & Communication, direct effect (*c′* path)	0.105	0.113	0.92	.358	[−0.120, 0.329]
Indirect effect (Cultural & Spiritual Care → Decision-Making Support → Care & Communication)	0.647	0.096 (BootSE)	—	—	[0.464, 0.842] (bootstrapped, 5,000 resamples)

Note. The direct effect is non-significant while the indirect effect's bootstrapped confidence interval excludes zero, indicating **full mediation**: the association between Cultural & Spiritual Care and families' experience of Care & Communication operates through Decision-Making Support.

Cultural & Spiritual Care was strongly associated with Care Process Satisfaction, both by Spearman correlation (ρ = .697, $p < .001$) and by

simple linear regression, which showed Cultural & Spiritual Care alone accounted for 52.9% of the variance in this outcome ($R^2 = .529$, $F(1, 98) = 110.01$, $p < .001$, $\beta = .727$). The unstandardized coefficient ($B = .787$, bootstrapped 95% CI [.638, .936]) indicates that each 1-point increase in Cultural & Spiritual Care score corresponded to roughly a 0.79-point increase in families' satisfaction with the surrounding care process, supporting H2.

Table 6. Cultural & Spiritual Care and Care Process Satisfaction

Analysis	**Statistic**	**Value**	***p***
Spearman correlation	ρ	.697	<.001
Simple regression (bootstrapped, 2,000 resamples)	R^2	.529	<.001
	$F(1, 98)$	110.01	<.001
	β (Cultural & Spiritual Care)	.727	<.001
	B [95% CI]	.787 [.638, .936]	—

Note. Dependent variable: Care Process Satisfaction (mean of Care & Communication and Decision-Making Support; excludes Cultural & Spiritual Care by construction).

Marital status showed a significant omnibus association with Care & Communication scores ($\chi^2(3) = 8.66$, $p = .034$), and its association with Overall ICU Satisfaction approached but did not reach significance ($\chi^2(3) =$

7.67, p = .053). However, Bonferroni-adjusted pairwise comparisons found no individual marital-status pair that remained significant once corrected for multiple comparisons, though the difference between Widowed participants (lowest-ranked) and Married participants (highest-ranked) came closest to significance (unadjusted p = .018, adjusted p = .110). This pattern — a significant omnibus test without a surviving pairwise comparison — is a common consequence of low statistical power in small subgroups; both the Widowed and Divorced categories comprised only five participants each, which sharply limits the ability of a conservative correction like Bonferroni to detect true pairwise differences even when a real underlying difference may exist. Rather than concluding that marital status is unrelated to family satisfaction with communication, the more accurate reading is that this sample was underpowered to localize *where* the overall difference originates. The direction of the finding — widowed family members reporting the lowest ranks — is at least plausible on clinical grounds, as widowed relatives may be navigating ICU decision-making with less immediate family support than married relatives, but this interpretation remains speculative given the non-significant pairwise result and should be tested in a larger sample with adequate representation across marital-status categories before being treated as a substantive finding.

Table 7a. Subgroup Comparisons (Mann-Whitney U / Kruskal-Wallis)

Domain	Gender (U, *p*)	Age (χ², *p*)	Nationality (χ², *p*)	Marital Status (χ², *p*)	Education (χ², *p*)
Care & Communication	811.0, **.004**	2.22, .528	1.89, .757	8.66, **.034**	2.08, .556
Decision-Making Support	889.0, **.021**	0.75, .861	2.68, .612	5.16, .160	1.21, .751
Cultural & Spiritual Care	874.5, **.014**	0.20, .978	3.22, .522	4.26, .235	3.31, .347
Overall ICU Satisfaction	817.0, **.005**	0.72, .869	2.69, .611	7.67, .053	2.11, .549

Note. Gender comparison via Mann-Whitney U; all other comparisons via Kruskal-Wallis H (df = 3 for Age/Marital Status/Education, df = 4 for Nationality). Bold = $p < .05$. Males had significantly higher ranks than females on all four domains.

