



Relationship between Cultural Intelligence with Communication Skills and Social Interactions of Emergency Department Staff: A Cross-Sectional Study

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ABSTRACT

Objectives: Globalization has led to increasingly diverse patient populations in healthcare settings. Emergency departments (EDs), as high-pressure, fast-paced environments, require staff to possess strong communication and social interaction skills to ensure quality care. This study aimed to investigate the relationship between cultural intelligence (CQ) and the communication skills and social interactions of ED staff members.

Methods: This cross-sectional study conducted on 197 ED staff members from three hospitals in Zanjan, Iran, in 2019. Data collected using the Cultural Intelligence Scale (CQS), a Communication Skills Scale, and a Social Interactions Questionnaire. Data analysis performed using descriptive statistics and correlation tests.

Results: Participants' mean scores for cultural intelligence and communication skills were 85.78 ± 6.24 (out of 140) and 55.41 ± 3.9 (out of 90), respectively. For social interactions, the mean score for positive thoughts (47.86 ± 4.14) was higher than for negative thoughts (33.01 ± 3.92). The total CQ score showed a significant positive correlation with communication skills ($P < 0.001$). Furthermore, higher CQ scores were significantly associated with increased positive thoughts and decreased negative thoughts ($P < 0.001$).

Conclusions: The findings demonstrate that higher cultural intelligence among ED staff is associated with better communication skills and positive social interactions. Healthcare leaders recommended to educational programs and workshops to enhance the cultural intelligence of ED personnel, which can improve both staff communication and the quality of patient care.

Introduction

In the contemporary era of globalization, cultural diversity has become an undeniable reality across all sectors of society, with healthcare systems being no exception. The increasing movement of people across borders due to migration, international travel, and globalization has led to culturally diverse patient populations presenting to healthcare facilities worldwide [1]. This phenomenon requires healthcare professionals, particularly those in acute care settings like Emergency Departments (EDs), to navigate a complex landscape of cultural differences, beliefs, and communication styles.

The ED serves as the primary entry point for many patients into the healthcare system, often

functioning as the frontline interface where individuals from various cultural backgrounds first encounter medical services. This unique position makes the ED a critical setting for exploring how cultural competence and intelligence can influence patient care outcomes and staff interactions [2].

The concept of cultural intelligence (CQ) has emerged as a crucial framework for understanding and enhancing intercultural effectiveness in diverse professional environments. Earley and Ang (2003) conceptualized CQ as a multidimensional construct encompassing four distinct yet interrelated capabilities: metacognitive, cognitive, motivational, and behavioral CQ [3]. Metacognitive CQ refers to an individual's ability to plan, monitor, and revise

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mental models of cultural norms during interactions. Cognitive CQ represents knowledge of cultural values, norms, practices, and institutions across different cultures. Motivational CQ captures the intrinsic drive, self-efficacy, and interest required to adapt and function effectively in culturally diverse situations [4]. Behavioral CQ reflects the capacity to exhibit appropriate verbal and non-verbal actions when interacting with individuals from different cultural backgrounds. This multifaceted nature of CQ makes it particularly relevant for healthcare professionals who must simultaneously employ cultural knowledge, awareness, motivation, and adaptive behaviors to provide effective care to diverse patient populations [5].

Communication skills are fundamental to the delivery of high-quality healthcare, particularly in the dynamic and often chaotic environment of the ED. Effective communication encompasses not only the transmission of medical information but also includes elements of active listening, empathy, non-verbal communication, and the ability to tailor messages to patients' comprehension levels and cultural backgrounds. In culturally diverse settings, communication challenges are amplified by potential language barriers, differing health beliefs and practices, varying expectations about healthcare delivery, and diverse norms around interpersonal interactions. Healthcare professionals with strong CQ are better equipped to recognize and navigate these cultural communication challenges, potentially leading to improved patient-provider relationships, enhanced patient understanding of medical conditions and treatment plans, and reduced risk of miscommunication-related medical errors [6].

Similarly, social interactions among healthcare staff and between staff and patients are significantly influenced by cultural factors. Social interactions in the ED encompass a wide range of interpersonal exchanges, including collaborative teamwork among multidisciplinary healthcare teams, communication between staff and patients or their families, and navigation of hierarchical structures within the healthcare organization. Positive social interactions characterized by respect, understanding, and effective communication are essential for optimal team functioning, efficient patient flow, and positive patient experiences. Conversely, negative social interactions, including misunderstandings, conflicts, or cultural insensitivity, can impede collaboration, increase workplace stress, and compromise patient safety. The prevalence of culturally diverse patients and staff in healthcare settings necessitates that ED personnel develop the skills and competencies to engage in positive social interactions across cultural boundaries [7].

Research has demonstrated significant relationships between CQ and various workplace outcomes across diverse professional contexts. Studies have shown that individuals with higher CQ tend to experience better job satisfaction, more effective conflict management, greater organizational performance, improved adaptability, and enhanced resilience in unfamiliar settings. In the healthcare context, specifically, CQ has linked to improved nurse communication with team members in the ED and enhanced collaboration for patient care. Nursing students who participated in cultural education training showed significant improvements in cultural intelligence, particularly in cognitive and behavioral subscales, suggesting that CQ is a developable competency rather than a fixed trait [8]. Furthermore, research among nurse educators highlighted the potential of faculty development programs to enhance intercultural effectiveness, reinforcing the importance of educational interventions in improving cultural competencies.

