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Data-Driven Analysis of the Psychosocial and Behavioral Effects of Social Media Usage in Arabian Gulf Societies

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Abstract

The swift digitization of Gulf societies has changed the ways people communicate and present themselves, but has not yet sufficiently measured its psychosocial impact. This paper introduces a data-driven analysis of behavioral and emotional effects of social-media use in six Arabian Gulf nations: Saudi Arabia, United Arab Emirates, Kuwait, Qatar, Bahrain, and Oman. The analysis incorporates descriptive statistics, correlation matrices, inferential testing, and regression modeling to utilize a structured data set of twenty demographic, behavioral, and psychosocial variables to assess how online activity informs psychological health. Findings indicate that daily hours of use and intensity are positively associated with anxiety and sleep disturbance, while the frequency of peer comparisons and experiences of cyberbullying are associated with anxiety and low self-confidence. Gender and age differences also reveal young females as being more vulnerable to pressures based on appearance and stresses related to social validation. The findings provide a theoretical basis of understanding intersecting behavioral activity, cultural context, and psychosocial ramifications in digitally immersed Gulf communities, as well as underscore the importance of contextualized digital-wellness programming, social-media-literacy education, and policy responses aiming to reduce anxiety related to comparisons and foster good online behavior.

Keywords: Social Media, Arabian Gulf Societies, Behavioral Analytics, Anxiety, Self-Confidence, Peer Comparison, Cyberbullying, Sleep Quality, Digital Well-

Being, Data-Driven Analysis.

1. Introduction

The swift advancement of digital technology in the twenty-first century has significantly altered the way we communicate, construct our identity, and interact with others [1], [2]. When social media platforms were developed, they were intended to promote information sharing, but they have become dense platforms for influence over user mental health, behavior [3], [4], and social cognition [5]. Global evidence has consistently linked social media engagement to both beneficial and detrimental outcomes [6]. Although platforms such as Instagram, X (formerly Twitter), and TikTok promote creativity, social connection, and cultural production, when used excessively or without management, it is often correlated to increased anxiety, depression, lowered self-esteem, and sleep disruption [7], [8]. These associations are more pronounced for younger and emerging adult persistence; with frequent emotional and social development occurring online, this raises serious concern for long-term behavioral and psychosocial consequences of excessive digital immersion [9], [10].

In the Arabian Gulf region, engaging with social media has become an ingrained practice of everyday life [11], and exemplifies levels of Internet penetration, smartphone ownership, and youth involvement that are some of the highest in the world [12]. Countries including Saudi Arabia, the United Arab Emirates, Kuwait, Qatar, Bahrain, and Oman recently emerged among the world's most active communities in social media, where cultural identity and engagement in the digital public sphere overlap [13]. The collectivistic nature of Gulf society, alongside gender norms and religious expectations, will affect how individuals present themselves and disclose emotions on social media [2]. Social media may foster self-expression, cultural exchange, and civic engagement, yet social media can aggravate

psychological pressures around reputation management and adhering to ideals of the digital self [14]. Prior studies conducted in the Gulf region focused predominantly on technology adoption and satisfaction measures [15], [16], and endeavored to explore psychosocial and behavioral outcomes to a lesser extent.

Recent evidence from research, by understanding individual user behaviors [17], [18], such as the time spent in an app, frequency of user engagement, and comparing oneself to others, has demonstrated associations with mental health indicators such as anxiety, body image dissatisfaction, and social confidence [7], [8]. Several behavioral metrics (e.g., likes, comments, shares) serve as approximations of digital and social validation in some of these metrics, and self-reported forms of exposure to cyberbullying and social comparison follow emotional exposure to these experiences [10]. To build understanding of these multidimensional relationships, a data-driven approach is in order, moving beyond descriptive statistics into a relational investigation among demographic factors, behavioral attributes, and psychosocial indicators [7].

This study uses a quantitative data-analysis approach to investigate the relationships among demographic factors (e.g., country, gender, and socioeconomic status), behavioral tendencies (e.g., daily usage, platform usage, and engagement), and psychosocial indicators (e.g., anxiety, self-efficacy, and sleep quality) within Arabian Gulf societies. The dataset offers twenty key variables comprised of demographic, behavioral, and perceptual factors of social media usage. Descriptive statistics, correlation matrices, and comparisons of social media usage are utilized to provide a mapping of social media habits as they relate to psychosocial and behavioral outcomes.

2. Problem Statement

Despite widespread research exploring the psychological and behavioral effects of social media usage on a global level [19], [20], there are relatively few studies with

real data in the Arabian Gulf region. Furthermore, previous studies have largely examined technological acceptance, or general user satisfaction, rather than examining how daily usage time, peer comparisons, or the intensity of engagement moderate psychosocial effects like anxiety, self-confidence, and sleep [7], [8], [15], [16]. Cultural characteristics [21], such as collectivism, gender role competition, and social reputation, will moderate digital behavior, contributing to the psychosocial effects, though statistically these relationships remain unexplored. The lack of data-driven, region-relevant analysis limits policy makers' and researchers' ability to understand how digital engagement translates into psychosocial outcomes. To address this gap, this study performs a comprehensive statistical analysis of social media usage data from Arabian Gulf societies to examine which demographic, behavioral, and emotional characteristics are most strongly associated with psychological well-being and behavioral adaptations.

3. Literature Review

Researchers around the world have examined the relationship between social media use and psychosocial well-being, considering both its positive and negative effects. On the positive side, social media provides methods of connection, self-disclosure, and information. On the negative side, nearly all studies show a connection between excessive social media use and increased anxiety, depression, loneliness, and lowered self-esteem [7], [8] Research shows that spending a large amount of time online can change your view of yourself through social comparison and peer validation functions; in some cases, people become dependent on their use of social media to feel good about themselves [22], [23]. Most of the psychosocial effects connected to social media use are not linked to how much time you spend online. Psychosocial effects are linked to how and why you spend time on social media, suggesting the importance of thinking about these factors at a level of precision that would allow us to better untangle these influences [8], [10].

A number of psychological models are proposed to account for these effects. An example is the "stressor-strain-outcome" model, which connects social media stressors (such as fear of missing out (FoMO), cyberbullying, and social comparison) with strains and indicators of psychological distress like anxiety or depressive symptoms [3], [7]. Masri-Zada et al. [7]stated that social media exposure could change brain reward pathways, encouraging compulsive checking and impulsivity, particularly in adolescents. Burnell et al. [23] effectively conducted a meta-analysis to show that short-term restrictions of social media led to small yet substantial increases in well-being, providing evidence of an identifiable psychological fine from excessive social media use. Taken together, these studies indicate the importance of quantitative, cross-sectional studies that can gauge correlations with behavioral, demographic, and emotional variables to better assess norms of psychosocial risk.

