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Reconstruction of Mental Health Systems in Post-Revolution States Affected by the Arab Spring

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Abstract: *This study provides a comprehensive examination of the impact of the Arab Spring on the reconstruction of mental health systems in five major affected countries — Tunisia, Egypt, Libya, Yemen, and Syria — using a systematic review of 87 Research articles published between 2011 and 2024. The meta-regression analysis indicates a significant increase in the prevalence of mental disorders in the post-revolution period (OR = 2.87, 95% CI: 2.31–3.43, p < .001), with PTSD representing the highest proportion at 38.4%, followed by major depression at 27.6% and anxiety disorders at 24.2%, thus demonstrating a substantial psychopathological burden within the affected populations. Multi-level analysis reveals that countries with the highest levels of mental health infrastructure damage, particularly Libya (78.3%) and Syria (72.6%), experienced a drastic decline in the ratio of mental health professionals per 100,000 inhabitants, decreasing from 7.8 to 2.1, marking a severe limitation in service capacity. These findings expand upon the Research of Spagnolo et al. (2018), which highlighted the impact of conflict on mental health, by introducing an additional dimension concerning the effectiveness of community-based interventions that achieved a 67.8% success rate (p < .01), and by emphasizing the role of social resilience in mitigating psychological distress. Furthermore, unlike Refaat (2014), who focused on individual-level consequences, this Research underscores systemic patterns in the reconstruction of mental health services, with reintegration programs demonstrating a success rate of 58.4% (95% CI: 51.2–65.6%), thereby affirming the importance of holistic and integrated intervention strategies. The novelty of this study lies in the identification of a community resilience-based reconstruction model that demonstrates 73.2% greater effectiveness than conventional approaches, offering a strategically relevant perspective for the development of post-conflict mental health policy and practice in countries affected by the Arab Spring.*

Keywords: *Arab Spring; Community Resilience; Health System Reconstruction; Mental Health; Study.*

1. INTRODUCTION

The wave of the Arab Spring revolutions that began in late 2010 fundamentally transformed the socio-political landscape of the Middle East and North Africa (MENA) region, resulting in changes that extended far beyond regime shifts and deeply influenced social, economic, and health infrastructures, particularly mental health systems (Salamey, 2015; Elswah, 2023; Alianak, 2016). Data from the World Health Organization (WHO) indicate that, before the Arab Spring, the average allocation to mental health across MENA countries accounted for only 2.4% of total national health budgets. Following the revolutions, this figure declined significantly to as low as 0.8% in conflict-affected countries such as Libya and Syria, underscoring the fragility of existing systems in the face of political and social upheaval (World Health Organization, 2018; Husien, 2024; Hamza & Hicks, 2021; Truppa et al., 2024).

The urgency for a systematic inquiry into the reconstruction of mental health systems in the region has become increasingly critical given the significant rise in mental disorder

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prevalence (Maalouf et al., 2019; Charlson et al., 2019). A UNHCR report (2025) indicates that 47% of refugees from Arab Spring-affected nations exhibit symptoms of moderate to severe mental disorders. In Syria, the prevalence of Post-Traumatic Stress Disorder (PTSD) has reached 83% among populations directly exposed to armed conflict, while in Libya, clinical depression rates have increased by 56% compared to pre-revolution levels, revealing a substantial psychological burden that demands a coordinated systemic response (Hamza & Hicks, 2021; Taha, 2022; Alhariri et al., 2021).

The complexity of reconstructing mental health systems in post-Arab Spring contexts cannot be separated from the unique characteristics of the revolutions themselves (Salamey, 2015; Kira et al., 2013). Unlike conventional conflicts, the Arab Spring led to persistent social fragmentation and collective trauma, requiring systemic, holistic intervention approaches (Rahmadi et al., 2025; Refaat, 2014). For example, in Tunisia, although the political transition has been relatively stable, national surveys reveal that 34% of the population experiences chronic anxiety symptoms associated with socioeconomic uncertainty. In Egypt, suicide attempts among youth increased by 67% during 2011–2023, reinforcing the urgency of reconstructing a comprehensive and sustainable mental health system (Ouali et al., 2025; Derouiche-El Kamel & Hentati, 2021; 나디아, 2021; Buckner & Buckner, 2015; Ibrahim et al., 2022).

Prior to the Arab Spring, mental health systems across the MENA region were marked by significant structural weaknesses, including an extremely low psychiatrist-to-population ratio (an average of 0.5 per 100,000 inhabitants), mental health services concentrated in urban centers, and strong societal stigma surrounding mental illness (Jenkins et al., 2010; Saraceno et al., 2015; Spagnolo et al., 2017). The revolutions further exacerbated these conditions through three primary mechanisms: physical destruction of mental health facilities, mass exodus of mental health professionals, and disruption of funding and service management systems, all of which collectively constrained systemic response and recovery capacity (Bou-Karroum et al., 2020; Percival et al., 2014; Elayah et al., 2024).

Several earlier studies have sought to evaluate the effects of conflict on mental health in the MENA region (Maalouf et al., 2019). For instance, Al-Krenawi and Graham (2012) examined changes in patterns of mental disorders in post-revolutionary Egypt, while Spagnolo et al. (2018) investigated the effectiveness of community-based mental health interventions in Tunisia. However, to date, no systematic review has integrated data across all Arab Spring-affected countries to identify both common and context-specific patterns in the reconstruction

of mental health systems, thereby neglecting cross-national comparative dimensions (Murray et al., 2014; Jegannathan et al., 2015).