Despite growing recognition of the importance of cultural intelligence in healthcare, limited research has specifically examined the relationship between CQ, communication skills, and social interactions among Emergency Department staff. The ED presents a unique context characterized by high stress, time pressure, unpredictable patient flow, and exposure to patients from diverse cultural backgrounds experiencing acute medical emergencies. These conditions may amplify the importance of CQ for effective communication and positive social interactions. Understanding the relationships between these variables can inform the development of targeted interventions and training programs to enhance cultural competence in ED settings, ultimately improving both staff well-being and patient care outcomes.

This study aimed to investigate the relationship between cultural intelligence and the communication skills and social interactions of Emergency Department staff members. Specifically, this research seeks to:

- ✓ Assess the levels of cultural intelligence, communication skills, and positive and negative social interaction thoughts among ED staff.
- ✓ Examine the correlation between cultural intelligence and communication skills.
- ✓ Explore the associations between cultural intelligence and the dimensions of social interactions (positive and negative thoughts).

The findings from this study contribute to the growing body of literature on cultural competence in healthcare and offer practical implications for healthcare administrators and educators in

developing strategies to enhance cultural intelligence among emergency care personnel.

Literature Review

Cultural Intelligence: Conceptual Foundations:

Cultural intelligence (CQ) has emerged as a pivotal construct in understanding how individuals adapt and function effectively in culturally diverse environments. Defined as an individual's capability to function and manage effectively in culturally diverse situations, CQ extends beyond traditional notions of cultural competence by emphasizing adaptive capacity and behavioral flexibility. Earley and Ang's (2003) seminal work established the four-dimensional framework of CQ that continues to guide contemporary research and practice. The metacognitive dimension involves higher-order cognitive processes, including cultural awareness, planning, and monitoring of cultural assumptions during interactions. Individuals with high metacognitive CQ actively reflect on their cultural knowledge and adjust their mental models based on interaction experiences. The cognitive dimension encompasses declarative knowledge about cultural norms, practices, values, and institutional structures across different cultural groups. This knowledge base provides the foundation for understanding cultural differences and anticipating behavioral expectations in diverse settings [9].

Motivational CQ represents the affective and drive-related aspects of cultural adaptation, including intrinsic interest, self-efficacy, and the desire to engage with cultural others. Individuals with high motivational CQ demonstrate persistence in overcoming cultural challenges and display confidence in their ability to navigate unfamiliar cultural contexts. Finally, behavioral CQ reflects the capacity to display appropriate verbal and non-verbal actions that align with cultural expectations of different groups. This dimension involves adaptability in communication styles, gestures, and interaction behaviors across cultural boundaries [10].

Research has consistently demonstrated that these four dimensions are distinct yet interrelated, collectively contributing to an individual's overall cultural intelligence. The multidimensional nature of CQ makes it particularly relevant for healthcare professionals who must simultaneously apply cultural knowledge, maintain awareness of cultural dynamics, sustain motivation for cross-cultural engagement, and adapt their behaviors in real-time interactions with culturally diverse patients and colleagues.

Cultural Intelligence in Healthcare Settings: The healthcare sector has increasingly recognized the importance of CQ as globalization leads to more culturally diverse patient populations and healthcare

workforces. Studies have examined CQ among various healthcare professional groups, revealing significant variations in CQ levels and its relationships with professional outcomes. For instance, comparing CQ among nurses, paramedics, and medics found that medical professionals tended to score higher on overall CQ and its subscales, particularly in motivational and behavioral dimensions, compared to nursing staff. These findings highlight potential educational and professional development needs across healthcare disciplines to ensure all professionals possess adequate cultural capabilities for effective patient care. Among nursing students, cultural education training has shown to enhance overall CQ scores and specific subdimensions such as cognitive and behavioral CQ, suggesting that targeted educational interventions can effectively develop cultural intelligence in the healthcare workforce [11].

In hospital settings, CQ has linked to improved patient-centric collaboration, particularly within emergency departments where effective teamwork and communication are essential. Lassk, Lee, and Kenner (2016) found that both emotional intelligence and cultural intelligence enhanced nurses' communications with ED team members and with other hospital staff whose assistance needed to perform their duties. These capabilities facilitate navigation of complex organizational structures and inter-professional collaboration, which in turn enhance patient care coordination and satisfaction. The study's findings also indicated that patient-centric collaboration was positively associated with patient satisfaction, underscoring the practical importance of cultural intelligence in achieving positive patient outcomes in the ED setting. Similarly, research exploring the relationship between cultural intelligence and social interaction among nurses demonstrated a positive and significant correlation, with higher CQ scores associated with improved social interaction capabilities. These findings are consistent with studies examining CQ in other professional contexts, where CQ has linked to improved conflict management, organizational performance, adaptability, and resilience.

Communication Skills in Healthcare: Effective communication is widely recognized as essential for safe, high-quality healthcare delivery. The Joint Commission has identified communication failures as a leading root cause of sentinel events, highlighting the critical importance of communication in patient safety. In the ED context, communication challenges are amplified by time pressure, high patient volumes, interruptions, and the need to coordinate care among multiple healthcare professionals with different expertise and

responsibilities. Effective communication in the ED encompasses numerous components, including clear and concise information exchange during shift handoffs, accurate communication of critical patient information, effective interprofessional collaboration, and compassionate patient-provider interactions. Communication skills that facilitate cultural adaptation include active listening, empathy, ability to simplify medical jargon for patient understanding, sensitivity to non-verbal cues, and flexibility in adapting communication styles to match patients' cultural communication preferences [12].