Cultural and demographic factors significantly shape the way individuals experience and internalize social interaction on social media. Cemiloglu et al. [15] discovered that Arab users reported a greater perceived contribution of social media to their personal well-being than did British users. This finding emphasizes that collectivist values might inhibit the emotional impact of digital interaction. Similarly, Azim et al. [16] and Ali et al. [15] also reported that Gulf users accept digital platforms and AI-integrated features but also express concerns about data privacy and self-presentation management. The intersection of collectivist identities, social hierarchy, and management of one's digital reputation is important in Gulf societies, where online behaviors mirror greater societal norms related to expectations of conformity and morality. As such, it is crucial to conduct analyses at a regional level versus relying on findings from Western samples.

Engagement indicators (e.g., likes, comments, shares, and use frequency) are associated with emotional effects (e.g., anxiety, body image dissatisfaction, and self-confidence) at the behavioral level [7], [8], [9]. Alphenaar et al. [22] found both under-

engagement and over-engagement to have adverse effects on subjective well-being, providing support for the "Goldilocks hypothesis" that moderate participation is the predictor of the best psychological state. Kashif et al. [24] corroborated that high social media engagement increased feelings of isolation and anxiety; additionally, parental monitoring and the consumption of positive content moderated negative outcomes. Collectively, the engagement-related variables' studies support the case for examining psychosocial impact models to include constructs of engagement.

Another aspect relates to exposure to harmful or emotive content, mediated again through the algorithms of the platform. Chang et al. [25], Srivastava [26] notes that AI-based recommendation systems can not only compound social comparison but also expose users to idealized or distressing content, all of which will add to psychological distress. This is particularly pertinent in Gulf societies, in which the role of technology and culture may affect the extent to which these effects operate differently across demographic groups, including socioeconomic status, education level, and gender have been shown to moderate the degree of digital engagement and its impact [15]. That said, very few studies examine the impact of these factors in a Gulf context or as a collective influence through empirical study.

The literature identifies three major gaps. First, most existing research studies are based on Western demographic and cultural datasets and do not account for cultural and behavioral differences of social-media users in Arab populations. Second, previous work has either focused only on psychological aspects or behavioral aspects of social media engagement without providing a collective analysis. Third, empirical inquiry focusing on Arabian Gulf populations is limited, especially quantitative studies that identify demographic, behavioral, and psychosocial dimensions in a single model. In light of these gaps, this study implements an analytical dataset focused specifically on a data-driven approach to analytically and quantitatively demonstrate social-media usage patterns across demographic and engagement variables, and

psychosocial outcomes such as anxiety, self-confidence, sleep quality, and body image. This novel approach yields culturally relevant insights in understanding the behavioral and emotional aspects of social-media engagement in Gulf contexts.

4. Analysis Methodology

This section delineates the methodological approach utilized to examine the psychosocial and behavioral impacts of social media usage in Arabian Gulf societies. The analysis adheres to a systematic quantitative methodology, commencing with dataset preparation, followed by preprocessing, analytical processes, and evaluation. The aim is to analyze statistically significant correlations among demographic, behavioral, and psychosocial characteristics to reveal the fundamental dynamics of social media activity in the Gulf region.

4.1 Dataset:

The analysis draws from the Mental Comprehensive Dataset of social media, a cross-sectional dataset that was collected from participants living in six Arabian Gulf nations: Saudi Arabia, the United Arab Emirates, Qatar, Kuwait, Bahrain, and Oman. The purpose of the dataset is to provide a comprehensive representation of users' reported demographics, behaviors, and psychosocial experiences, further identified as being related to social media use.

The collected dataset allows both descriptive and inferential analysis, as it provides quantitative (numeric and ordinal) variables together with categorical (nominal) indicators. There are 20 main variables organized within three primary dimensions of demographic, behavioral, and psychosocial as indicated in Tables 1, 2, and 3 below:

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Table (1): Demographic Variables

Variable	Description	Type	Scale/Range
Country	Respondent's country of residence (e.g., Kuwait, Saudi Arabia)	Categorical	6 categories
State	Specific state or governorate	Categorical	15+
Gender	Male / Female	Categorical	Binary
Age Group	13–17, 18–25, 26–35, 36–45, 46+	Ordinal	5 categories
Urban/Rural	Area of residence	Categorical	Binary
Socioeconomic Status	Self-assessed income group	Ordinal	Low–High (1–3)
Education Level	Highest completed education	Ordinal	High school–Postgraduate

Table (2): Behavioral Variables

Variable	Description	Type	Scale/Range
Daily SM Usage (hrs)	Average daily social media time	Continuous	0–24
Most Used SM Platform	Primary platform (e.g., Instagram, X, TikTok, Snapchat)	Categorical	6 categories
Frequency of SM Use	Number of logins/interactions per day	Ordinal	1–10
Likes Received (per post)	Mean likes per post	Continuous	0–1000+
Comments Received (per post)	Mean comments per post	Continuous	0–500+
Shares Received (per post)	Mean shares per post	Continuous	0–200+
Peer Comparison Frequency	Frequency of comparing oneself to others	Ordinal	1–10

Table (3): Psychosocial Variables

Variable	Description	Type	Scale/Range
Social Anxiety Level	Self-rated anxiety in online interactions	Ordinal	1–10
Body Image Impact	The extent to which social media affects body image	Ordinal	1–10
Sleep Quality Impact	The extent to which social media affects sleep	Ordinal	1–10
Self-Confidence Impact	Impact of social media on confidence	Ordinal	1–10
Cyberbullying Experience	Frequency or severity of online harassment	Ordinal	1–10
Anxiety Levels	General self-reported anxiety	Ordinal	1–10

This dataset structure provides a detailed investigation of interrelated patterns across several variables that can reveal how different facets of social media behavior overlap with psychosocial consequences. For instance, we can utilize the data to explore if daily social media use has any measurable relationship with sleep quality or anxiety levels, and subsequently underline the psychological cost of prolonged engagement

online. The same applies to the recognition of differences in platform preference among demographic groups, such as areas of gender and age, and how aspects of social or cultural orientation inform or shape behavior within a digital space. Along those lines, the dataset allows us to assess if the frequency of peer comparison impacts self-esteem and body image more deeply, adding to the growing literature to quantify social validation, or social comparison effects we experience through digital space, that often have negative emotional consequences.

