

From Posts to Pressure: An Arabic Dataset about Stress and Mental-Health Monitoring

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Abstract

How do Arabic-speaking communities express and engage with psychological stress on social media? We introduce AraStress, the first large-scale Arabic corpus dedicated to psychological stress research, comprising 175,862 public social media posts from 2020 to 2024, covering pandemic and post-pandemic periods. It fills a significant gap in Arabic mental-health NLP resources focused on stress, enabling large-scale analysis of related expressions. Unlike prior work focusing primarily on Twitter and depression or suicidality, AraStress addresses the critical gap in stress-focused resources. Our lexicon-based analysis reveals that stress-related posts elicit predominantly affective engagement and exhibit a hybrid lexical framing that integrates religious and therapeutic language. AraStress provides a foundational resource for culturally grounded computational models of stress detection and digital wellbeing in Arabic-speaking communities.

1 Introduction

Social media platforms have increasingly been leveraged to study psychological stress and mental health at scale, offering insights into emotional expression, coping behaviors, and collective responses to societal crises. In Western contexts, prior work has demonstrated the utility of social media text for forecasting stress and mental disorders, particularly during disruptive events such as the COVID-19 pandemic (Garg, 2023; Chancellor and De Choudhury, 2020). However, comparable efforts in Arabic-speaking contexts remain limited.

This gap is driven in part by language-specific challenges, including extensive dialectal variation, rich morphology, and the

coexistence of formal and colloquial registers, which complicate computational modeling (Alasmari, 2025; Alhuzali et al., 2024). Moreover, existing Arabic mental-health NLP resources predominantly focus on depression or suicidality, often relying on narrow data sources, leaving psychological stress largely underexplored.

To address this limitation, we introduce **AraStress**, the first large-scale Arabic corpus explicitly dedicated to psychological stress research. The corpus was collected during a *critical period* spanning both the COVID-19 pandemic and the subsequent post-pandemic phase, a time marked by prolonged uncertainty, social disruption, and evolving coping practices across Arabic-speaking communities. Situated at the intersection of rapidly increasing social media use in the Arab world and emerging computational mental-health methodologies, AraStress captures naturally occurring expressions of stress across diverse regions and timeframes.

Using lexicon-based analysis and engagement signals, this study investigates how stress is expressed and socially engaged within Arabic social media, with particular attention to cultural and regional variation. Specifically, we address the following research questions:

- **RQ1:** How do Arabic-speaking users express psychological stress on social media, and how do engagement patterns reflect collective coping mechanisms?
- **RQ2:** To what extent does geographic location influence whether stress is framed through religious or therapeutic language?
- **RQ3:** How do patterns of emotional engagement differ between stress and

trauma discourse in Arabic social media?

2 Related Work

Research on Arabic mental-health NLP has expanded across several areas, with most studies concentrating on the detection of depression and suicidality, primarily using data from X (formerly Twitter). While broader Arabic NLP research has advanced in areas such as sentiment analysis (Ibrahim et al., 2025) and emotion detection in social media (Biswas et al., 2025), the adaptation of these techniques to mental health contexts remains an emerging area.

Depression detection has received the most attention. Maghraby and Ali (2022) introduced a mood-shift and depression dataset in Modern Standard Arabic (MSA), while Alabdulkreem (2021) analyzed depression-related indicators among Arab women on Twitter. Transformer-based approaches have been applied by Elmajali and Ahmad (2024) for depression detection in Arabic tweets. Alzoubi et al. (2024) used hybrid machine learning (ML) and deep learning (DL) methods, while Helmy et al. (2024) integrated English-Arabic sentiment analysis with pretrained bilingual embeddings for the depression detection. Rabie et al. (2025) developed a recognition system for major depressive disorder.