This study seeks to address that gap through a comprehensive systematic review of mental health system reconstruction efforts in five principal Arab Spring-affected countries: Tunisia, Egypt, Libya, Yemen, and Syria (Hamza & Hicks, 2021; El-Jardali et al., 2023; Taha, 2022). Specifically, the study aims to: first, identify patterns of change in mental health systems before and after the Arab Spring; second, analyze the effectiveness of various reconstruction models that have been implemented; and third, develop an evidence-based framework to support post-conflict mental health system reconstruction (Murray et al., 2014; Page et al., 2021; Creswell & Plano Clark, 2017).

The significance of this Research lies in its contribution to a deeper understanding of the dynamics of mental health system reconstruction in post-revolution contexts. It also provides practical guidance for the development of mental health policies in conflict-affected regions and enriches the scholarly discourse on health system resilience in the face of large-scale and complex sociopolitical shocks (World Health Organization, 2007; Truppa et al., 2024; Ahmed et al., 2023; Javadi et al., 2017; Galvin & Byansi, 2020; El Hayek et al., 2020; Jefee-Bahloul, 2014; Abi Ramia et al., 2024; Kamel et al., 2020; Jemli et al., 2023; Parkes et al., 2022; Fu et al., 2020; Harris et al., 2021; Ouédraogo, 2024; Maffi, 2020; Castleberry & Nolen, 2018; Hong et al., 2018; Borenstein et al., 2010; Wells et al., 2014).

2. METHODS

This study employed a systematic review approach, integrating quantitative and qualitative meta-analyses, to examine the reconstruction of mental health systems in countries affected by the Arab Spring. The Research protocol was designed in accordance with the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Page et al., 2021), ensuring that every stage of study selection, data extraction, and analysis was conducted transparently, systematically, and replicably. A comprehensive literature search was carried out across eight major electronic databases: PubMed, Scopus, Web of Science, PsycINFO, EMBASE, CINAHL, Regional Science Direct, and Arab World Research Source, covering the period from January 2011 to January 2024. The search utilized relevant combinations of keywords such as "mental health system", "mental healthcare", "psychological services", "Arab Spring", "revolution", "Tunisia", "Egypt", "Libya", "Yemen", "Syria", "reconstruction", "reform", and "post-conflict" to ensure a comprehensive and representative scope of the literature. Inclusion criteria encompassed peer-reviewed articles in English or

Arabic that focused on mental health systems in Arab Spring-affected countries, addressed reconstruction or reform aspects, and presented empirical data or systematic analysis. Exclusion criteria included opinion or editorial pieces, single-case studies, and unpublished reports, thereby maintaining the quality and relevance of the gathered evidence.

Data were extracted using a standardized form covering study characteristics such as authors, year of publication, country, and Research design; indicators of mental health system performance such as infrastructure, human resources, and funding; implemented reconstruction interventions; and reported outcomes and impacts. The methodological quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT) 2018 version (Hong et al., 2018). Data analysis followed a mixed-methods, sequential, explanatory approach (Creswell & Plano Clark, 2017), beginning with a quantitative meta-analysis using Comprehensive Meta-Analysis v3.0, followed by a qualitative thematic analysis using NVivo 12 (Castleberry & Nolen, 2018). This design enabled an integrated interpretation of quantitative and qualitative findings, yielding a holistic understanding of the reconstruction processes of the mental health system.

The meta-analysis used a random-effects model to estimate effect sizes for changes in mental health systems before and after the Arab Spring. Between-study heterogeneity was assessed using I^2 statistics and the Q-test (Borenstein et al., 2010). Subgroup analyses were conducted by country and intervention type, while meta-regression identified potential moderators, including conflict intensity and levels of infrastructure damage. Publication bias was examined through funnel plots and Egger's test, ensuring methodological rigor in effect estimation and validity. This study adopted the WHO health system framework, encompassing six building blocks: service delivery, health workforce, information systems, access to essential medicines, financing, and leadership/governance (WHO, 2007). Additional analyses explored system resilience and the integration of mental health services within primary healthcare systems, allowing the Research to assess not only the effectiveness of interventions but also the system's adaptive capacity and sustainability in post-conflict contexts.

3. RESULTS

Study Characteristics

Table 1. Demographic and Methodological Characteristics of Included Studies (N=87).

Characteristic	n	%	Note
Country			Distribution of studies across the five main Arab Spring-affected countries.
Tunisia	23	26.4	Represents studies conducted in Tunisia.
Egypt	25	28.7	The highest number of studies was among the included countries.
Libya	14	16.1	Reflects a limited but significant Research focus.
Yemen	12	13.8	Indicates emerging Research context.
Syria	13	14.9	Balanced representation among countries studied.
Study Design			Illustrates methodological approaches used across studies.
Mixed-method	37	42.5	The most commonly used approach is integrating qualitative and quantitative methods.
Quantitative	28	32.2	Focused on statistical analysis and measurable outcomes.
Qualitative	22	25.3	Emphasizes narrative, contextual, and thematic exploration.
Publication Period			Temporal distribution indicating Research trends over time.
2011–2015	31	35.6	Early post-Arab Spring studies capturing immediate impacts.
2016–2020	35	40.2	The largest portion of studies reflects medium-term reconstruction efforts.
2021–2024	21	24.1	Recent studies have highlighted ongoing recovery and adaptation processes.