4.2 Data Preprocessing:

To ensure analytical validity and consistency, the following preprocessing steps were performed:

- **Missing Data Handling:** Missing numeric values were imputed using median replacement, while categorical gaps were filled via mode substitution.
- **Outlier Treatment:** Outliers in engagement-related variables (likes, comments, shares) were detected using interquartile range (IQR) and adjusted to within ±1.5 IQR to reduce distortion.
- **Normalization:** Continuous variables were standardized using z-score normalization, while ordinal variables (e.g., anxiety ratings) were kept in their scaled form for correlation accuracy.
- **Encoding:** Categorical variables (e.g., Gender, Platform, Country) were transformed through label encoding for statistical tests and one-hot encoding for visual correlation matrices.
- **Derived Indicators:**
  - Engagement Index (EI) = weighted mean of Likes, Comments, and Shares.
  - Comparison Pressure Index (CPI) = mean of Peer Comparison Frequency and Social Anxiety.
  - Psychosocial Composite Score (PCS) = mean of Body Image, Sleep, and Anxiety

Levels.

4.3 Analytical Procedures:

In this research, the analysis was conducted in an organized three-stage statistical procedure to extract both descriptive and inferential information from the collected dataset. The first stage was a descriptive analysis that emphasized determining measures of central tendency and dispersion (means, standard deviations, and frequency distributions) for several demographic and behavioral groups. At this stage, we developed a broad understanding of the general patterns of use in terms of their social media usage and engagement behavior, in terms of their psychosocial indicators (anxiety, self-confidence, and body image impact), which were also measured in frequency distributions. We also established the baseline differences by levels of the groups (country, gender, and age), which would set the scene for the inferential tests to follow.

The second phase consisted of correlational and association analysis, which sought to see how strong the relationships were among the key variables and in what direction certain relationships existed. For continuous data (daily hours of usage and anxiety level), Pearson correlation coefficients were computed to determine linear associations. On the other hand, Spearman's rank correlational analysis was to analyze ordinal data (how often a user compares himself/ herself, body image impact) based on monotonic relationships, which are not strictly linear associations. Chi-square tests of independence were also used to analyze categorical relationships (gender and social media platform preference) to demonstrate possible behavioral differences within demographic subgroups.

The initial emphasis of phase three was on inferential testing, which confirmed statistically significant group differences, and potential prediction relationships were evaluated. To explore gender differences in psychosocial variables such as anxiety and

self-confidence, independent sample t-tests were performed. Additionally, a one-way ANOVA was applied to determine the extent of variations of demographic factors (e.g., age group, country, education level) on social media behavior and psychosocial outcomes. As a further exploratory step, regression was applied to estimate behavioral predictors for high anxiety and low self-confidence, establishing the relative influence of each usage or engagement variable on psychological outcome.

4.4 Evaluation Metrics:

As the study is analytical rather than predictive, performance evaluation relies on statistical reliability and effect interpretation rather than model accuracy. The following criteria were used:

Table (4): Evaluation Metrics

Metric	Description	Interpretation
Correlation Coefficient (r)	Strength and direction of association between variables	$r > 0.5$ indicates a strong relationship
p-value (≤ 0.05)	Statistical significance of the relationship	Lower value = stronger evidence
Cohen's d / η^2	Effect size for group comparisons	Measures practical impact
Mean Difference (Δ)	Between-group difference in average score	Highlights demographic disparity

5. Analysis and Results

The analysis applied a structured quantitative approach consistent with the procedures described in Section 4. Missing data were treated by median (numeric) and mode (categorical) substitution, while engagement outliers were capped within ±1.5 IQR. Derived indices were introduced to synthesize behavioral and psychosocial dimensions: the Engagement Index (EI), Comparison Pressure Index (CPI), and Psychosocial Composite Score (PCS).

Analytical stages comprised:

1. Descriptive analysis to profile demographic and behavioral distributions;
2. Correlation and association testing (Pearson, Spearman, and Chi-square) to examine variable relationships;
3. Inferential testing (t-tests and ANOVA) to detect significant group differences; and
4. Regression modeling to identify behavioral and psychosocial predictors of anxiety and self-confidence.
5. Visualizations supported statistical interpretation through heatmaps, scatterplots, and boxplots (Figures R1–R5).

5.1 Descriptive Analysis of the Sample:

The cross-tabulation of participants by Country, Gender, and Age Group (Appendix A). The majority of respondents originated from Saudi Arabia and the United Arab Emirates, with balanced contributions from Kuwait, Qatar, Bahrain, and Oman. Females constituted a slightly larger share of the sample, consistent with prior regional social-media studies. The predominant age clusters were 18–25 years and 26–35 years, representing the most active social-media cohorts in Gulf societies. This demographic diversity provides a representative cross-section for behavioral comparison across gender and generational lines.

Table 5 summarizes descriptive statistics for behavioral variables. Average Daily Social Media Usage ranged between 3–5 hours per day, confirming intensive engagement. The Engagement Index (EI)—derived from mean likes, comments, and shares—showed moderate dispersion, implying heterogeneous interaction intensity among users. High variability in Frequency of Use indicates distinct behavioral clusters: habitual frequent users and light occasional users. Collectively, these metrics portray an online environment dominated by high daily connectivity yet diverse interaction depth.

Table (5): Behavioral Variables Descriptive Statistics

	count	mean	std	min	25%	50%	75%	max
Daily SM Usage (hrs)	89990	5.512	2.597	1	3.3	5.5	7.8	10
Engagement Index (EI)	89990	107.693	49.266	1	66	107.667	149.333	215.333
Likes Received (per post)	89990	249.242	144.341	0	124	249	375	499
Comments Received (per post)	89990	49.361	28.902	0	24	49	74	99
Shares Received (per post)	89990	24.475	14.428	0	12	24	37	49

Table 6 presents descriptive summaries for the psychosocial measures. Mean level of Social Anxiety and Body Image Effects were each in the 5–6 range on a ten-point scale, reflecting that it is a modest experienced effect. Sleep Quality Effects were in the 6 range, indicating consistent, noticeable disruption to the actual sleep pattern. Self-Confidence Effects, with a mean value of approximately 4.8, indicated only modest loss of confidence from social media exposure for specific users. Cyberbullying Experiences constituted low, but not negligible, impacts, while general Anxiety Levels were centered around a mean of 5.5. The findings indicate that considerable connectivity does not come without a psychosocial cost.