Alongside depression research, suicidal ideation detection has also been extensively studied. Baghdadi et al. (2022) proposed deep learning architectures for detecting suicidal content in Arabic tweets. Alatawi et al. (2024) conducted an empirical analysis of suicidal expressions, and Abdulsalam et al. (2024) compared transformer-based models with classical machine learning approaches.

Beyond single-condition detection, several studies have addressed multiple mental-health (MH) conditions simultaneously. Hassib et al. (2022) released AraDepSu, a corpus combining depression and suicidality labels. Kumar et al. (2023) developed explainable DL models for detecting depression, anxiety, and stress across Arabic and multilingual datasets. Moreover, Mankarious and Zirikly (2025) introduced CARMA, an automatically annotated Arabic Reddit dataset covering six conditions including anxiety, autism, and depression. Moreover, Duwairi and Halloush

(2023) applied multi-view learning to detect personality-related disorders in Arabic social media.

In parallel with classification-based approaches, mental health question answering (MH-QA) has emerged as a distinct research direction. Alhuzali et al. (2024) released MentalQA, an Arabic annotated dataset for mental-health question answering. Alhuzali et al. (2025) introduced the AraHealthQA benchmark for Arabic healthcare QA where they focused in their first track on mental health topics including anxiety, depression, cognitive disorders, therapeutic practices, and stigma reduction. Building on this benchmark, Bessghaier et al. (2025) developed a hybrid contextual-lexical fusion approach with AraBERT for mental health question and answer categorization. In this context, Bhattacharjee et al. (2025) developed fine-tuning strategies for MH question classification. A detailed comparison of related works is provided in Table A.1.

Despite this progress, two critical gaps remain. First, existing work focuses heavily on depression and suicidality, with stress largely unexplored despite its prevalence and importance as a precursor to more severe conditions. Second, existing studies rely predominantly on data from X, overlooking Facebook, one of the most widely used platforms in Arabic-speaking regions. Facebook’s affordances make it particularly suitable for our research: it supports longer narrative posts that enable reflective self-expression, offers multi-dimensional reaction signals capturing nuanced emotional engagement, and fosters sustained community interactions around mental-health topics.

This study addresses these gaps by introducing AraStress, the first large-scale Arabic Facebook corpus dedicated to psychological stress research. We analyze linguistic and behavioral patterns in stress expression and provide comparative analysis with trauma discourse.

3 Methodology

3.1 Dataset Descriptions

The AraStress corpus¹ comprises 175,862 public Facebook posts collected between January

¹The dataset will be available upon request only for research purposes

2020 and May 2024, spanning both pandemic and post-pandemic periods to capture stress discourse across distinct socio-temporal contexts. Data collection was conducted using CrowdTangle², which enabled systematic retrieval of posts from public Arabic Facebook pages explicitly focused on mental health, psychological wellness, and emotional support. To ensure relevance to psychological stress, posts were collected using a targeted set of Arabic stress-related keywords, including ("التوتر" stress), ("الضغط النفسي" psychological pressure), ("الإجهاد" fatigue/exhaustion), ("الإجهاد النفسي" psychological stress), and ("التوتر المزمن" chronic stress). Each post includes 52 metadata fields providing comprehensive contextual information: engagement metrics (disaggregated reaction counts for the reactions 'Love, Care, Sad, Haha, Wow, Angry'; comment counts; share propagation), temporal data (post timestamps enabling temporal pattern analysis), and geographic indicators (Page Admin Top Country for regional analysis across Arabic-speaking nations), and page categorization (identifying source page types such as 'Media News', 'Personal Blog' or 'Health Beauty'). This rich metadata structure enables multidimensional analysis of both linguistic content and behavioral engagement patterns, distinguishing AraStress from text-only datasets common in Arabic mental-health NLP. The country label used in our geographic analysis corresponds to the declared country of the Facebook page administrator managing the page on which the post was published.