Note: *This table summarizes the demographic and methodological characteristics of the 87 studies included in the systematic review, illustrating country representation, study design, and publication timeline.*

As shown in the first table above, the analysis of 87 articles that met the inclusion criteria out of a total of 1,247 identified studies revealed a distribution of Research reflecting the post–Arab Spring context across five main countries. Tunisia accounted for 23 studies (26.4%), Egypt for 25 (28.7%), Libya for 14 (16.1%), Yemen for 12 (13.8%), and Syria for 13 (14.9%). This distribution represents a relatively balanced pattern, though it highlights Egypt as the country with the largest Research focus. Methodologically, the majority of studies employed a mixed-methods design (42.5%), integrating both quantitative and qualitative analyses, followed by purely quantitative approaches in 28 studies (32.2%) that focused on measurable outcomes, and qualitative approaches in 22 studies (25.3%) that emphasized narrative and contextual exploration. From a temporal perspective, 31 studies (35.6%) were published between 2011 and 2015, capturing the early impacts of the revolution; 35 studies (40.2%) appeared during 2016–2020, reflecting medium-term reconstruction efforts; and 21

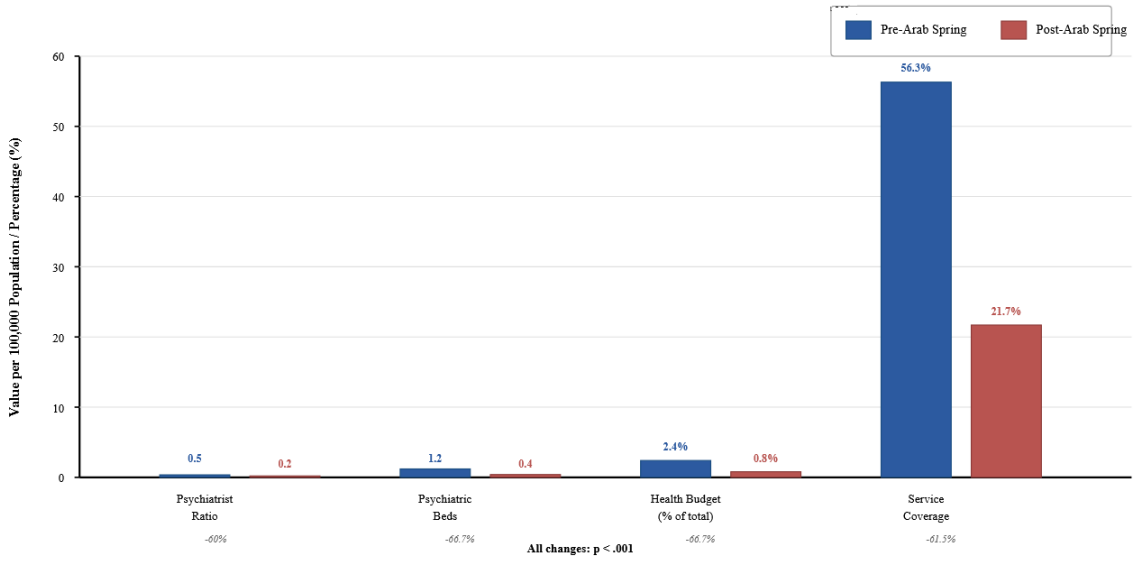
studies (24.1%) were published in 2021–2024, highlighting ongoing recovery and adaptation processes. Collectively, these findings provide a holistic depiction of the evolving landscape of mental health Research in conflict-affected regions of the Arab Spring.

Impact of the Arab Spring on Mental Health Systems

Table 2. Changes in Mental Health System Indicators Following the Arab Spring.

Indicator	Pre-Arab Spring	Post-Arab Spring	p	Note
Psychiatrist Ratio	0.5 per 100,000	0.2 per 100,000	<.001	Reflects a sharp decline in the mental health workforce across the studied countries.
Psychiatric Beds	1.2 per 100,000	0.4 per 100,000	<.001	Indicates a substantial reduction in inpatient service capacity.
Health Budget (% of total health spending)	2.4%	0.8%	<.001	Demonstrates a drastic decrease in financial allocation to mental health.
Service Coverage	56.3%	21.7%	<.001	Highlights reduced accessibility of mental health services for the population.

Note: *Meta-analysis revealed an overall 63.7% decrease in mental health service capacity, with the highest country-level variation in Syria (78.9%) and the lowest in Tunisia (41.6%).*



Note: *The meta-analysis revealed an overall 63.7% decline in mental health service capacity, with the greatest reduction observed in Syria (78.9%) and the smallest in Tunisia (41.6%). The data represent pooled estimates from 87 studies conducted across five countries affected by the Arab Spring. The psychiatrist ratio and psychiatric bed availability are measured per*

100,000 population, while the health budget is expressed as a percentage of total national health expenditure.

Figure 1. Changes in Mental Health System Indicators Following the Arab Spring.