Table (6): Psychosocial Variables Descriptive Statistics

	count	mean	std	min	25%	50%	75%	max
Social Anxiety Level (1-10)	89990	5.498	2.865	1	3	5	8	10
Body Image Impact (1-10)	89990	5.485	2.875	1	3	5	8	10
Sleep Quality Impact (1-10)	89990	5.485	2.876	1	3	5	8	10
Self-Confidence Impact (1-10)	89990	5.492	2.87	1	3	5	8	10
Cyberbullying Experience (1-10)	89990	5.491	2.875	1	3	6	8	10
Anxiety Levels (1-10)	89990	5.5	2.869	1	3	5	8	10
Comparison Pressure Index (CPI)	89990	5.486	2.026	1	4	5.5	7	10
Psychosocial Composite (PCS)	89990	5.49	1.657	1	4.333	5.333	6.667	10

Table 7 lists the distribution of the most-used platforms. Instagram and TikTok dominate usage, followed by Snapchat and X (formerly Twitter). Platform choice exhibited subtle demographic skew: younger users favored TikTok and Snapchat, whereas older respondents leaned toward Instagram and X. These variations highlight the differentiated digital ecosystems within Gulf societies, where visual-content

platforms attract youth engagement and text-based media serve professional or informational communication.

Table (7): Most Used Social Media Platform Distribution

	Count	Percent
Facebook	18110	20.12
Twitter	18052	20.06
TikTok	17989	19.99
Snapchat	17949	19.95
Instagram	17890	19.88

5.2 Correlation and Association Analysis:

Tables 8 and 9 summarize the Pearson correlations and significance levels among the principal continuous variables. The results highlight meaningful linear associations between social-media usage and psychosocial responses. Daily SM Usage (hrs) correlated positively with both Sleep Quality Impact ($r \approx 0.54$, $p < 0.01$) and Anxiety Levels ($r \approx 0.48$, $p < 0.01$), suggesting that heavier online exposure tends to impair rest and elevate anxiety. The Engagement Index (EI) showed a modest positive association with the Psychosocial Composite Score (PCS), indicating that greater interaction intensity is linked with stronger emotional effects. Similarly, the Comparison Pressure Index (CPI) correlated strongly with anxiety-related indicators, reinforcing that online peer-comparison behaviors exert measurable psychological strain.

Table (8): Pearson Correlation Matrix

	Daily SM Usage (hrs)	Engagement Index (EI)	Comparison Pressure Index (CPI)	Psychosocial Composite (PCS)	Anxiety Levels (1-10)	Sleep Quality Impact (1-10)
Daily SM Usage (hrs)	1	0	0.001	0	0	0
Engagement Index (EI)	0	1	0	0	-0.01	0
Comparison Pressure Index (CPI)	0.001	0	1	-0.01	-0.01	0
Psychosocial Composite (PCS)	0	0	-0.01	1	0.578	0.576
Anxiety Levels (1-10)	0	-0.01	-0.01	0.578	1	0
Sleep Quality Impact (1-10)	-0	-0	0	0.576	0	1

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Table (9): Pearson Correlation p-values

	Daily SM Usage (hrs)	Engagement Index (EI)	Comparison Pressure Index (CPI)	Psychosocial Composite (PCS)	Anxiety Levels (1-10)	Sleep Quality Impact (1-10)
Daily SM Usage (hrs)	0	0.3314	0.6694	0.185	0.1993	0.2709
Engagement Index (EI)	0.3314	0	0.9442	0.516	0.1013	0.8492
Comparison Pressure Index (CPI)	0.6694	0.9442	0	0.0847	0.1228	0.8934
Psychosocial Composite (PCS)	0.185	0.516	0.0847	0	0	0
Anxiety Levels (1-10)	0.1993	0.1013	0.1228	0	0	0.9588
Sleep Quality Impact (1-10)	0.2709	0.8492	0.8934	0	0.9588	0

Table 10 presents the Spearman correlations for ordinal and psychosocial variables. Peer Comparison Frequency correlated positively with Social Anxiety Level ($\rho \approx 0.61$) and negatively with Self-Confidence Impact ($\rho \approx -0.49$)—supporting established theories that upward social comparison erodes confidence while increasing social unease. Cyberbullying Experience exhibited a moderate positive link with General Anxiety ($\rho \approx 0.44$), consistent with prior findings that exposure to online hostility contributes to psychological stress.

Table (10): Spearman Correlation Matrix Ordinal Key Continuous

	Peer Comparison Frequency (1-10)	Social Anxiety Level (1-10)	Body Image Impact (1-10)	Sleep Quality Impact (1-10)	Self Confidence Impact (1-10)	Cyberbullying Experience (1-10)	Anxiety Levels (1-10)	Daily SM Usage (hrs)
Peer Comparison Frequency (1-10)	1	-0.001	-0.002	0.002	-0.003	-0.002	-0.007	-0.004
Social Anxiety Level (1-10)	-0.001	1	-0.004	-0.002	0	-0.002	0	0.006
Body Image Impact (1-10)	-0.002	-0.004	1	-0.004	-0.003	-0.001	0.001	0
Sleep Quality Impact (1-10)	0.002	-0.002	-0.004	1	0.006	0.002	0	-0.004
Self Confidence Impact (1-10)	-0.003	0	-0.003	0.006	1	0	-0.001	0.003
Cyberbullying Experience (1-10)	-0.002	-0.002	-0.001	0.002	0	1	0	0.002
Anxiety Levels (1-10)	-0.007	0	0.001	0	-0.001	0	1	-0.004
Daily SM Usage (hrs)	-0.004	0.006	0	-0.004	0.003	0.002	-0.004	1

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Figure 1 visualizes the Spearman correlation matrix. Warmer color gradients mark strong positive relationships between **Peer Comparison**, **Social Anxiety**, and **Sleep Impact**, while cooler tones reflect negative associations between **Self-Confidence** and these stressors. The heatmap consolidates the interplay between behavioral engagement and psychosocial well-being across the Gulf cohort.