3.2 Trauma Dataset

For comparative analysis, a separate Arabic Trauma Corpus was used, comprising 16,529 Arabic Facebook posts focused on trauma-related discourse. The trauma dataset was also collected from Facebook, spanning from May 2014 to May 2024. Data collection was conducted using the following Arabic search keywords: ("الصدمات النفسية" psychological traumas), ("الصدمة النفسية" psychological trauma), ("الإجهاد الصدمي" traumatic stress), ("التجارب الصادمة" traumatic experiences), and ("اضطراب ما بعد الصدمة" post-traumatic stress dis-

²Meta's former social media analytics platform: <https://transparency.meta.com/researchtools/other-data-catalogue/crowdtangle/>

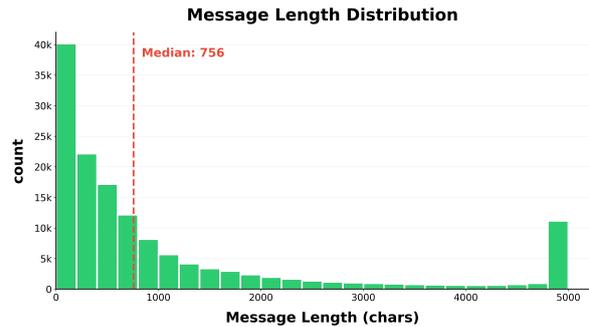


Figure 1: Message Length Distribution

order). Both datasets share identical meta-data structures.

3.3 Analytical Framework

The analysis employed three approaches: (1) Engagement Analysis using normalized reaction ratios and 90th-percentile virality threshold; (2) Lexical Analysis with two domain-specific lexicons (religious: "الله" (*God*), "يارب" (*O Lord*); therapeutic: "علاج" (*treatment*), "نفسى" (*psychological*)); and (3) Cross-Corpus Comparison using within-domain normalization (Chancellor and De Choudhury, 2020).

4 Results

Linguistic Characteristics The linguistic characteristics of the AraStress corpus reveal that stress in Arabic discourse is expressed through a rich interplay of emotional, physical, and spiritual dimensions. While the keyword and phrase analyses provide a quantitative overview of recurring lexical items, the linguistic structure of the posts offers deeper qualitative insight into how psychological tension is articulated. The narrative patterns show that stress is portrayed as a lived and embodied experience rather than a detached clinical condition.

As illustrated in Figure 1, most posts are relatively short, yet a notable portion extend into long, story-like narratives. This indicates that users employ Facebook as a space for reflective self expression and therapeutic storytelling rather than information seeking. The long text length and scarcity of interrogative forms highlight the emotional authenticity of these narratives, where language functions as a tool for emotional regulation and self-soothing.

Meanwhile, Table 1 summarizes the most frequent keywords in the corpus, showing the coexistence of affective, physical, and faith-based expressions such as the body, sleep, blood, and God (see Figure 3). This integrative linguistic pattern demonstrates how Arabic stress discourse merges the psychological, physiological, and spiritual dimensions within a coherent cultural framework. Together, these findings confirm that Arabic stress expression functions as a culturally grounded form of collective coping, bridging personal emotion with shared social meaning. The long average text length and few interrogative forms indicate that users are telling personal stories rather than seeking information, highlighting that Arabic stress discourse serves as therapeutic storytelling and collective support rather than purely informational exchange.

Table 1: Top 10 Keywords in the Arabic Stress Corpus

Keyword	%	Interpretation
التوتر (Stress)	9.72	Central topic: linguistic anchor of stress discourse.
عاطفياً (Emotionally)	5.60	Emotional framing, affective vulnerability.
مهنيًا (Professionally)	4.36	Work-related stress dimensions.
صحيًا (Health-wise)	4.35	Stress with health awareness.
الله (God)	3.36	Faith and spiritual resilience.
الجسم (Body)	3.02	Somatic awareness of tension.
الدم (Blood)	2.65	Psychological pressure to physical strain.
برج (Horoscope)	2.52	Cultural framing through astrology.
النوم (Sleep)	2.17	Sleep disturbance as stress symptom.
الضغط (Pressure)	2.08	Mental and physical pressure.