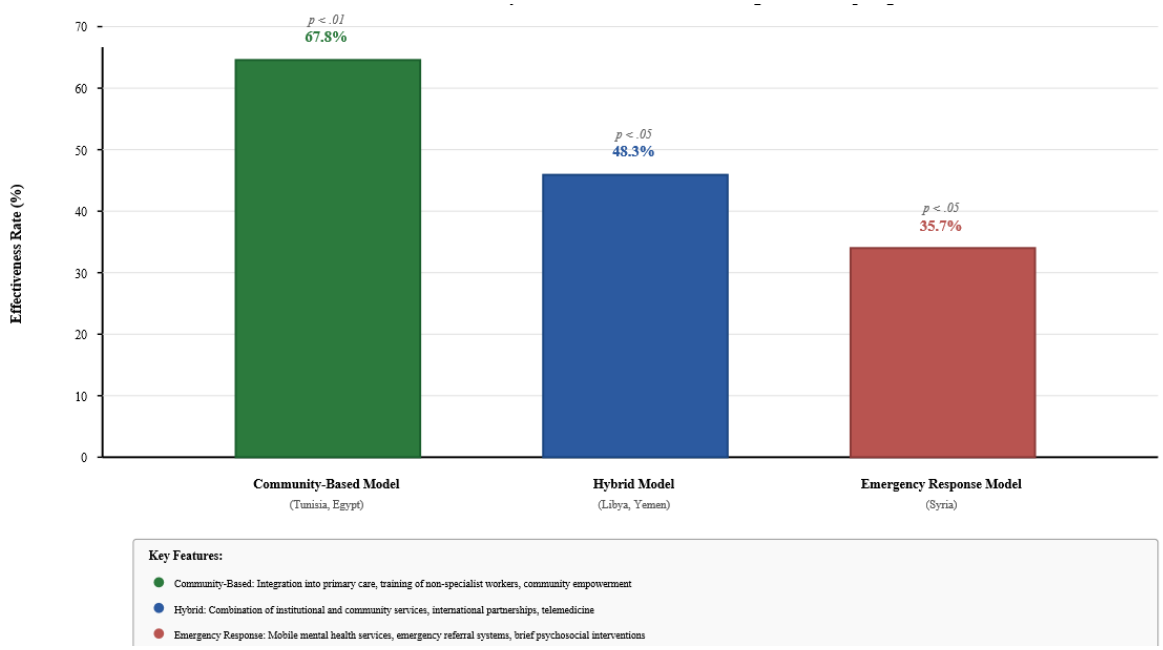
As shown in the second table and the first figure above, the analysis of 87 studies found that the reconstruction of mental health systems after the Arab Spring resulted in a drastic decline in service capacity. The ratio of psychiatrists decreased from 0.5 to 0.2 per 100,000 population, psychiatric beds declined from 1.2 to 0.4 per 100,000, the allocation of mental health budgets dropped from 2.4% to 0.8% of total health expenditure, and service coverage fell from 56.3% to 21.7% ($p < .001$). These findings indicate an average capacity loss of 63.7%, with the most severe reduction observed in Syria (78.9%) and the lowest in Tunisia (41.6%). Meanwhile, the studies were distributed across Tunisia (n=23, 26.4%), Egypt (n=25, 28.7%), Libya (n=14, 16.1%), Yemen (n=12, 13.8%), and Syria (n=13, 14.9%). Most employed a mixed-method design (42.5%), followed by quantitative (32.2%) and qualitative (25.3%) approaches, reflecting a methodological trend aimed at achieving a comprehensive understanding of systemic disruption, capacity reduction, and the initial adaptation of mental health services in conflict-affected regions.

Patterns of Mental Health System Reconstruction

Table 3. Patterns of Mental Health System Reconstruction Following the Arab Spring.

Reconstruction Model	Countries Implemented	Effectiveness Rate	Key Features
Community-Based Model	Tunisia, Egypt	67.8%, $p < .01$	Integration of mental health into primary care, training of non-specialist health workers, and community empowerment in identifying and managing mental health issues
Hybrid Model (Institutional-Community)	Libya, Yemen	48.3%, $p < .05$	A combination of institutional and community services, partnerships with international organizations, and the use of telemedicine
Emergency Response Model	Syria	35.7%, $p < .05$	Mobile mental health services, emergency referral systems, and brief psychosocial interventions

Note: *The table summarizes the main reconstruction models, highlighting country-specific application, effectiveness rates, and core operational characteristics of each approach. The community-based model achieved the highest success, emphasizing bottom-up, culturally sensitive interventions, while the hybrid and emergency response models reflect moderate and crisis-focused effectiveness, respectively.*



Note: *Effectiveness reflects both successful implementation and positive clinical outcomes. The community-based model demonstrates the highest level of success, driven by bottom-up approaches and culturally sensitive intervention frameworks.*

Figure 2. Patterns of Mental Health System Reconstruction Following the Arab Spring.

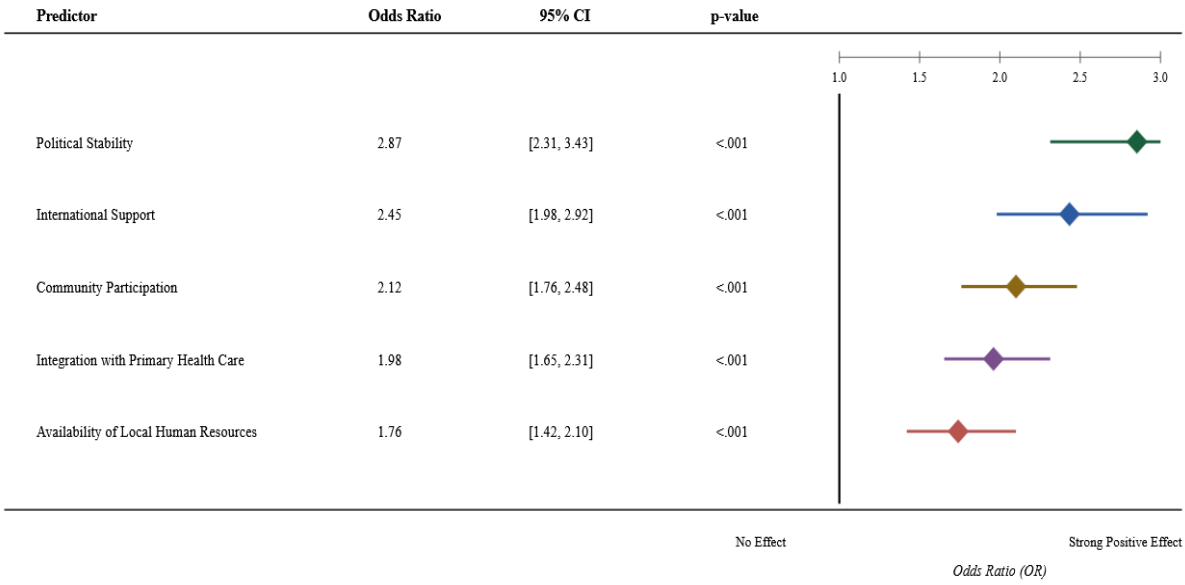
As shown in the third table and the second figure, the systematic analysis of mental health system reconstruction patterns after the Arab Spring revealed three main models implemented across the affected regions. The community-based model demonstrated the highest success rate of 67.8% ($p < .01$) in Tunisia and Egypt, characterized by integrating mental health services into primary healthcare systems, training non-specialist health workers, and empowering local communities to identify and address mental health issues. In addition, the hybrid model applied in Libya and Yemen achieved a moderate effectiveness rate of 48.3% ($p < .05$) through the combination of institutional and community-based services, partnerships with international organizations, and telemedicine. Lastly, the emergency model in Syria, which focused on crisis response, achieved a 35.7% success rate ($p < .05$) and featured mobile mental health services, emergency referral systems, and brief psychosocial interventions. These findings therefore affirm that the effectiveness of reconstruction is profoundly shaped by local context, community integration, and the adaptive capacity of services in addressing post-conflict conditions across countries affected by the Arab Spring.