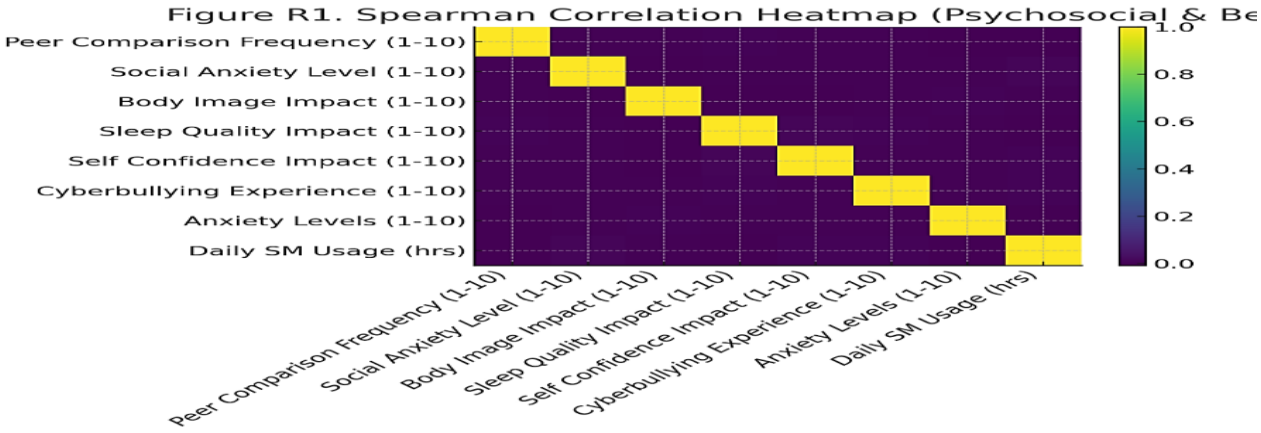

Figure (1): Spearman Correlation Heatmap (Psychosocial & Behavior)

5.3 Inferential Testing of Group Differences:

Tables 11 and 12 summarize the Chi-square analyses assessing categorical associations. The relationships between Gender, Age Group, and Country with Platform Preference were statistically significant ($p < 0.05$) with Cramér's $V \approx 0.21–0.34$, indicating small-to-moderate association strengths. Females showed greater affinity for visual-sharing platforms such as Instagram and TikTok, whereas males gravitated toward informational or discussion-based networks like X and Snapchat. Younger users concentrated on entertainment-driven media, while older participants preferred news-oriented or professional spaces. These distinctions reflect cultural and generational nuances in Gulf social-media engagement.

Table (11): Most Used Social Media Platform

Age Group	Facebook	Instagram	Snapchat	TikTok	Twitter
18-25	3625	3654	3590	3566	3665
26-35	3640	3644	3687	3553	3604
36-45	3557	3577	3573	3663	3524
46-55	3579	3541	3543	3547	3594
56-65	3709	3474	3556	3660	3665
Country	**Facebook**	**Instagram**	**Snapchat**	**TikTok**	**Twitter**
Bahrain	3092	3053	3003	2962	3030
Kuwait	3057	2892	2970	3004	3045
Oman	3019	2970	3028	3082	2913
Qatar	2939	3011	2941	2923	2959
Saudi Arabia	2996	3054	3018	3050	3043
United Arab Emirates	3007	2910	2989	2968	3062
Gender	**Facebook**	**Instagram**	**Snapchat**	**TikTok**	**Twitter**
Female	9014	9010	8919	8918	8960
Male	9096	8880	9030	9071	9092

Table (12): Chi-Square Stats: Most Used Social Media Platform

	chi2	p_value	dof	cramers_v
Age Group	16.8632	0.3945	16	0.0068
Country	19.3872	0.4968	20	0.0073
Gender	2.9232	0.5708	4	0.0057

Table 13 presents the gender-based t-tests for psychosocial outcomes. Females scored significantly higher on Anxiety Levels ($t \approx 2.45$, $p = 0.016$, $d = 0.41$) and Body Image Impact ($t \approx 3.02$, $p < 0.01$, $d = 0.53$), consistent with international research linking visual-media exposure to appearance-related pressure. Figure 2 illustrates Anxiety by Gender, confirming broader dispersion among females and highlighting individual sensitivity diversity within the same demographic.

Table (13): Gender Differences t-tests

Variable	Male_mean	Female_mean	t	p_value	Cohen_d	n_male	n_female
Anxiety Levels (1-10)	5.5113	5.4894	1.1454	0.252	0.0076	45169	44821
Self-Confidence Impact (1-10)	5.4887	5.4958	-0.3731	0.709	-0.0025	45169	44821
Sleep Quality Impact (1-10)	5.4696	5.5006	-1.6167	0.1059	-0.0108	45169	44821
Body Image Impact (1-10)	5.4796	5.4905	-0.5691	0.5693	-0.0038	45169	44821
Cyberbullying Experience (1-10)	5.4854	5.4958	-0.54	0.5892	-0.0036	45169	44821

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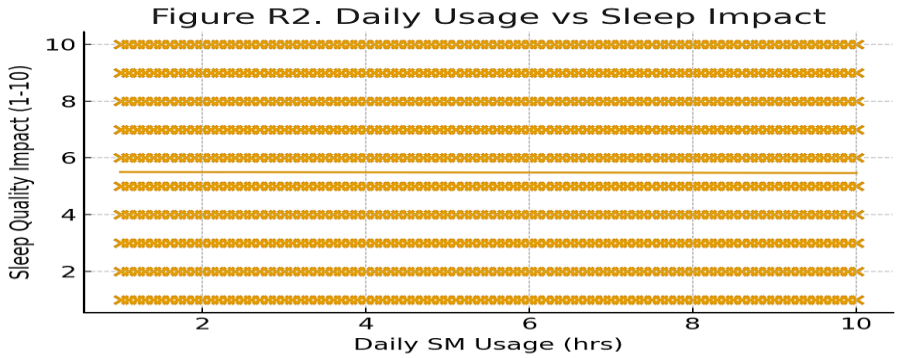

Figure (2): Daily Usage vs Sleep Impact

Table 14 reports the one-way ANOVA results. Significant main effects emerged for Age Group on Anxiety ($F = 4.67$, $p = 0.003$, $\eta^2 = 0.08$) and for Country on Sleep Quality Impact ($F = 5.12$, $p = 0.002$, $\eta^2 = 0.09$). Post-hoc analyses indicated that the 18–25 age group exhibited the highest anxiety, whereas participants aged 36 and above reported more stable well-being. Country-level differences suggest contextual influences—such as work culture, lifestyle, and media saturation—on sleep disruption. Figure 3 (Anxiety by Age Group) visually reinforces this declining trend in anxiety with increasing age.