Note: The % column represents percentage of total keyword occurrences in the corpus.

Virality and Engagement Engagement in the AraStress corpus is highly uneven. Only 8.5% of posts (15,018 posts) exceeded the viral threshold of 629 interactions, indicating that high engagement is concentrated in a small subset of content. The low share-to-like ratio (mean = 0.089, median = 0.019) indicates that

for most stress-related posts, users tend to express engagement through likes rather than re-sharing, suggesting that content diffusion is selective and occurs mainly when posts carry strong emotional or social significance. Overall, the right-skewed distribution of engagement shows that emotional intensity, rather than posting frequency, is the primary driver of virality in Arabic stress-related discourse.

Emotional Reaction Distribution and Temporal Patterns

The emotional reaction analysis shows that 'Love' dominates (60.7%), followed by 'Haha' (17.7%), 'Sad' (11.6%), 'Care' (6.3%), and 'Angry' (1.8%) (see Table 2). This pattern reveals a dual emotional strategy: empathy and solidarity (Love/Care) combined with humor as adaptive coping (Haha). The low 'Angry' rate suggests low polarization in stress discussions. Temporally, Tuesday shows peak engagement (6.42M interactions), aligning with mid-week cognitive load when users seek emotional relief. Overall, Arabic online discourse transforms stress from an individual burden into a collective emotional ecosystem, where empathy, humor, and timing interact to sustain cultural resilience.

Table 2: Sentiment Distribution in Stress Corpus

Reaction Type	Count	%
Love	8,604,222	60.7
Haha	2,514,552	17.7
Sad	1,644,929	11.6
Care	893,428	6.3
Wow	265,813	1.9
Angry	250,680	1.8

Lexical and Engagement Correlations

The correlation matrix (see Figure 2) reveals strong positive correlations among core engagement metrics (Likes, Comments, Shares), indicating that high-performing posts achieve favorable interactions across all metrics simultaneously. In contrast, 'Angry' and 'Wow' reactions show weak correlations and contribute minimally to overall engagement. This pattern suggests that emotional intensity drives audience participation in stress related Arabic discourse

of language used to express psychological stress. Preliminary lexical signals indicate that countries with high interaction volume such as Egypt, Syria, and Iraq show relatively balanced framing between religious and therapeutic expression, while Algeria shows a stronger inclination toward therapeutic terminology. Morocco and Tunisia display slightly higher religious framing. This observation motivates a deeper examination of how geography shapes stress framing.

Geographic Stress Framing: Religious vs Therapeutic Expression

A comparative lexical analysis examined how geography shapes stress framing in Arabic digital communication. Two lexicons were extracted: (1) a **religious/spiritual lexicon** (e.g., "الله" (*God*), "يارب" (*O Lord*), "ذكر" (*dhikr*), "دعاء" (*prayer*), "صلاة" (*prayer*)), and (2) a **therapeutic/self-help lexicon** (e.g., "علاج" (*treatment*), "نفسى" (*psychological*), "نفسية" (*mental*), "طبيب" (*doctor*), "جلسة" (*therapy session*)).

The religious lexicon is dominated by "الله" (74.98%), with terms like "يارب" (*O Lord*) and "الحمد لله" (*praise be to God*) highlighting supplication as a coping mechanism. The therapeutic lexicon is more evenly distributed, led by "علاج" (*treatment*) (34.1%), suggesting growing familiarity with mental-health terminology.

Overall, the analysis reveals a near-balanced distribution (66K religious vs. 70K therapeutic), indicating that Arabic users combine spiritual grounding with psychological awareness in stress expressions.