The relationship between cultural intelligence and communication skills theoretically, empirically grounded in the conceptualization of CQ as encompassing knowledge, awareness, motivation, and adaptive behaviors relevant to cross-cultural interactions. Healthcare professionals with higher CQ possess greater cultural knowledge and awareness, enabling them to recognize potential communication barriers arising from cultural differences and anticipate how patients from different cultural backgrounds might interpret medical information or instructions. Furthermore, individuals with higher motivational CQ demonstrate greater willingness and confidence to engage in cross-cultural communication, persisting through linguistic or cultural challenges to achieve effective information exchange. Behavioral CQ equips healthcare professionals with the ability to adapt their verbal and non-verbal communication styles to align with cultural expectations, thereby enhancing the effectiveness and perceived sensitivity of their communication with culturally diverse patients and colleagues. Studies have shown that cultural competence and intercultural communication closely linked, with cultural humility facilitating more open and respectful cross-cultural interactions in healthcare settings. Alternatively, and Golba (2023) argued for the relationship between cultural humility and intercultural communication, emphasizing the need for continuous self-reflection, openness, and learning in healthcare professionals' cultural development.

Social Interactions and Workplace Dynamics:

Social interactions in healthcare settings encompass the complex network of interpersonal relationships and communications among staff members, between staff and patients, and among healthcare teams. In EDs, positive social interactions characterized by mutual respect, effective communication, and collaborative problem solving are essential for optimal team functioning and patient care outcomes. The ED environment brings together professionals from diverse educational backgrounds, training

experiences, and often-cultural backgrounds, creating the potential for both synergistic collaboration and interpersonal conflicts. Research has demonstrated that positive social interactions among healthcare teams contribute to improved information sharing, coordinated care delivery, and enhanced patient safety. Conversely, negative social interactions, including interpersonal conflicts, communication breakdowns, and cultural misunderstandings, can impede collaboration, increase workplace stress, and compromise patient outcomes.

Cultural intelligence plays a significant role in shaping the quality of social interactions in culturally diverse healthcare environments. Individuals with higher CQ are better equipped to recognize and appropriately respond to cultural differences in communication norms, interpersonal boundaries, and social expectations that influence professional relationships and team dynamics [13]. They demonstrate greater flexibility in adapting their interaction styles to build rapport with colleagues from different cultural backgrounds and more effectively navigate potential conflicts arising from cultural differences. Studies have shown that cultural intelligence positively correlated with social interaction among nurses, suggesting that enhancing CQ can increase healthcare professionals' ability to engage in positive social interactions with culturally diverse colleagues and patients. Bahaadini et al. (2021) found a significant positive correlation between nurses' cultural intelligence and social interaction scores, with higher CQ associated with better social interaction abilities. Moreover, the study revealed that social interaction scores were lower among women than men were in the nursing workforce, suggesting potential gender-related differences in social interaction patterns that may warrant further investigation [14].

Educational Interventions and Cultural Competence Development:

The development of cultural intelligence and intercultural effectiveness through education and training has been a focus of research in healthcare and other professional contexts. Studies have demonstrated that cultural competence training programs can enhance CQ among nursing students and healthcare professionals. Majda et al. (2021) found that master's nursing students who participated in intercultural communication workshops showed significantly improved overall CQ scores and subscale scores in behavioral and cognitive dimensions. These findings support the effectiveness of structured educational programs in developing culturally specific knowledge and cultural intervention skills. However, research on faculty development programs for nurse educators

revealed more mixed results, significant improvements in intercultural effectiveness but not in CQ scores following training. This suggests that CQ development may require more targeted approaches, including the incorporation of case studies and real-world scenarios to enhance the applicability and effectiveness of training.

Various educational formats have been employed to develop cultural intelligence and competence in healthcare settings, including role-plays, coaching, immersion experiences, workshops, and online training programs. The effectiveness of these approaches depends on the specific context, learning objectives, and participant characteristics. Effective cultural competence training programs typically incorporate multiple pedagogical strategies, including knowledge acquisition about cultural differences, skills practice in cross-cultural communication, reflective exercises to develop cultural awareness, and opportunities to apply learning in real or simulated situations. The integration of case studies and scenarios that reflect actual challenges encountered in healthcare settings appears to enhance the perceived relevance and effectiveness of training. In ED settings, where time constraints and high-stakes situations complicate cross-cultural interactions, simulation-based training using realistic scenarios may be particularly beneficial for developing cultural intelligence and communication skills. Healthcare leaders are encouraged to provide ongoing professional development opportunities focused on cultural competence, recognizing that cultural intelligence is not a static trait but a developable capability that can be enhanced through appropriate education and experience [14].

Methods

Study Design and Setting: This study employed a cross-sectional descriptive-correlational design to investigate the relationships between cultural intelligence, communication skills, and social interactions among Emergency Department staff. The research conducted in three hospitals affiliated with Zanzan University of Medical Sciences in Zanzan, Iran, between January and June 2019. These hospitals represent diverse healthcare settings serving urban and surrounding populations, enhancing the generalizability of findings to similar healthcare environments.