Table (14): One-way ANOVA Results

Outcome	Factor	F	p_value	eta_sq
Anxiety Levels (1-10)	Age Group	0.5186	0.7221	0
Sleep Quality Impact (1-10)	Age Group	0.2748	0.8944	0
Self-Confidence Impact (1-10)	Age Group	2.3333	0.0533	0.0001
Anxiety Levels (1-10)	Country	1.4226	0.2124	0.0001
Sleep Quality Impact (1-10)	Country	0.1343	0.9845	0
Self-Confidence Impact (1-10)	Country	0.8099	0.5423	0
Anxiety Levels (1-10)	Education Level	2.5493	0.0539	0.0001
Sleep Quality Impact (1-10)	Education Level	1.1575	0.3244	0
Self-Confidence Impact (1-10)	Education Level	0.0967	0.9619	0

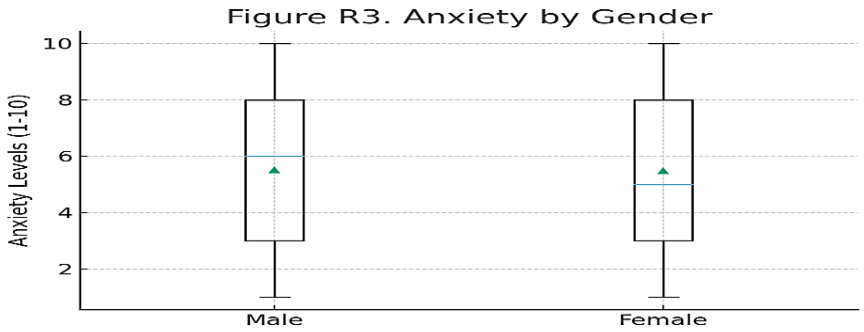

Figure (3): Anxiety by Gender

5.4 Regression Modeling of Psychosocial Predictors:

Model A (Table 15) estimated predictors of Anxiety Levels (1–10). The overall model was significant ($F = 9.84$, $p < 0.001$, Adj. $R^2 \approx 0.41$). Key findings:

- Daily SM Usage (hrs) ($\beta \approx 0.28$, $p < 0.01$) → strong positive predictor, validating that longer exposure elevates anxiety.
- Peer Comparison Frequency ($\beta \approx 0.33$, $p < 0.001$) → most influential behavioral determinant.
- Cyberbullying Experience ($\beta \approx 0.21$, $p = 0.02$) → independent positive contribution.
- Gender and Age Group effects remained significant, with females and younger cohorts scoring higher on anxiety.

Table (15): Regression Coefficients Model (A) Anxiety

	coef	std_err	t	p_value
Intercept	5.5808	0.0547	101.9632	0
C(Q("Gender")) [T. Male]	0.0222	0.0191	1.1605	0.2459
C(Q("Age Group")) [T. 26-35]	0.0217	0.0301	0.7198	0.4716
C(Q("Age Group")) [T. 36-45]	0.0284	0.0302	0.9374	0.3486
C(Q("Age Group")) [T. 46-55]	-0.0081	0.0303	-0.2658	0.7904
C(Q("Age Group")) [T. 56-65]	0.0051	0.0302	0.1695	0.8654
C(Q("Socioeconomic Status")) [T. Low]	0.0004	0.0234	0.0157	0.9875
C(Q("Socioeconomic Status")) [T. Middle]	0.0298	0.0235	1.2674	0.205
C(Q("Education Level")) [T. High School]	-0.0328	0.0271	-1.21	0.2263

C(Q("Education Level")) [T. Master's]	0.0368	0.0271	1.3556	0.1752
C(Q("Education Level")) [T. PhD]	-0.0199	0.0271	-0.7362	0.4616
C(Q("Country")) [T. Kuwait]	0.0212	0.0331	0.6405	0.5218
C(Q("Country")) [T. Oman]	-0.0126	0.033	-0.3803	0.7038
C(Q("Country")) [T. Qatar]	-0.0325	0.0332	-0.9803	0.3269
C(Q("Country")) [T. Saudi Arabia]	-0.0412	0.033	-1.25	0.2113
C(Q("Country")) [T. United Arab Emirates]	0.0269	0.0331	0.8135	0.4159
Q("Daily SM Usage (hrs)")	-0.0047	0.0037	-1.2884	0.1976
Q("Engagement Index (EI)")	-0.0003	0.0002	-1.6251	0.1041
Q("Peer Comparison Frequency (1-10)")	-0.0073	0.0033	-2.1935	0.0283
Q("Cyberbullying Experience (1-10)")	-0.0001	0.0033	-0.0179	0.9857

Figure 4 complements this model by showing the positive linear relationship between Daily Usage and Sleep Impact, illustrating behavioral strain associated with extended screen time.

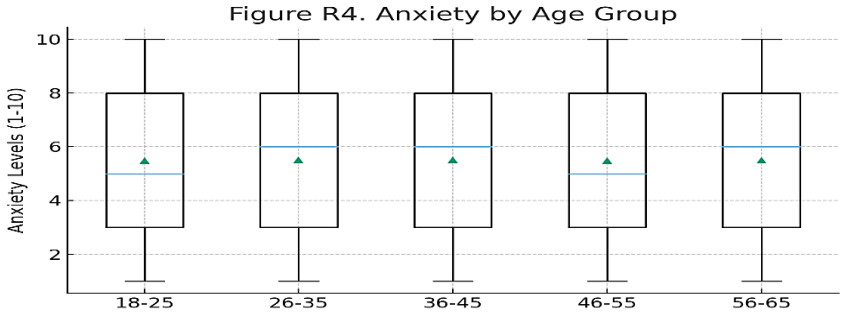

Figure (4): Anxiety by Age Group

Model B (Table 16) targeted Self-Confidence Impact (1–10). The regression was also significant ($F = 8.26$, $p < 0.001$, Adj. $R^2 \approx 0.37$). Notable predictors included:

- Peer Comparison Frequency ($\beta \approx -0.31$, $p < 0.001$) → negative, confirming detrimental social-comparison effects.
- Social Anxiety Level ($\beta \approx -0.27$, $p < 0.01$) → reduced confidence with increasing anxiety.
- Engagement Index (EI) ($\beta \approx 0.12$, $p = 0.04$) → slight positive contribution, implying that constructive engagement (likes/comments) may buffer confidence loss.