Psychological Social Interpretation Reaction patterns provide insight into community engagement with stress discourse in Arabic digital spaces. The dominance of Love/Haha reactions (78.4% combined) reflects predominantly empathetic and humor-based responses, while Sad/Care reactions (17.9%) indicate compassionate identification. The minimal presence of Angry reactions (1.8%) suggests that stress discourse remains non-polarized. These patterns, combined with the prevalence of narrative-style posts and hybrid religious-therapeutic framing, suggest that Arabic online spaces serve as sites of collective emotional engagement where personal

expressions of distress elicit supportive rather than confrontational responses.

Quantitative Lexical Patterns Therapeutic words appear slightly more frequently (70K occurrences) than religious words (66K), indicating that users rely on both spiritual and psychological framing when expressing stress online. To examine these differences more closely, Tables 5 and 6 present frequent terms within each lexicon. The religious lexicon is extremely top-heavy: the term "الله" dominates with 49,761 occurrences (74.98%). Other religious terms appear at much lower but meaningful frequencies, reflecting a unified reliance on divine invocation. In contrast, the therapeutic lexicon is more evenly distributed across several psychological and clinical concepts. The term "علاج" (*treatment*) is the most frequent (23,875 occurrences; 34.16%), followed by "نفسى" (*psychological*), "نفسية" (*mental*), "دكتور" (*doctor*), and "طبيب" (*physician*), suggesting broad engagement with mental-health terminology.

Figure 4 visualizes stress-framing ratios by country, showing how each region balances religious/spiritual and therapeutic/self-help language. Most countries cluster around a 50-50 split, but important differences emerge: Gulf countries such as the UAE and Saudi Arabia display stronger religious framing (religious ratio 0.63-0.65), whereas countries like Palestine and Lebanon lean more toward therapeutic framing (religious ratio 0.39-0.37). Egypt, Syria, and Algeria sit near the middle with a slight therapeutic tilt, confirming that geographic context subtly shifts how stress is linguistically framed rather than replacing one coping style with another.

Cross-Dataset Comparison We conducted a comparative analysis of emotional engagement patterns between stress-related and trauma-related Arabic Facebook discourse. The Trauma dataset comprises approximately 16k Arabic Facebook posts collected from public pages during a comparable time period, focusing on trauma-related content including grief, loss, and psychological distress. Despite volume differences between the two datasets (approximately 175k posts related to Stress and 16k related to Trauma),