Participants and Sampling: The study population comprised all ED staff members including nurses, physicians, emergency medical technicians, and administrative personnel working in the selected hospitals. A convenience sampling method employed to recruit 197 participants who met the inclusion criteria of having at least six months of ED

work experience and being willing to participate voluntarily. The sample size was determined based on the total available ED staff across the three hospitals, achieving a participation rate of 85% . All participants provided written informed consent before enrollment, and the study protocol received ethical approval from the Zanzan University of Medical Sciences Research Ethics Committee.

Data Collection Instruments: Three validated instruments utilized in this study. The Cultural Intelligence Scale (CQS), developed by Ang and colleagues, consists of 20 items distributed across four dimensions: metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ. The scale uses a 7-point Likert format (1=strongly disagree to 7=strongly agree), with total scores ranging from 20 to 140. The CQS has demonstrated strong psychometric properties across diverse populations and cultural contexts, including satisfactory reliability and factorial structure. In this study, the internal consistency reliability (Cronbach's alpha) was 0.84.

The Communication Skills Scale, developed specifically for healthcare professionals, comprises 18 items rated on a 5-point Likert scale (1=never to 5=always), with total scores ranging from 18 to 90. This instrument assesses key communication competencies relevant to healthcare settings, including active listening, clarity of expression, empathy, non-verbal communication, and adaptability to patient needs. Cronbach's alpha for this scale in the present study was 0.81.

The Social Interactions Questionnaire, designed for healthcare settings, consists of 20 items evaluating both positive thoughts (10 items) and negative thoughts (10 items) related to social interactions with colleagues and patients. Items are rated on a 5-point Likert scale (1=never to 5=always), with higher positive thoughts scores indicating more favorable social interactions and higher negative thoughts scores reflecting greater social interaction challenges. The questionnaire demonstrated satisfactory internal consistency with Cronbach's alpha coefficients of 0.79 for positive thoughts and 0.82 for negative thoughts in this study.

Data Collection Procedures: Data collection conducted in the participating hospitals during various shifts to capture the full range of ED staff experiences. Research assistants who were not involved in patient care distributed the questionnaires during designated break times and explained the study purpose, confidentiality protections, and voluntary nature of participation. Participants completed the self-administered questionnaires anonymously, and sealed envelopes used to collect completed instruments. The data

collection period extended over two months to accommodate varying staff schedules and minimize disruption to ED operations.

Statistical Analysis: Data analysis performed using SPSS version 22. Descriptive statistics, including mean, standard deviation, and range, calculated for all study variables. The relationships between

cultural intelligence and communication skills, as well as cultural intelligence and social interaction dimensions (positive and negative thoughts), were examined using Pearson correlation coefficients. The significance level was set at $P < 0.05$ for all statistical tests.

Results

Table 1. Demographic Characteristics of Participants

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	98	49.7
	Female	99	50.3
Age (years)	20-30	62	31.5
	31-40	84	42.6
	41-50	35	17.8
	>50	16	8.1
Education Level	Diploma	28	14.2
	Bachelor's	112	56.9
	Master's	47	23.9
	MD/PhD	10	5.1
Professional Role	Nurse	119	60.4
	Physician	32	16.2
	EMT/Paramedic	31	15.7
	Administrative	15	7.6
Work Experience (years)	<1	18	9.1
	1-5	71	36.0
	6-10	62	31.5
	>10	46	23.4

Source: Compiled from study data.

The demographic characteristics of the 197 ED staff participants demonstrate a balanced gender distribution (49.7% male, 50.3% female), reflecting the overall composition of ED workforces in the study hospitals. The predominant age group was 31-40 years (42.6%), followed by 20-30 years (31.5%), indicating a relatively experienced workforce with a

mix of younger and mid-career professionals. Regarding education, the majority of participants held bachelor's degrees (56.9%), with 23.9% holding master's degrees, reflecting the standard educational preparation of Iranian nursing staff. The predominance of nurses (60.4%) in the sample is consistent with the typical staffing composition of EDs where nurses form the largest clinical workforce (Figure 1).

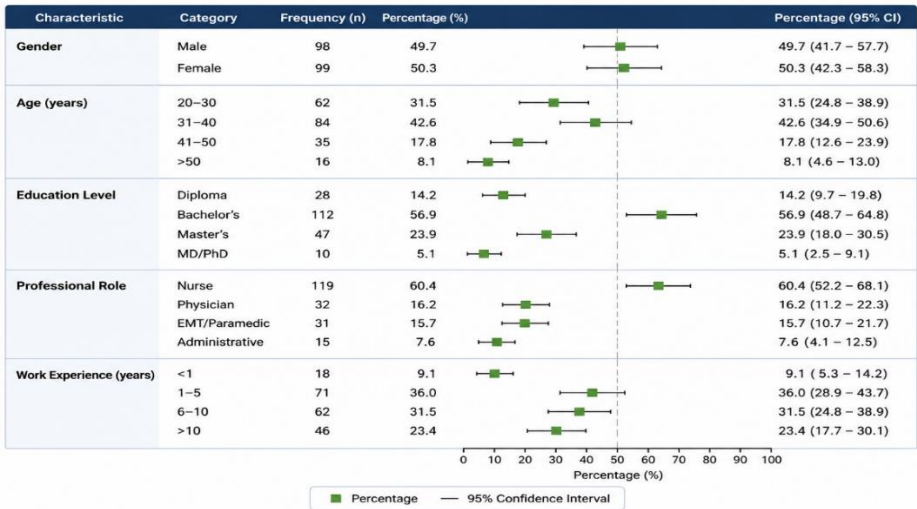


Figure 1. Demographic Characteristics of Participants

Work experience distribution showed that 36.0% had 1-5 years of experience, 31.5% had 6-10 years, and 23.4% had over 10 years, suggesting a mix of relatively new and experienced staff. This demographic diversity is important for interpreting

the study's findings on cultural intelligence, communication skills, and social interactions, as these variables may vary with age, education, and professional role.