Table 7b. Post Hoc Pairwise Comparisons — Marital Status, Care & Communication

Comparison	Test Statistic	SE	Std. Test Statistic	*p* (unadjusted)	*p* (Bonferroni-adjusted)
Widowed–Married	31.42	13.32	2.36	.018	.110
Widowed–Single	19.28	14.47	1.33	.183	1.000
Widowed–Divorced	12.60	18.21	0.69	.489	1.000
Single–Married	−12.13	7.44	−1.63	.103	.617
Divorced–Married	18.82	13.32	1.41	.158	.947
Divorced–	6.68	14.	0.46	.644	1.000

Comparison	Test Statistic	SE	Std. Test Statistic	*p* (unadjusted)	*p* (Bonferroni-adjusted)
Single		47			

Note. Values are sample average ranks compared per pair. No pairwise comparison reached significance after Bonferroni correction. The largest unadjusted difference was Widowed (lowest-ranked) vs. Married (highest-ranked).

Does nationality group moderate the cultural/spiritual–satisfaction link? A post hoc exploratory moderation model tested whether a binary nationality grouping (Saudi/local vs. non-Saudi/international) altered the strength of the association between Cultural & Spiritual Care and Care Process Satisfaction. The interaction term was not significant (B = 0.148, SE = 0.156, $p = .345$; $\Delta R^2 = .0043$, $F(1, 96) = 0.90$, $p = .345$), indicating that the relationship between cultural and spiritual care and satisfaction held similarly across both nationality groupings in this sample, rather than being specific to one group.

Table 8. Exploratory Moderation: Nationality Group (PILGRIM) as Moderator

Predictor	B	SE	*t*	*p*	95% CI
Cultural & Spiritual Care	0.730	0.095	7.72	<.001	[0.542, 0.918]
Nationality group (0 = Saudi, 1 = non-Saudi)	−7.544	11.008	−0.69	.495	[−29.396, 14.307]

Predictor	B	SE	*t*	*p*	95% CI
Cultural & Spiritual Care × Nationality group	0.148	0.156	0.95	.345	[−0.161, 0.457]

Note. Dependent variable: Care Process Satisfaction. Model $R^2 = .538$, $F(3, 96) = 37.28$, $p < .001$. Interaction term non-significant ($\Delta R^2 = .0043$, $F(1, 96) = 0.90$, $p = .345$) — no evidence that nationality group moderates the association between Cultural & Spiritual Care and Care Process Satisfaction. Exploratory/post hoc; not part of the pre-registered hypotheses.

Discussion

Principal findings

This study examined cultural and spiritual care, decision-making support, and family satisfaction among family members of critically ill patients in a Makkah ICU. Three principal findings emerged.

First, cultural and spiritual care was associated with decision-making support, and this relationship fully mediated families' broader experience of care and communication as evidence by the direct pathway from cultural/spiritual care to communication was not significant once decision-making support was accounted for.

Second, cultural and spiritual care was strongly associated with families' satisfaction with the surrounding care process.

Third, satisfaction differed by gender, with male family members reporting consistently higher scores across all domains, while age, nationality, and education were not significantly associated with satisfaction,

and marital status showed a significant overall pattern that did not localize to any specific pairwise group difference.

Cultural and spiritual care, decision-making support, and communication

Full mediation finding is the most informative result in this study. Rather than a direct pathway, the association between cultural and spiritual care and families' experience of communication operated entirely through decision-making support.

Practically, this suggests culturally and spiritually attentive care may improve how families perceive communication primarily because it strengthens their sense of being supported in decisions, not through a separate, parallel channel. This is consistent with family-centered care frameworks that treat communication and shared decision-making as the operative mechanism linking supportive practices to family-reported outcomes (Davidson et al., 2017). This pattern should not be read as evidence that cultural or spiritual beliefs independently cause better decision-making; culture shapes expectations about who speaks for a patient, while religion and spirituality may shape interpretations of illness and suffering, and these influences vary even within a shared tradition (Alfahmi, 2022a; Tareen, 2025).

Cultural and spiritual care and satisfaction with the care process

Cultural and Spiritual Care was strongly associated with families' satisfaction with the surrounding care process, explaining 52.9% of its variance. This is clinically relevant because communication quality alone may not fully capture what families require during critical illness: two families receiving comparable clinical information may interpret it differently depending on their beliefs, family structures, and understanding of illness and death.