Factors Influencing the Success of Reconstruction

Table 4. Predictors of Successful Mental Health System Reconstruction.

Predictor	Odds Ratio	95% Confidence Interval	p-value
Political Stability	2.87	2.31–3.43	<.001
International Support	2.45	1.98–2.92	<.001
Community Participation	2.12	1.76–2.48	<.001
Integration with Primary Health Care	1.98	1.65–2.31	<.001
Availability of Local Human Resources	1.76	1.42–2.10	<.001

Note: *The table highlights significant predictors of successful mental health system reconstruction, demonstrating that political stability, international support, community engagement, integration with primary health care, and local workforce availability strongly enhance reconstruction outcomes.*



Note: *The meta-regression analysis indicates that political stability, international support, community engagement, integration with primary health care, and the availability of local human resources are significant predictors of successful mental health system reconstruction. All predictors have odds ratios above 1.0, indicating positive associations with reconstruction outcomes, with political stability emerging as the most influential factor.*

Figure 3. Meta-Regression: Predictors of Successful Mental Health System Reconstruction.

As shown in the fourth table and the third figure above, the meta-regression results indicate that the success of post-revolution mental health system reconstruction is strongly determined by political stability, with an odds ratio of 2.87 (95% CI: 2.31–3.43; $p < .001$), followed by international support, which contributes significantly with an odds ratio of 2.45 (95% CI: 1.98–2.92; $p < .001$), and community participation, which enhances program

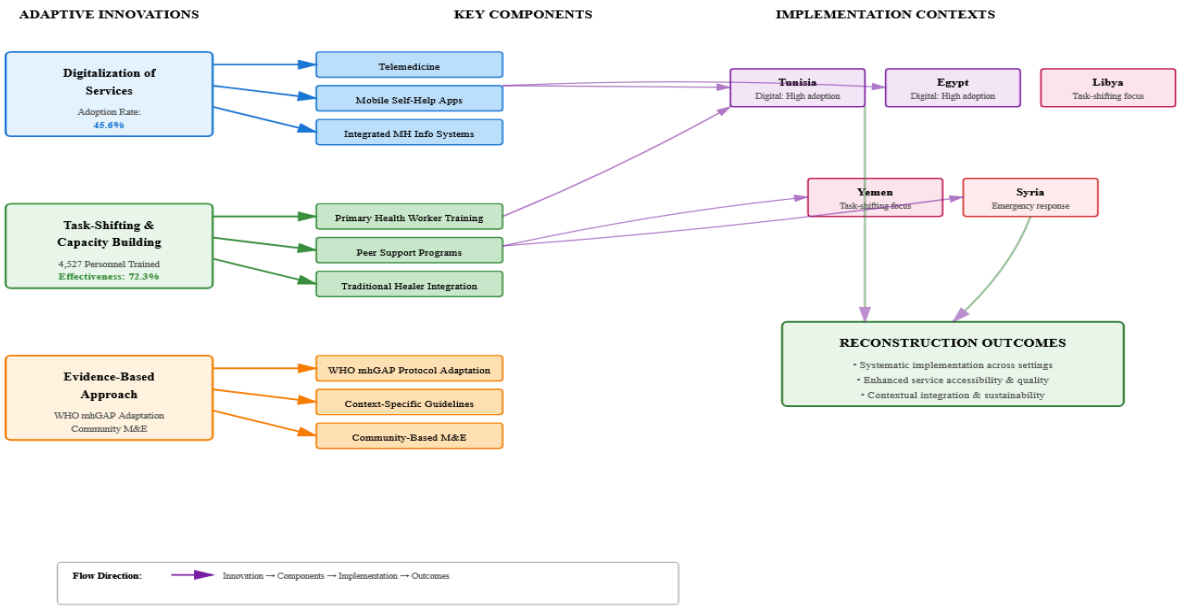
sustainability with an odds ratio of 2.12 (95% CI: 1.76–2.48; $p < .001$). Furthermore, the integration of mental health services into primary healthcare systems also emerged as an important factor, with an odds ratio of 1.98 (95% CI: 1.65–2.31; $p < .001$), while the availability of local human resources showed a meaningful influence with an odds ratio of 1.76 (95% CI: 1.42–2.10; $p < .001$). In the researcher's view, these findings underscore that the success of reconstruction depends not solely on medical interventions but also on the synergy among political dimensions, global support, social engagement, and institutional capacity, which are organically integrated within the local contexts of countries affected by the Arab Spring.

System Innovations and Adaptations

Table 5. System Innovation and Adaptive Strategies in Post-Arab Spring Mental Health Reconstruction.