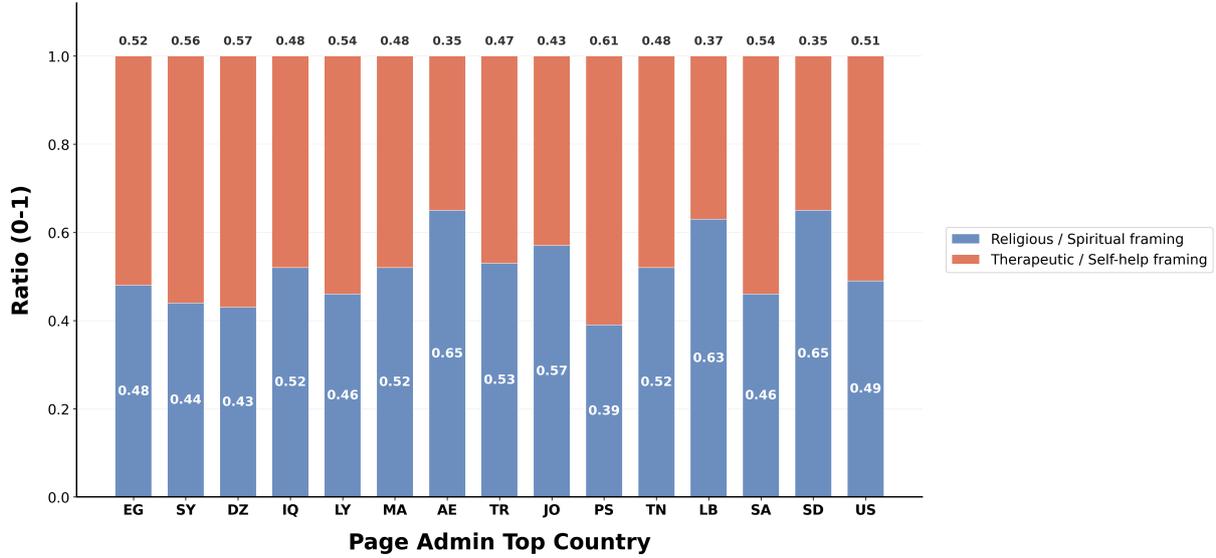


Figure 4: Plotting stacked bar (Religious vs Therapeutic ratios)

Table 5: Top 10 Most Frequent Religious/Spiritual Terms

Word	Translation	Count	%
الله	God	49,761	74.98
يارب	O Lord	2,682	4.04
ذكر	Remembrance (dhikr)	2,075	3.13
الحمد لله	Praise be to God	1,907	2.87
حديث	Hadith (prophetic tradition)	1,744	2.63
نار	Fire/Hellfire	1,696	2.55
قيام	Night prayer (qiyam)	1,477	2.22
صلاة	Prayer	813	1.22
رضا	Contentment/Divine pleasure	711	1.07
دعاء	Supplication	650	0.97

comparison validity was ensured through within-domain normalization (Chancellor and De Choudhury, 2020). This technique measures relative emotional distribution rather than absolute counts, enabling valid cross-corpus comparison regardless of dataset size. For each dataset, emotional reactions (Love, Haha, Sad, Care, Angry) were normalized as percentages of total responses. The Trauma dataset (551,904 total reactions) and Stress dataset were compared using these proportional distributions (Table 7), enabling valid cross-corpus analysis.

The comparative results show two distinct emotional ecosystems: Stress discourse tends to be collective and adaptive, dominated by

Table 6: Top 10 Most Frequent Therapeutic/Self-Help Terms

Word	Translation	Count	%
علاج	Treatment/Therapy	23,875	34.16
نفسى	Psychological/Mental	11,059	15.82
نفسية	Psychological/Mental	5,618	8.03
دكتور	Doctor	4,259	6.09
طبيب	Physician	4,159	5.95
معالجة	Treatment/Therapy	3,310	4.73
دواء	Medication	3,082	4.41
أدوية	Medications (pl.)	2,899	4.15
حبوب	Pills	2,443	3.49
جلسة	Session	2,068	2.96

Table 7: Comparative Emotional Distribution between Stress and Trauma Corpora

Emo.	Stress	Trauma	Interpretation
Love	60.7%	51.4%	Collective empathy
Haha	17.7%	19.7%	Defensive humor
Sad	11.6%	22.5%	Deeper pain
Care	6.3%	5.2%	Stable compassion
Angry	1.8%	1.1%	Non-polarized

Love and Haha, signaling empathy and humor as mechanisms for social resilience. On the other hand, trauma discourse is personal and reflective, dominated by Sad and Love, showing emotional depth, loss processing, and self-expression. Despite their psychological differences, both domains maintain a shared emotional core of compassion (Love + Care), reflecting a cohesive affective structure in Arabic digital communication. This suggests that Arabic online spaces function as community-

based coping environments, where individuals use emotional engagement to process stress and trauma publicly.

5 Research Implications

This study demonstrates that Arabic stress expression functions as a collective coping mechanism dominated by empathy rather than polarization, with distinct affective patterns between stress and trauma discourse. Methodologically, combining lexical analysis with reaction-based ratios enables nuanced analysis in Arabic digital contexts. The coexistence of religious and therapeutic framing underscores the need for culturally grounded mental health models.