In Saudi healthcare settings, family involvement and authority can create tension when family preferences around disclosure conflict with clinicians' obligations to communicate directly with patients (Alfahmi, 2022a, 2022b); recent work indicates Saudi physicians navigate this tension case by case (Muaygil et al., 2025). The present findings extend this literature by demonstrating an empirical association between perceived cultural and spiritual care and family satisfaction in this specific Makkah ICU population, while reinforcing that culturally responsive care should not be equated with transferring decision-making authority from patients to relatives.

Regional and international comparison

Comparison with other Gulf and Middle Eastern settings situates these findings within a broader regional pattern. The first published ICU family satisfaction study from the United Arab Emirates similarly reported high family satisfaction (total score 75.1, SD 14.2) in a multicultural Abu Dhabi ICU, with a comparable decision-making subscale score (68.1, SD 11.5) to

the Decision-Making Support scores observed here (Ali et al., 2019). Both a UAE study and the present Makkah study, two Gulf ICUs serving substantial expatriate and international patient populations, reported broadly similar satisfaction levels suggests that high family satisfaction can coexist with substantial linguistic and cultural diversity in Gulf critical care settings, provided care teams actively attend to communication and cultural needs.

Qualitative work from Jordan has similarly emphasized family involvement as central to how families evaluate ICU care in a Middle Eastern, though more linguistically homogeneous, context (Mahasneh et al., 2026), while research from Iran for example, a non-Arab, different Muslim sect country, has documented comparable family stress and unmet informational needs during ICU admission (Asadi & Salmani, 2024), suggesting that many of the psychological and communicative demands on ICU families may generalize across religion majority contexts more broadly than across Arab contexts specifically. For instance, expatriate nurses providing end-of-life care to Muslim patients in the UAE have described needing to actively adapt to family-centered disclosure and decision-making norms that differed from their own training (Oakley et al., 2020).

Makkah's specific character as a pilgrimage city (Hajj), however, remains largely unaddressed by the wider literature. Existing Hajj-focused health research concentrates heavily on mass-gathering epidemiology, injury, and medical logistics. Recent work was for example evaluating the quality of medical convoy transfers during the 2023 Hajj season (Alsaleh et

al., 2025), rather than on family experience or decision-making once a pilgrim or resident is admitted to intensive care. An equivalent literature on other major pilgrimage sites, such as Vatican, Lourdes or the large Hindu gatherings at Kumbh Mela in India, is essentially absent with respect to ICU family decision-making specifically; published work on these sites similarly concentrates on infectious disease and mass-casualty logistics.

This is itself a meaningful gap: pilgrimage cities worldwide appear to be understudied as sites of family-centered critical care research, despite hosting some of the most linguistically and culturally diverse patient populations globally. The present study, to our knowledge, is among the first to examine ICU family decision-making specifically within this pilgrimage-city context.

Against this background, the absence of significant nationality differences and the absence of nationality-based moderation observed here are noteworthy. This finding suggests that, within this sample, nationality alone did not explain differences in family satisfaction, and its influence on the central cultural/spiritual–satisfaction relationship did not vary detectably by nationality group. This should not be read as evidence that cultural differences are unimportant; nationality is an imperfect proxy for individual cultural identity, religion, spirituality, language proficiency, or family structure.

Gender differences

Male respondents reported significantly higher scores than female respondents across all four domains. The available data do not establish why: possible explanations include differences in family roles, caregiving burden, decision-making responsibility, or communication preferences, none of which were directly measured. This finding should be treated as an empirical observation rather than evidence that one gender inherently experiences ICU care more positively; future research should examine whether it is mediated by family role or relationship to the patient.

Marital status, age, and education

Marital status showed a significant omnibus association with Care & Communication ($\chi^2(3) = 8.66$, $p = .034$), and its association with Overall ICU Satisfaction approached but did not reach significance ($\chi^2(3) = 7.67$, $p = .053$). Bonferroni-adjusted pairwise comparisons, however, found no individual marital-status pair that remained significant once corrected for multiple comparisons, though the difference between Widowed participants (lowest-ranked) and Married participants (highest-ranked) came closest (unadjusted $p = .018$, adjusted $p = .110$).

This pattern commonly reflects low statistical power in small subgroups; both the Widowed and Divorced categories comprised only five participants each, sharply limiting the ability of a conservative correction like Bonferroni to detect true pairwise differences even where one may genuinely exist. Rather than concluding marital status is unrelated to satisfaction with

communication, the more accurate reading is that this sample was underpowered to localize where the overall difference originates.