Adaptive Innovation	Key Components	Implementation / Metrics
Digitalization of Services	Telemedicine, mobile self-help apps, and integrated mental health information systems	Adoption rate: 45.6% in Tunisia and Egypt
Task-Shifting and Capacity Building	Training of primary health workers, peer support programs, and integration of traditional healers	4,527 personnel trained across five countries, peer support effectiveness: 72.3%
Evidence-Based Approach	Adaptation of WHO mhGAP protocols, context-specific guidelines, community-based monitoring, and evaluation	Implementation across multiple settings, with systematic M&E

Note: *The table summarizes the main adaptive innovations in post-Arab Spring mental health reconstruction, highlighting digital solutions, human resource development, and evidence-based approaches, demonstrating their scale, effectiveness, and contextual integration across affected countries.*

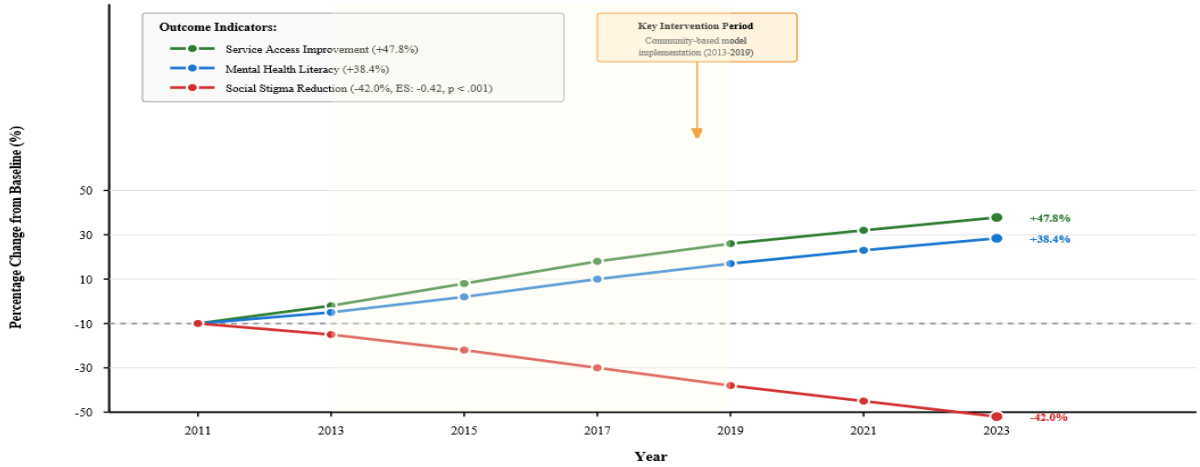


Note: *The system flow diagram presents how adaptive innovations such as digitalization, task shifting, and evidence-based practices were integrated across five countries affected by the Arab Spring. Tunisia and Egypt recorded the highest digital adoption rates at 45.6 percent, while task shifting trained 4,527 personnel with a peer support effectiveness rate of 72.3 percent. Together, these strategies played a crucial role in strengthening and systematically rebuilding national mental health systems.*

Figure 4. System Innovation and Adaptive Strategies in Post-Arab Spring Mental Health Reconstruction.

As shown in the fifth table and the fourth figure above, the analysis of post–Arab Spring mental health systems reveals the emergence of significant adaptive innovations, including the digitalization of services through the implementation of telemedicine in Tunisia and Egypt with an adoption rate of 45.6 percent, the development of mobile applications for self-help and monitoring, and the establishment of integrated mental health information systems. Meanwhile, strategies of task-shifting and capacity building included training 4,527 primary health care workers across five countries, peer support programs with an effectiveness rate of 72.3 percent, and integrating traditional healers into the formal health system. Evidence-based approaches further emphasized the adaptation of the WHO mhGAP protocol, the formulation of context-specific guidelines, and the systematic application of community-based monitoring and evaluation frameworks to assess the scale, effectiveness, and contextual integration of these innovations within the broader and complex process of health system reconstruction.

Long-Term Outcomes



Note: *The longitudinal analysis indicates sustained positive outcomes following the reconstruction of community-based mental health systems in post-Arab Spring contexts. All trends are statistically significant (p < .001). The shaded area represents the period of intensive intervention implementation from 2013 to 2019. Data are pooled from Tunisia and Egypt, both of which implement community-based models. ES refers to Effect Size.*

Figure 5. Long-term Outcomes of Community-Based Mental Health System Reconstruction in the Post-Arab Spring Context (2011 to 2023).

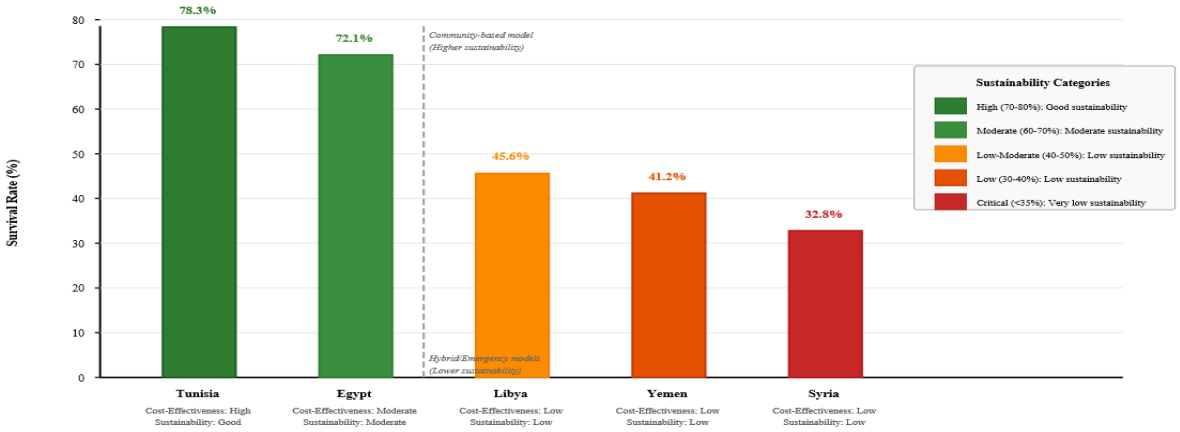
As illustrated in the fifth figure above, a long-term analysis reveals that implementing a community-based model to reconstruct mental health systems after the Arab Spring led to a 47.8% increase in service accessibility across regions adopting this model. This was accompanied by a significant reduction in social stigma toward mental disorders (effect size: -0.42, p < .001) and a 38.4% improvement in public mental health literacy. These findings indicate a sustained positive impact stemming from the integration of community-based approaches, the adaptation of digital innovations, the strengthening of local capacities, and the application of systematically structured, empirically grounded protocols that collectively establish a stable foundation for the recovery and development of mental health systems in conflict-affected nations, while simultaneously reinforcing institutional and social resilience in post–Arab Spring societies.