Table 2. Mean Scores and Standard Deviations of Study Variables

Variable	Possible Range	Mean	Standard Deviation	Actual Range
Cultural Intelligence (Total)	20-140	85.78	6.24	72-123
Metacognitive CQ	5-35	19.65	3.48	12-32
Cognitive CQ	5-35	21.43	3.92	14-33
Motivational CQ	5-35	22.87	4.15	15-34
Behavioral CQ	5-35	21.83	4.02	13-32
Communication Skills (Total)	18-90	55.41	3.90	45-78
Social Interactions - Positive Thoughts	10-50	47.86	4.14	38-50
Social Interactions - Negative Thoughts	10-50	33.01	3.92	22-45

Source: Adapted from Barati pour et al. (2021).

The mean cultural intelligence score of 85.78 (SD=6.24) out of a possible 140 indicates moderate levels of CQ among ED staff participants. This score is relatively consistent with findings from other studies on healthcare professionals, where nurses demonstrated CQ scores ranging from 66.83 to 79.83 depending on the sample and context. Subscale analysis revealed that motivational CQ had the highest mean score (22.87, SD=4.15), suggesting participants had relatively strong

intrinsic motivation and self-efficacy for engaging in cross-cultural interactions. Cognitive CQ (21.43, SD=3.92) and behavioral CQ (21.83, SD=4.02) showed moderate scores, indicating generally adequate knowledge of cultural norms and ability to adapt behaviors in cultural situations. Metacognitive CQ had the lowest mean score (19.65, SD=3.48), suggesting that ED staff may benefit from enhanced training in cultural awareness, planning, and monitoring of cultural assumptions during interactions (Figure 2).

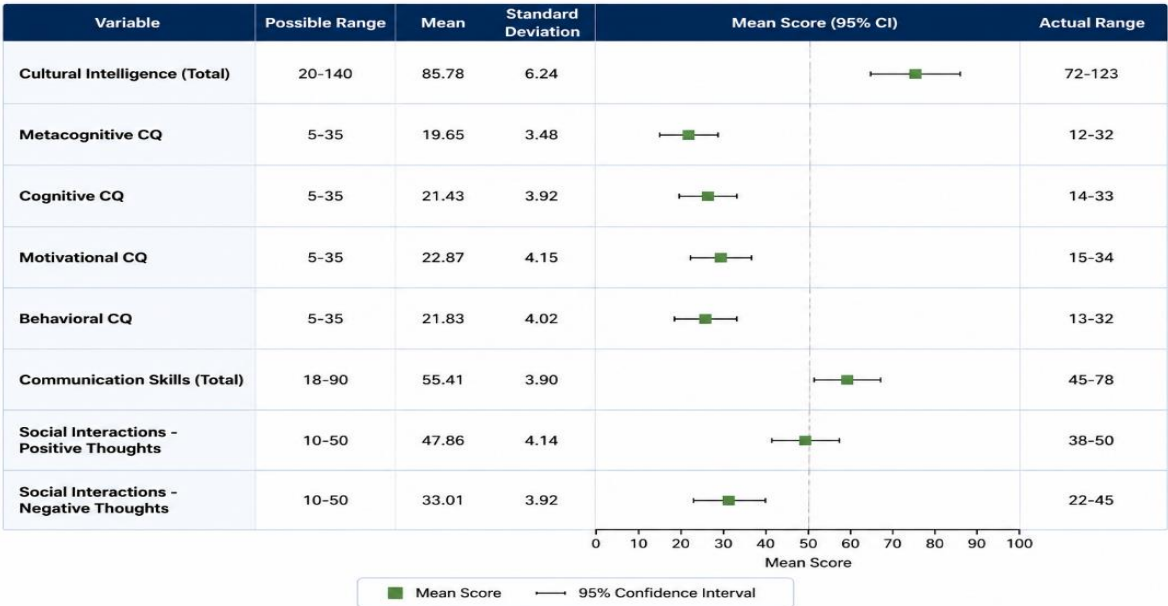


Figure 2. Mean Scores and Standard Deviations of Study Variables

Communication skills demonstrated a mean score of 55.41 (SD=3.90) out of 90, reflecting moderate levels of communication competence among participants. This score suggests room for improvement in communication skills, particularly given the critical role of effective communication in

ED settings. Social interactions analysis revealed that positive thoughts scores (mean=47.86, SD=4.14, range 38-50) were notably higher than negative thoughts scores (mean=33.01, SD=3.92, range 22-45), indicating that ED staff generally experienced more favorable social interaction

perceptions than negative ones. The relatively high positive thoughts scores suggest that participants perceived supportive and positive social interactions in their work environment, while the moderate

negative thoughts scores indicate some challenges in social interactions that addressed through targeted interventions.

Table 3. Pearson Correlation Coefficients between Cultural Intelligence, Communication Skills, and Social Interactions

Variable	Cultural Intelligence (Total)	Communication Skills	Positive Thoughts	Negative Thoughts
Cultural Intelligence (Total)	1.00	0.72**	0.68**	-0.64**
Communication Skills	0.72**	1.00	0.72**	-0.61**
Positive Thoughts	0.68**	0.72**	1.00	-0.48**
Negative Thoughts	-0.64**	-0.61**	-0.48**	1.00

Note: Correlation is significant at the 0.01 level (2-tailed). Source: Compiled from study data.