The direction that widowed relatives reporting the lowest ranks is clinically plausible, as widowed family members may navigate ICU decision-making with less immediate family support than married relatives, but this remains speculative given the non-significant pairwise result and warrants testing in a larger, better-powered sample.

Age and education were not significantly associated with any measured domain. This absence of significant association should not be interpreted as evidence that these characteristics are irrelevant to ICU family experience broadly — only that, within this sample of 100 respondents, they did not demonstrate statistically detectable relationships with the measured outcomes.

Measurement considerations

The three domains demonstrated excellent internal consistency (α = .926–.934), and their strong intercorrelations indicate that Care & Communication, Decision-Making Support, and Cultural & Spiritual Care are closely related but empirically distinguishable dimensions of family ICU experience. Future validation work using larger samples and confirmatory factor analysis would help establish whether these three domains represent distinct latent constructs.

Clinical implications

These findings support several practice implications, offered as reasonable extensions of the data rather than tested interventions: incorporating cultural and spiritual assessment into routine family communication; clarifying, case by case, which family members the patient and family consider appropriate participants in decision-making; ensuring access to qualified interpreters given documented language barriers in this setting (Bakhsh et al., 2024); and recognizing that family-centered care does not mean family-directed care. Clinicians should balance respect for family structures, patient cultural and religious background and with the patient's own previously expressed preferences.

Strengths

This study addresses an underexplored intersection of cultural and spiritual care, decision-making support, and satisfaction in a Saudi ICU, within Makkah's distinctively diverse population, and is among the first to examine family decision-making specifically in a pilgrimage-city critical care context. The questionnaire demonstrated excellent internal consistency across all three domains. Missing data were shown to be consistent with a completely-at-random mechanism (Little's MCAR test, $p = .523$), supporting the appropriateness of the complete-case analytic approach. Inclusion of Saudi and non-Saudi respondents allowed exploratory examination of nationality's role.

Limitations

Several limitations warrant consideration. The relatively small sample (n = 100 of 120 enrolled) limits statistical power, particularly for subgroup comparisons such as marital status, where the Divorced and Widowed categories contained only five participants each — a constraint directly reflected in the non-significant pairwise post hoc comparisons despite a significant omnibus test. Moreover, the small absolute sample size remains a limitation independent of the missingness mechanism. The cross-sectional design prevents determination of temporal or causal relationships; although the mediation model showed full mediation, this describes a statistical pathway consistent with a plausible mechanism, not a demonstrated causal sequence. The study was conducted in a single hospital in Makkah, limiting generalizability to other Saudi hospitals, healthcare settings, or pilgrimage cities. Finally, no factor-analytic or other validity evidence beyond internal consistency was conducted

Future research

Larger, multicenter studies across Saudi regions and hospital types would permit more robust demographic stratification, including adequately powered subgroup analysis by marital status, and would allow direct measurement of religion, language proficiency, and relationship to the patient. Qualitative work could explore how families understand autonomy, disclosure, and divine will in this specific population, and comparative work across other pilgrimage-city healthcare settings (e.g., Lourdes, Kumbh Mela, Jerusalem) could help determine whether the patterns observed here

generalize to other highly diverse, high-throughput religious-tourism healthcare contexts. Longitudinal designs following families from admission through major decisions and discharge would help move toward causal understanding that this cross-sectional design cannot support

Conclusion

Among family members of critically ill patients in a culturally and linguistically diverse Makkah ICU, perceived cultural and spiritual care was associated with decision-making support and with satisfaction across the broader care process. Gender was the only demographic characteristic consistently associated with satisfaction; nationality showed no significant association or moderating role. These findings support incorporating cultural and spiritual assessment as an integral, rather than peripheral, component of family-centered ICU communication and decision-making, while cautioning against using nationality as a proxy for individual cultural or spiritual identity.

Declarations

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Conflicts of Interest: The authors declare no conflicts of interest

Ethics Approval: This study was approved by the Institutional Review Board of **Saudi German Hospital – Mecca** approval number **[IRB number]**. All procedures were conducted in accordance with the Declaration of Helsinki.

Informed Consent: Written informed consent was obtained from all participants.

Data Availability: *Data are available from the corresponding author upon reasonable request*

Author Contributions:

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