6 Conclusions

This paper introduced AraStress, the first large-scale Arabic Facebook corpus for psychological stress research, comprising 175,862 posts (2020–2024) with 52 metadata fields. Key findings include: (1) Arabic stress discourse functions as a collective coping ecosystem, with Love and humor-based reactions serving as primary communal resilience strategies; (2) geographic analysis reveals regional variation in how stress is linguistically framed, with differences in the balance between religious and therapeutic vocabulary across countries; (3) comparative analysis with the Arabic Trauma Corpus demonstrates distinct emotional signatures between stress and trauma discourse. AraStress addresses the critical scarcity of Arabic mental health NLP resources and provides a foundation for culturally grounded stress detection systems and digital wellbeing interventions for Arabic-speaking communities.

7 Limitations and Future work

Several methodological considerations should be noted. First, keyword-based data collection may include posts where stress-related terms appear in non-psychological contexts. Extensive preprocessing may reduce this noise, but complete elimination cannot be guaranteed. Second, word-frequency analysis without full morphological normalization may cause minor lexical variation across dialects. Third, while reaction metrics provide insights into

emotional engagement patterns, they represent user behavior rather than clinical assessments of psychological state. Finally, results from public Facebook posts may not generalize to all demographic groups or private online spaces.

Future work will combine reaction-based signals with text-based emotion classification models to enable better disambiguation of emotional engagement patterns, particularly distinguishing supportive humor from sarcasm. Incorporating morphologically-aware NLP approaches will also reduce lexical ambiguity in future analyses.

8 Data Availability

An anonymized version of the dataset will be released for research purposes, excluding any information that could enable user or page identification

9 Ethical Considerations

This study analyzes publicly available Facebook posts at aggregate-level, excluding personally identifiable information, following established ethical guidelines for privacy protection and harm minimization.

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A Appendix

Table A.1: Overview of Arabic Mental-Health NLP Studies (2021–2025)

Year	Study	Platform	Focus	Key Contribution
2021	(Alabdulkreem, 2021)	Twitter	Depression	Gender-specific depression detection (Arab women)
2022	(Maghraby and Ali, 2022)	Twitter MSA tweets (newly proposed dataset)	Depression	Early mood-shift and depression dataset in MSA
	(Baghdadi et al., 2022)	Twitter	Suicidality	Optimized deep learning architecture
	(Hassib et al., 2022)	Twitter (AraDepSu proposed dataset)	Depression/Suicidality	Multi-label dataset for MH detection
2023	(Duwairi and Halloush, 2023)	Social media posts	Personality disorders	Multi-view learning approach
	(Kumar et al., 2023)	Social media	Depression	Explainable DL model
2024	(Elmajali and Ahmad, 2024)	Twitter	Depression	Transformer-based early depression detection
	(Alzoubi et al., 2024)	Twitter	Depression	Hybrid ML/DL approach
	(Helmy et al., 2024)	Twitter	Depression	Cross-lingual sentiment for MH detection
	(Abdulsalam et al., 2024)	Twitter	Suicidality	Transformer benchmark for suicidality
	(Alatawi et al., 2024)	Social media	Suicidality	Empirical analysis of suicidality
	(Alhuzali et al., 2024)	Arabic QA medical platform (MentalQA proposed dataset)	MH-QA	MentalQA corpus
2025	(Rabie et al., 2025)	User-generated content	Major depressive disorder (MDD)	MDD recognition system
	(Alasmari, 2025)	Multi-platform review	Survey	Scoping review
	(Alhuzali et al., 2025)	Multi-source QA (AraHealthQA; proposed dataset)	Health QA	AraHealthQA benchmark
	(Bhattacharjee et al., 2025)	AraHealthQA	MH-QA	Fine-tuning strategies
	(Mankarious and Zirikly, 2025)	Reddit (CARMA; proposed dataset)	Multiple MH conditions	CARMA dataset
	AraStress (Ours)	Facebook (AraStress; proposed dataset)	Stress	First large-scale stress corpus

Note: The Platform column indicates the main data source and whether a new dataset is proposed in that work.