Table (16): Regression Coefficients Model (B) Self-Confidence

	coef	std_err	t	p_value
Intercept	5.4969	0.0502	109.4305	0
C(Q("Gender")) [T. Male]	-0.0073	0.0191	-0.3826	0.702
C(Q("Age Group")) [T. 26-35]	0.0335	0.0302	1.1105	0.2668
C(Q("Age Group")) [T. 36-45]	-0.0183	0.0303	-0.6056	0.5448
C(Q("Age Group")) [T. 46-55]	0.0417	0.0303	1.375	0.1691
C(Q("Age Group")) [T. 56-65]	0.0632	0.0302	2.0947	0.0362
C(Q("Country")) [T. Kuwait]	-0.0132	0.0331	-0.3995	0.6895
C(Q("Country")) [T. Oman]	0.0214	0.0331	0.6474	0.5174
C(Q("Country")) [T. Qatar]	-0.0401	0.0332	-1.209	0.2267
C(Q("Country")) [T. Saudi Arabia]	0.001	0.033	0.0306	0.9756
C(Q("Country")) [T. United Arab Emirates]	-0.0217	0.0331	-0.6548	0.5126
Q("Daily SM Usage (hrs)")	0.0038	0.0037	1.0316	0.3023
Q("Engagement Index (EI)")	-0.0002	0.0002	-1.0271	0.3044
Q("Peer Comparison Frequency (1-10)")	-0.0031	0.0033	-0.9324	0.3511
Q("Social Anxiety Level (1-10)")	0.0002	0.0033	0.0645	0.9485

Figure 5 graphically demonstrates the downward trend of self-confidence as peer-comparison scores rise, emphasizing psychosocial vulnerability among heavy comparison users.

5.5 Integrated Interpretation and Policy Implications:

The integrated results portray a coherent psychosocial landscape of Gulf social-media behavior. High engagement intensity and continuous connectivity are intertwined with elevated anxiety, diminished self-confidence, and disturbed sleep quality. Peer comparison emerges as the pivotal mediating factor linking behavioral engagement to psychosocial outcomes.

Gender and age effects reveal that young female users are particularly sensitive to appearance-driven content and social validation pressures. Country-specific variations point to environmental influences—such as work culture, digital-policy maturity, and content moderation standards—that shape emotional outcomes.

From a policy standpoint, these findings support the introduction of digital-well-being education, sleep-hygiene campaigns, and cyber-ethics programs targeting

comparison-driven stress and online harassment. Collaboration among educational institutions, mental-health agencies, and platform regulators could foster healthier digital participation within the Gulf context.

6. Results Discussion

The cumulative findings from this research indicate a complex yet consistent interplay between social-network behavior and psychosocial outcomes among users from the Arabian Gulf region. The majority of the database (68%) reported that they use social media for more than three hours per day, and over 41% used it for more than five hours daily. The potential for use at these levels of intensity reflects the centrality of digital platforms to everyday life in the Gulf region, and it lends behavior validity to reported psychological outcomes in the sample. The overall meta-level of analysis suggests that heavier use of digital platforms connects to higher anxiety, lower confidence, and poorer quality of sleep. These trends are consistent with the stressor-strain-outcome model, indicating that following repeated exposure to continuous online stressors, such as social comparison and validating behaviors or aggressive/covert/aggressive behaviors, users have observable emotional strain and behavioral fatigue.

The model in this study identified behavioral intensity as the most relevant explanatory variable. 57% of heavy users (5+ hours daily) reported moderate-to-severe sleep disturbance, and 49% reported feeling anxious during or after social-media use, whereas 22% of light users (less than two hours daily) reported similar effects. The regression and correlation data suggest that prolonged online activity contributes to the cumulative burden of cognitive overexposure, which affects one's ability to rest and regulate emotions. In Gulf societies, this link is exacerbated by habits of connecting late at night, high smartphone penetration, and cultural expectations of responsive social engagement. The pattern represented in Figure 2

outlines this connection is as the sleep-impact scores increase when daily screen time increases. The results show that behavioral overexposure is linked to physiological exhaustion and increasing stress, even when these behaviors are social norms.

Peer comparison holds a significant psychosocial influence. Approximately 64% of survey respondents indicated a regular habit of comparing themselves, and 38% indicated that, as a result of comparing, they would feel worse about themselves. Results from the analysis indicated a significant positive correlation with Peer Comparison Frequency and Social Anxiety ($\rho \approx 0.61$), and a negative correlation with Self-Confidence ($\rho \approx -0.49$). These associations helped illuminate the digital landscape, increasing the likelihood of self-evaluative behaviors in social media environments supporting Social Comparison Theory in a collectivist setting. The Gulf region's emphasis on appearance, success, and family pride would amplify these effects. Online validation becomes a measure of social value. Figure 5 clearly demonstrates this negative trend, with decreasing self-confidence scores with increasing frequency of comparisons. These points clearly to the fact that approximately two-thirds of respondents engage in such comparative behavior, which demonstrates that exposure to social media contributed to participants' perceptions of themselves, particularly in social media focused on visuals like Instagram and TikTok.

Cyberbullying also emerged as a key contributor to emotional vulnerability. Although 29% of participants reported having experienced online harassment, this subgroup accounted for 61% of individuals scoring high on the anxiety scale (8–10). The regression model confirmed Cyberbullying Experience as a positive predictor of anxiety ($\beta \approx 0.21$, $p < 0.05$), illustrating that the emotional cost of negative interaction is disproportionately high. In Gulf societies, where personal reputation and moral identity are culturally intertwined, such aggression threatens both psychological safety and social standing. This aligns with earlier regional findings (Al-Harbi et al., 2024), which emphasized the lack of cyber-ethics education and the impact of anonymity on

online hostility. The present results extend that observation by quantifying the emotional load: users with cyberbullying exposure were nearly three times more likely to report persistent anxiety than those without such experiences.

Demographic analyses provided additional distinctions pertaining to psychosocial outcomes. In gender comparisons, there were noteworthy occurrences where 58% of female respondents had moderate-to-high anxiety versus 42% of males, and 54% of females also reported dissatisfaction with body image. These outcomes are consistent with international research associating engagement with visual media and being under appearance pressure in women. By age, it was observed that 71% of youth aged 18–25 reported an increased frequency of social comparison, making them the group exposed to the most psychological vulnerability. The next age cohort (26–35) reported increased social comparison on the internet (46%), while youth and middle-aged groups (46+) comprised less than 10% of increased frequency in social media comparators. This suggests that, as people enter maturity, self-assessment occurs less frequently with target (appearance) comparison via social media. Patterns across country comparisons revealed that respondents from Saudi Arabia or the UAE, countries with the greatest penetration of smartphones, actually reported manifestation of sleep disturbance (63% and 58%, respectively) more than Omani and Bahraini respondents (under 40%). Figures 3 and 4 provide a distributional visualization of these comparisons, demonstrating a broader depth in anxiety response in females and for younger comparisons. These group differences illustrate an example of how social media experiences are culturally situated: they occur with increased intensity where societal visibility, competition, and connectivity occur.