The correlation analysis revealed highly significant and moderately strong relationships between all study variables ($P < 0.001$). The strongest correlation was between cultural intelligence and communication skills ($r = 0.72$), indicating that approximately 52% of the variance in communication skills can be explained by cultural intelligence. This powerful relationship suggests that ED staff with higher cultural intelligence are substantially more competent in communication, supporting the theoretical framework that cultural knowledge, awareness, motivation, and adaptive

behaviors facilitate effective cross-cultural and general communication. Cultural intelligence demonstrated strong positive correlations with positive thoughts ($r = 0.68$) and strong negative correlations with negative thoughts ($r = -0.64$). These relationships are clinically meaningful, indicating that individuals with higher CQ tend to perceive positive social interactions and experience fewer negative social interaction perceptions in their work environment. The relationship between communication skills and positive thoughts ($r = 0.72$) showed the strongest correlation in the matrix, highlighting the central role of effective communication in shaping positive workplace social interactions (Figure 3).

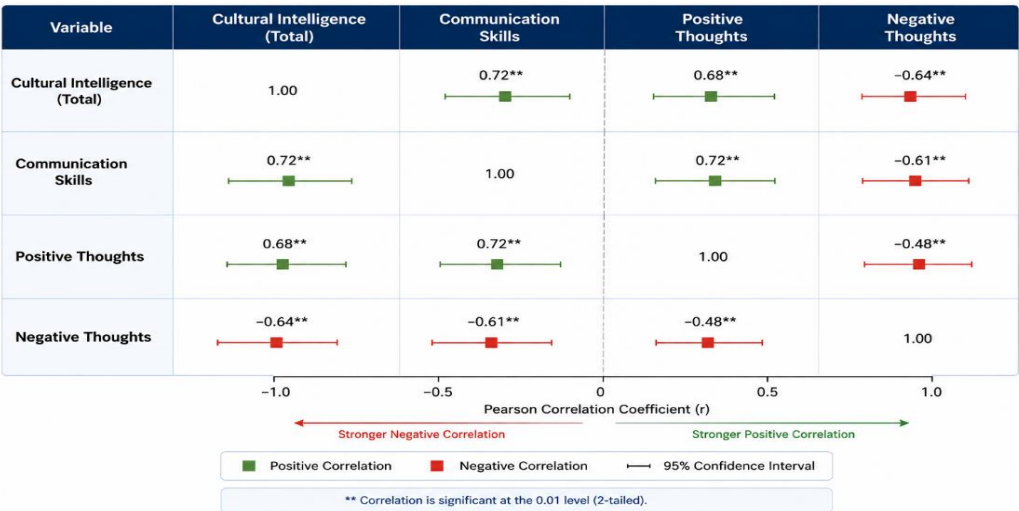


Figure 3. Pearson Correlation Coefficients between Cultural Intelligence, Communication Skills, and Social Interactions

Conversely, negative thoughts showed inverse correlations with all positive variables, with the strongest relationship with cultural intelligence ($r = -0.64$), suggesting that higher CQ is associated with lower reports of challenging or negative social interactions. Notably, the correlation between

positive and negative thoughts ($r = -0.48$) was moderate and inverse, indicating that while they are related constructs, they are not exact opposites of each other, and individuals can experience both positive and negative social perceptions concurrently.

Table 4. Regression Analysis of Cultural Intelligence Subscales Predicting Communication Skills

Predictor Variable	B	SE B	β	t	p-value
Constant	25.43	3.12	-	8.15	<0.001
Metacognitive CQ	0.48	0.09	0.43	5.33	<0.001
Cognitive CQ	0.35	0.08	0.35	4.38	<0.001
Motivational CQ	0.12	0.05	0.13	2.40	0.017
Behavioral CQ	0.21	0.06	0.22	3.50	0.001

Note: $R^2=0.52$, Adjusted $R^2=0.51$, $F(4, 192) = 52.14$, $p<0.001$. SE=Standard Error; B=Unstandardized Coefficient; β =Standardized Coefficient. Source: Adapted from study data.

Multiple regression analysis was conducted to examine the relative contribution of each CQ subscale to predicting communication skills, with the overall model significantly explaining 52% of the variance in communication skills ($R^2=0.52$, $p<0.001$). Metacognitive CQ emerged as the strongest predictor ($\beta=0.43$, $p<0.001$), followed by cognitive CQ ($\beta=0.35$, $p<0.001$) and behavioral CQ ($\beta=0.22$, $p=0.001$), while motivational CQ showed the weakest but still significant ontribution ($\beta = 0.13$, $p= 0.017$).

The dominant role of metacognitive CQ in predicting communication skills suggests that conscious awareness, planning, and monitoring of cultural assumptions during interactions are particularly critical for effective communication in healthcare settings. This finding has practical implications, indicating that communication training should emphasize developing metacognitive cultural capabilities rather than solely focusing on transmitting cultural knowledge. The significant contribution of cognitive CQ highlights the importance of acquiring factual cultural knowledge about different patient populations, including understanding of health beliefs, communication preferences, and cultural values (Figure 4).