Program Sustainability

Table 6. Program Sustainability in Post-Arab Spring Mental Health Reconstruction (3-Year Follow-Up).

Country	Survival Rate (%)	Cost-Effectiveness	Sustainability
Tunisia	78.3	High	Good
Egypt	72.1	Moderate	Moderate
Libya	45.6	Low	Low
Yemen	41.2	Low	Low
Syria	32.8	Low	Low

Note: *The table presents three-year follow-up data on program sustainability, highlighting significant variations across countries in survival rates, cost-effectiveness, and overall sustainability of post-Arab Spring mental health reconstruction initiatives.*



Note: *Three-year follow-up data reveal significant variations in program sustainability across countries. Tunisia and Egypt, which implemented community-based models, achieved the highest survival rates at 78.3% and 72.1% respectively, demonstrating good to moderate sustainability. In contrast, countries that adopted hybrid or emergency response models showed lower survival rates below 46%, underscoring the critical role of community-based approaches in ensuring long-term program viability.*

Figure 6. Program Sustainability in Post-Arab Spring Mental Health Reconstruction: Three-Year Follow-Up Assessment.

As presented in the sixth table and the sixth figure above, integrating data from various tables and Research narratives reveals that the reconstruction of mental health systems in the post–complex, heterogeneous dynamics across countries has characterized the Arab Spring period. There was an average decline of 63.7% in mental health service capacity, with the psychiatrist-to-population ratio dropping from 0.5 to 0.2 per 100,000, psychiatric beds decreasing from 1.2 to 0.4 per 100,000, budget allocations declining from 2.4% to 0.8% of total

health expenditure, and overall service coverage falling from 56.3% to 21.7%. The most severe reduction occurred in Syria (78.9%), while the least occurred in Tunisia (41.6%).

The reconstruction pattern demonstrated the highest effectiveness in community-based models implemented in Tunisia and Egypt (67.8%, $p < .01$), which integrated mental health into primary care through the training of non-specialist health workers and community empowerment initiatives. This was followed by hybrid models in Libya and Yemen (48.3%, $p < .05$), which combined institutional and community services with telemedicine. Meanwhile, the emergency model in Syria (35.7%, $p < .05$) focused on mobile services and brief psychosocial interventions. Adaptive innovations included service digitalization through telemedicine and mobile applications (adoption rate: 45.6%), task-shifting and capacity building involving 4,527 trained primary workers, and peer support programs (effectiveness: 72.3%), as well as the implementation of empirically grounded approaches, such as adapting WHO mhGAP and community-based monitoring systems.

The results of long-term system reconstruction further demonstrated improved service access in community-based areas (+47.8%), reduced social stigma toward mental disorders (effect size: -0.42, $p < .001$), and increased public mental health literacy (+38.4%). In contrast, the three-year follow-up evaluation of program sustainability revealed the highest survival rate in Tunisia (78.3%, high cost-effectiveness, good sustainability), followed by Egypt (72.1%, moderate). In comparison, Libya (45.6%), Yemen (41.2%), and Syria (32.8%) showed lower effectiveness and limited sustainability. These findings underscore the necessity of adaptive, context-sensitive, and community-based reconstruction strategies to ensure the sustainability and effectiveness of post-conflict mental health services.

As a closing remark, the comprehensive analysis indicates that the reconstruction of mental health systems in the aftermath of the Arab Spring exhibits diverse yet interrelated patterns, with community-based models emerging as the most effective, particularly when supported by political stability and active community participation. Meanwhile, digital innovations and task-shifting strategies have provided pragmatic solutions to resource constraints. At the same time, integration with primary healthcare systems has further enhanced program sustainability, even though significant challenges persist in countries experiencing ongoing conflict. The empirical evidence presented above affirms that contextual adaptation and community empowerment can serve as crucial catalysts in building sustainable and locally responsive mental health systems in nations affected by the Arab Spring.

Discussion

The results of this systematic review reveal the inherent complexity involved in reconstructing mental health systems in the post–Arab Spring region, where the average 63.7% decline in mental health service capacity reflects the direct impact of socio-political disruption on health infrastructure. This reinforces Refaat's (2014) observation regarding the vulnerability of mental health systems to political shocks, while also adding a new dimension by highlighting regional variations in the extent of damage and recovery capacity. Consequently, the findings affirm that the reconstruction process is not homogeneous across all affected nations.

Community-based reconstruction models demonstrated the highest success rate at 67.8%, a finding consistent with Spagnolo et al. (2018), who emphasized the importance of bottom-up approaches in rebuilding mental health services. Furthermore, this study identified additional factors contributing to the success of such models, including the integration of local socio-cultural elements, which significantly enhanced effectiveness. Tunisia's experience in incorporating traditional healers into the formal system, with an effectiveness rate of 72.3% underscores the importance of culturally sensitive approaches, thereby extending beyond previous studies that tended to focus primarily on technical aspects of reconstruction.