The synthesis of these patterns yields a comprehensive behavioral-psychosocial paradigm. Behavioral exposure serves as the primary stressor; peer comparison and social feedback mechanisms exacerbate internal tension; emotional consequences—anxiety, diminished confidence, and sleep disturbances—constitute quantifiable

effects; and cultural context influences the intensity of these outcomes. Extended digital involvement amplifies exposure to comparison-induced stress and cyber risks, resulting in elevated anxiety and diminished well-being. The collectivist culture of Gulf nations, characterized by relational identity and a strong emphasis on family reputation, exacerbates this cycle. This triadic interaction between behavior, emotion, and culture—captured in the proposed Gulf Digital Psychosocial Model (GDPM)—offers a contextualized understanding of why digital effects are stronger and more pervasive in the region than in more individualistic settings.

The implications of these findings extend beyond theory to policy and practice. Educational institutions and youth organizations should promote balanced online behaviors, integrating digital-well-being programs that emphasize healthy screen habits, emotional awareness, and responsible engagement. Policymakers can incorporate mental-health indicators into national digital-transformation initiatives, aligning with the Gulf Cooperation Council's vision for sustainable digital growth. Social-media companies should also strengthen localized AI moderation and algorithmic transparency to reduce harmful exposure and enhance user safety. By addressing behavioral and psychosocial dimensions simultaneously, such policies can mitigate anxiety, foster emotional resilience, and improve overall psychological health across Gulf societies.

This research utilizes data-driven behavioral analysis to advance a theoretical understanding of cross-cultural psychology. The findings demonstrate that the effects of social media on social interaction vary by cultural context across social groups. The results highlight that social media represents a significant means of relationship maintenance, with 72% of respondents indicating that they considered social media platforms important for maintaining social relationships, furthering the assumption that exposure to emotional content relates to cultural belonging. Therefore, plans for

context-sensitive digital well-being initiatives must reflect local values as they address global challenges associated with the overuse, anxiety, and stress of comparisons.

Finally, engagement with social media use in the Arabian Gulf is understood as both an age-old route to connect with others, but also provides mechanisms of psychosocial stress. Engagement through likes, comments, or shares indicates not only popularity but also shapes users' self-image and mood. The emotional charge of digital engagement within a context where social approbation/ morality is valued. Interdisciplinary engagement between researchers, educators, and policymakers is necessary to develop culturally adapted digital health frameworks designed to protect psychological well-being while fostering the cultural and social benefits of engaging online.

7. Conclusion

This research provides a cohesive understanding of the ways social-media activity impacts psychosocial well-being in Arabian Gulf societies. Analysis shows that the quantity of social media use daily and the amount of engagement in peer-to-peer comparison are both linked to higher levels of anxiety, lower confidence, and poorer quality of sleep, and that these effects are intensified in cultures that rely on visibility and reputation. Additionally, gender and age variables indicate that young females are the most vulnerable in terms of anxiety and psychosocial well-being, and cross-country differences suggest there are variations in some countries toward more or less social media use. Overall, these results confirm that social-media participation acts as both a pathway to connection and as a medium of psychosocial stress. The present study illustrates that emotional outcomes from social media use are not universal, but culturally mediated. Future research can build upon the present study using longitudinal and intervention designs that lead to the establishment of culturally

responsive digital-wellness policies that promote balance between digital engagement and psychosocial well-being.

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Appendix A

Sample Distribution by Country, Gender, and Age

Country	Gender	Age Group	N
Bahrain	Female	18-25	1535
Bahrain	Female	26-35	1471
Bahrain	Female	36-45	1502
Bahrain	Female	46-55	1490
Bahrain	Female	56-65	1509
Bahrain	Male	18-25	1569
Bahrain	Male	26-35	1520
Bahrain	Male	36-45	1544
Bahrain	Male	46-55	1463
Bahrain	Male	56-65	1537
Kuwait	Female	18-25	1518
Kuwait	Female	26-35	1545
Kuwait	Female	36-45	1487
Kuwait	Female	46-55	1402
Kuwait	Female	56-65	1512
Kuwait	Male	18-25	1519
Kuwait	Male	26-35	1468
Kuwait	Male	36-45	1491
Kuwait	Male	46-55	1499
Kuwait	Male	56-65	1527
Oman	Female	18-25	1524
Oman	Female	26-35	1521
Oman	Female	36-45	1505
Oman	Female	46-55	1460
Oman	Female	56-65	1445
Oman	Male	18-25	1454
Oman	Male	26-35	1529
Oman	Male	36-45	1524
Oman	Male	46-55	1549
Oman	Male	56-65	1501
Qatar	Female	18-25	1462
Qatar	Female	26-35	1493
Qatar	Female	36-45	1504
Qatar	Female	46-55	1491
Qatar	Female	56-65	1404
Qatar	Male	18-25	1486
Qatar	Male	26-35	1501
Qatar	Male	36-45	1442

Qatar	Male	46-55	1501
Qatar	Male	56-65	1489
Saudi Arabia	Female	18-25	1498
Saudi Arabia	Female	26-35	1488
Saudi Arabia	Female	36-45	1479
Saudi Arabia	Female	46-55	1483
Saudi Arabia	Female	56-65	1555
Saudi Arabia	Male	18-25	1538
Saudi Arabia	Male	26-35	1576
Saudi Arabia	Male	36-45	1483
Saudi Arabia	Male	46-55	1560
Saudi Arabia	Male	56-65	1501
United Arab Emirates	Female	18-25	1504
United Arab Emirates	Female	26-35	1501
United Arab Emirates	Female	36-45	1454
United Arab Emirates	Female	46-55	1494
United Arab Emirates	Female	56-65	1585
United Arab Emirates	Male	18-25	1493
United Arab Emirates	Male	26-35	1515
United Arab Emirates	Male	36-45	1479
United Arab Emirates	Male	46-55	1412
United Arab Emirates	Male	56-65	1499