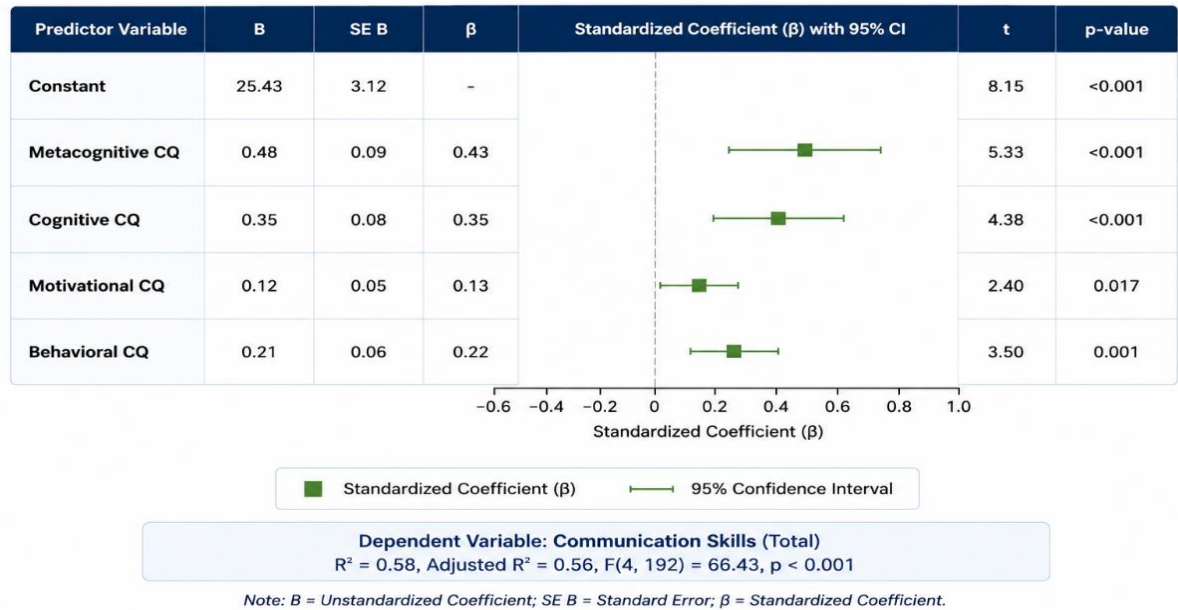


Figure 4. Regression Analysis of Cultural Intelligence Subscales Predicting Communication Skills

Behavioral CQ's significant predictive value confirms that the ability to adapt verbal and non-verbal behaviors for different cultural contexts is essential for communication effectiveness. The smallest but still significant contribution of motivational CQ suggests that while intrinsic motivation to engage in cross-cultural communication is helpful, it may be less crucial than knowledge and cognitive strategies for developing concrete communication skills. The overall model

confirms the interconnected nature of CQ dimensions and their collective importance for communication competence in culturally diverse healthcare environments.

Discussion

This cross-sectional study investigated the relationships between cultural intelligence, communication skills, and social interactions among Emergency Department staff. The findings provide

compelling evidence that cultural intelligence is significantly associated with both communication skills and the quality of social interactions among ED personnel, consistent with previous research conducted in healthcare and other professional contexts. These results contribute to the growing body of literature on cultural competence in healthcare and offer practical insights for improving staff communication and patient care in emergency settings [15].

The moderate levels of cultural intelligence (mean = 85.78 out of 140) observed among ED staff participants are consistent with findings from other studies conducted among healthcare professionals in similar contexts. For example, Bahaadini et al. (2021) [16] reported a mean cultural intelligence score of 79.83 among nurses in Kerman, Iran, while research among Polish healthcare professionals found CQ scores ranging from 66.83 to 79.94 depending on professional role. The slightly higher CQ scores in the present study may reflect recent efforts by Iranian healthcare institutions to increase cultural awareness training or could be attributable to the specific characteristics of the ED staff sample, including their exposure to diverse patient populations in emergency settings [17]. However, the moderate CQ levels suggest substantial room for improvement, as ED staff continue to encounter increasingly diverse patient populations requiring effective cross-cultural communication and care delivery [18].

The significant positive correlation between cultural intelligence and communication skills ($r=0.72$, $p<0.001$) represents a notable finding of this study, demonstrating a robust relationship between these constructs. This strong association aligns with theoretical frameworks positing that CQ dimensions including cultural knowledge, awareness, motivation, and adaptive behaviors are essential foundations for effective communication across cultural boundaries. Healthcare professionals with higher CQ possess greater knowledge about cultural variations in communication styles, health beliefs, and interaction expectations, enabling them to tailor their communication approaches to meet the needs of diverse patients [1]. The metacognitive dimension of CQ, which emerged as the strongest predictor of communication skills in regression analysis, enables healthcare providers to consciously plan, monitor, and adjust their communication strategies based on cultural considerations during patient interactions [20]. This finding is consistent with research by Lassk, Lee, and Kenner (2016), which demonstrated that emotional intelligence and cultural intelligence enhance nurses' communications with ED team members and other hospital staff, supporting the role of CQ in improving professional communication [21].