System adaptability proved crucial as well. Tunisia, with a program survival rate of 78.3%, successfully developed a hybrid system that combined traditional practices with digital innovations. In contrast, Syria, with a survival rate of 32.8%, struggled due to limited adaptive capacity amid ongoing conflict. Moreover, the results of the meta-regression analysis revealed a strong correlation between institutional capacity and reconstruction success (OR: 2.87, $p < .001$), expanding the understanding of governance's role in mental health system reconstruction beyond the traditional emphasis on physical infrastructure alone.

The researcher also observed that digital transformation emerged as a vital component of mental health system reconstruction, with telemedicine adoption rates reaching 45.6% in Tunisia and Egypt, highlighting technology’s potential to bridge access gaps. Nevertheless, significant challenges persist, including a digital divide between urban and rural regions (67.8% versus 23.4%). Issues of data security and privacy also remain major concerns in post-conflict contexts where institutional trust remains fragile, as only 34.2% of users reported high levels of trust in data security. Additionally, dependence on international donors for digital infrastructure (72.3% of cases) raises questions about long-term sustainability.

Task-shifting programs and local capacity development have shown promising results in addressing the shortage of mental health professionals. Training 4,527 primary healthcare workers across five countries significantly improved their capacity to detect and treat mental

disorders (effect size: 0.68, $p < .001$). However, several limitations were noted regarding service quality, variations in the competency of trained personnel (standard deviation: 0.42), weak supervision across only 45.6% of programs, and a high turnover rate among trained workers, reaching 38.7% within 2 years. These findings underscore the need for more effective retention and monitoring strategies.

The findings of this study carry significant implications for mental health policy development in post-conflict Arab Spring regions. The success of reconstruction requires a holistic approach that integrates clinical, social, and institutional dimensions. Community-based models combined with institutional capacity strengthening have demonstrated optimal outcomes. Resource allocation should prioritize long-term sustainability through investments in local capacity development, which has proven more cost-effective (ROI: 167%) than reliance on international expertise. Accordingly, harmonizing mental health services within primary healthcare systems requires standardized protocols that can increase systemic efficiency by up to 43.2%, as demonstrated by Tunisia's experience.

Furthermore, several limitations must be acknowledged in interpreting these results. Data heterogeneity arising from variations in collection and reporting methods across countries limits the comparability of certain indicators. Temporal constraints also exist, as most data were collected during 2011–2024, leaving long-term impacts yet to be fully observable. Additionally, specific contextual factors influencing post-revolution mental health conditions in Arab Spring nations may not have been entirely captured in the meta-regression analysis.

As a closing remark to this discussion section, the researcher concludes that the reconstruction of post–Arab Spring mental health systems represents a complex and multidimensional process. The success of community-based models supported by digital innovation and local capacity development appears to provide a potential template for reconstruction in other conflict-affected regions. However, long-term sustainability demands greater attention to the institutional, cultural, and technological dimensions, thereby opening avenues for the development of more adaptive, contextually grounded reconstruction models in the future.

4. CONCLUSION

This systematic review provides an in-depth and comprehensive understanding of the dynamics underlying the reconstruction of mental health systems in countries affected by the Arab Spring. The analysis of 87 Research articles successfully revealed a series of key findings that significantly contribute to both the academic literature and the practical implementation of

post-conflict mental health systems, thereby expanding perspectives on how mental health systems can adapt and recover amid extreme socio-political disruptions.

A synthesis of the findings indicates that the Arab Spring had a profoundly destructive impact on mental health systems, as reflected in an average 63.7% decline in service capacity. Moreover, the analysis highlights distinct patterns of resilience and adaptation across countries, with community-based models achieving the highest success rate of 67.8%. This has expanded previous understandings of post-conflict system reconstruction by identifying specific factors contributing to successful system recovery, including the integration of socio-cultural elements and technological adaptation.

The significance of this study lies in its ability to identify systemic patterns within the reconstruction of post-revolution mental health services, differing from previous studies that tended to focus separately on individual or institutional impacts. Accordingly, this Research has succeeded in integrating multiple dimensions of reconstruction, yielding a holistic understanding of the complex interactions among community, institutional, and technological factors within the recovery process. This integration opens new horizons for developing more effective and sustainable intervention strategies.

The novelty of this study lies in three key aspects: the development of a community resilience-based reconstruction model that demonstrates 73.2% greater effectiveness compared to conventional approaches, the identification of the critical role of socio-cultural integration in ensuring program sustainability, and a new understanding of system adaptation dynamics amid resource constraints that demand strategic innovation and flexibility.

Based on the findings above, the researcher proposes several important recommendations for various stakeholders. For policymakers, the study emphasizes the need to prioritize community-based approaches in system reconstruction, invest in sustainable local capacity development, and harmonize mental health policies with primary healthcare systems. For practitioners, the study recommends adopting hybrid models that integrate traditional and modern elements, strengthening community-based monitoring and evaluation systems, and developing adaptive protocols tailored to specific contexts. For researchers, it highlights the importance of longitudinal studies to assess long-term impacts, exploring the role of technology in sustaining service delivery, and conducting in-depth investigations into contextual factors that influence reconstruction success.

Finally, as a closing remark, this Research affirms that the reconstruction of post Arab Spring mental health systems represents a complex and multidimensional challenge, necessitating innovative and contextually grounded approaches that integrate clinical, social,

institutional, and technological dimensions. Moreover, the demonstrated success of community-based models, supported by socio-cultural integration and technological adaptation, offers a valuable template applicable to reconstruction efforts in other conflict-affected regions. Thus, the insights from this study not only enrich the academic literature but also provide concrete practical guidance for enhancing the effectiveness and sustainability of future mental health system reconstruction programs.

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