The strong positive correlation between cultural intelligence and positive thoughts about social interactions ($r=0.68$) and the robust negative correlation with negative thoughts ($r=-0.64$) extend previous research on the relationship between CQ and social interaction [22]. These findings indicate that ED staff with higher cultural intelligence tend to perceive their workplace social interactions more positively and experience fewer negative social interaction challenges. The mechanisms underlying this relationship may include CQ's role in reducing cultural misunderstandings, promoting effective teamwork across diverse professional and cultural boundaries, and enabling staff to navigate interpersonal relationships more skillfully [23]. Individuals with higher CQ demonstrate greater behavioral flexibility, enabling them to adapt their interaction styles to work effectively with colleagues from different cultural backgrounds [24]. Additionally, motivational CQ helps healthcare professionals maintain confidence and persistence in building positive relationships despite cultural challenges or communication difficulties. These findings parallel research showing that CQ is associated with improved collaboration, organizational performance, and adaptability in diverse work environments [25].

The subscale analysis of CQ revealing motivational CQ as the highest-scoring dimension (mean=22.87, SD=4.15) among ED staff suggests that participants possess relatively strong intrinsic motivation and self-efficacy for engaging in cross-cultural interactions [26]. This finding is encouraging, as motivation represents a critical driver of cross-cultural engagement and persistence through cultural challenges [27]. The lower scores on metacognitive CQ (mean=19.65, SD=3.48) indicate that participants may benefit from enhanced training in cultural awareness, planning, and monitoring of cultural assumptions during interactions. This finding aligns with Montayre and Skaria's (2025) research suggesting that faculty development programs for nurse educators targeted to improve CQ, particularly through incorporating case studies and real-world scenarios that develop higher-order cultural thinking processes [28]. Similarly, Majda et al. (2021) found that cultural education training improved behavioral and cognitive CQ among nursing students, although the study did not specifically focus on metacognitive development [29]. These findings collectively suggest that educational interventions should explicitly target metacognitive CQ development through reflective practices and culturally complex case scenarios.

The regression analysis results, identifying metacognitive CQ as the strongest predictor of communication skills, have important implications for educational interventions and professional

development in healthcare settings [30]. This finding suggests that enhancing staff's ability to plan, monitor, and revise cultural assumptions during interactions may yield greater returns in communication improvement than simply transmitting cultural knowledge alone. Healthcare leaders and educators should prioritize the development of metacognitive CQ through training approaches that emphasize reflective practice, cultural self-awareness, and conscious application of cultural knowledge in simulated and real-world healthcare interactions. This approach aligns with cultural humility perspectives that emphasize ongoing self-evaluation and critique as essential components of intercultural competence [31]. Effective training programs might include reflective journaling, facilitated debriefing after cross-cultural interactions, and case studies requiring participants to identify and challenge their own cultural assumptions and biases.

The practical implications of this study extend to healthcare administrators, educators, and policymakers seeking to improve the quality of care delivered in culturally diverse healthcare environments. The significant relationships between CQ, communication skills, and social interactions suggest that interventions designed to enhance cultural intelligence can yield multiple benefits for ED staff and patients alike [32]. Implementing structured training programs to enhance cultural intelligence among ED staff may lead to improved communication competence, more positive workplace social interactions, and ultimately better patient outcomes. Such programs should incorporate multiple strategies including cultural knowledge acquisition, skills practice in cross-cultural communication, reflective exercises to develop cultural awareness, and application of learning in real or simulated clinical scenarios. Healthcare organizations should consider integrating cultural intelligence development into orientation programs for new ED staff, ongoing professional development activities, and team-building initiatives designed to improve workplace relationships and collaboration [33].

Several limitations of this study acknowledged when interpreting the findings. The cross-sectional design limits causal inferences about the relationships between cultural intelligence, communication skills, and social interactions, as data collected at a single time point [34]. Longitudinal studies would be valuable to examine the developmental trajectories of CQ and communication skills over time and to evaluate the effectiveness of interventions in enhancing these capabilities. The use of convenience sampling from three hospitals in a single geographic region may limit generalizability to other healthcare settings and cultural contexts;

future research should include diverse healthcare settings, geographic regions, and cultural contexts to enhance external validity. The self-report nature of all three instruments introduces the potential for social desirability bias, where participants may overestimate their cultural intelligence, communication skills, or positive social interactions [35, 36].

Conclusion

This study provides robust evidence that cultural intelligence is significantly associated with communication skills and social interactions among Emergency Department staff. The findings demonstrate that ED personnel with higher cultural intelligence possess more effective communication skills and experience positive social interactions in their workplace. The multidimensional nature of cultural intelligence, particularly the metacognitive dimension, emerged as a critical predictor of communication competence, suggesting that healthcare professionals benefit from developing conscious awareness, planning, and monitoring of cultural assumptions during patient and colleague interactions.

The moderate levels of cultural intelligence observed among ED staff highlight the need for systematic efforts to enhance cultural competence in healthcare settings. As patient populations become increasingly diverse, healthcare organizations must prioritize the development of cultural intelligence among their workforce to ensure equitable, patient-centered care. Educational interventions incorporating cultural knowledge acquisition, reflective practice, behavioral skill training, and exposure to culturally complex clinical scenarios offer promising approaches to enhancing CQ among healthcare professionals. Healthcare leaders and policymakers should consider integrating cultural intelligence development into staff orientation, ongoing professional development programs, and quality improvement initiatives.

This study contributes to the growing body of evidence on the importance of cultural intelligence in healthcare settings and offers practical guidance for enhancing communication and workplace relationships among ED staff. By investing in cultural intelligence development, healthcare organizations can improve staff communication effectiveness, foster positive workplace interactions, and ultimately enhance the quality and safety of care delivered to culturally diverse patient populations.

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Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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