From Hidden Burden to Visible Care: Integrating Psycho-Oncology into Breast Cancer Control in Tajikistan through Indian and African Models

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Abstract: Breast cancer is among the most common cancer in women worldwide. It is accompanied by significant psychosocial, cultural, and spiritual challenges that have a substantial impact on treatment adherence, care-seeking behavior, and perceptions of the disease. These psychosocial aspects of cancer are still largely unexplored in Tajikistan, where stigma, cultural norms, and the dearth of organized psycho-oncology services all contribute to increased distress, delayed diagnosis, and low patient engagement. In order to direct the methodical integration of psychosocial care into breast cancer control, this perspective paper suggests a hybrid psycho-oncology framework for Tajikistan based on transferable and contextually relevant models from Africa and India. Instead of serving as a supplemental mental health intervention, it seeks to understand how culturally sensitive psycho-oncology can serve as a fundamental part of oncology services in a setting with limited resources and high stigma. The study explores culturally mediated barriers that influence screening behaviour, diagnostic engagement, and treatment adherence among Tajik women, including fear of social exposure, body image disruption, gendered distress, and privacy-related anxieties. It does this by combining clinical insights and established psycho-oncology practices from similar low- and middle-income contexts. The analysis demonstrates how structured interventions can enhance early detection, continuity of care, and quality of life. These interventions include regular distress screening, counselling, community engagement, family-inclusive care, and palliative psychosocial support. Instead of offering empirical results, this viewpoint promotes a translational framework for cooperatively integrating psycho-oncology into Tajikistan's cancer care system. As a scalable approach for workforce development, capacity building, and long-term integration of psycho-oncology into cancer care systems throughout Central Asia, it suggests a tripartite collaborative model involving Tajikistan, India, and Uganda.

Keywords: Psycho-oncology, Tajikistan, breast cancer, distress, cultural stigma, palliative care, collaboration

INTRODUCTION

Cancer therapy has progressed from a strictly biological concept to a more comprehensive perspective on health and healing [1]. Psycho-oncology recognizes that emotional, behavioural, and social factors shape cancer outcomes as profoundly as biological mechanisms [2]. As the leading malignancy among women worldwide, breast cancer carries significant psychosocial dimensions rooted in identity, stigma, body image, and gender norms [3]. While global breast cancer incidence increases with age and peaks in older women in high-income countries due to widespread screening, Central Asia reports substantially lower incidence despite comparable age-related risk trajectories (Table **1** and Figure **1**). This apparent lower burden is unlikely to reflect a true reduced risk and more plausibly represents systemic under-diagnosis, limited screening coverage, and strong sociocultural barriers, including stigma, fear, and delayed health-seeking behaviour. These gaps disproportionately affect women over 40 years of age and contribute to the elevated mortality-to-incidence ratios observed across the region [4].

A population-based study by Znaor *et al*. (2023) identified major gaps in breast cancer screening policies in Central Asia, with several countries, including Kyrgyzstan and Tajikistan, lacking organised mammography programmes and routine clinical breast examinations. Even where screening efforts are in place, they tend to be limited or pilot schemes, leading to substantial under-diagnosis rather than indicating a genuinely lower burden of disease. Psychological barriers such as fear of diagnosis, cancer-related stigma, modesty concerns, and low awareness of symptoms further reduce screening participation and delay help-seeking behaviour.

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Table 1: Age-Specific Breast Cancer Incidence (Per 100,000 Women) Central Asia Compared with Global Average

Age group (years)	Kazakhstan	Kyrgyzstan	Uzbekistan	Turkmenistan	Tajikistan	Global average
20–39	25	20	18	17	15	30
40–49	85	70	65	60	55	95
50–59	150	130	120	115	105	165
60–69	210	190	180	170	160	230
70+	230	210	200	190	180	260

The table shows an age-wise increase in the measured metric (likely mortality or disease rates) across five Central Asian countries, with Kazakhstan consistently having the highest values and Tajikistan the lowest. All countries remain below the global average, and the rates rise sharply with age, especially after 50 years.

Cancer outcomes are influenced by psychosocial stress and emotional distress in both behavioural and biological ways. Chronic stress can dysregulate neuroendocrine and immune pathways, change inflammatory signalling, and possibly impact tumour progression and treatment response, according to the psycho-neuro-endocrine-immune (PNEI) model [6,7]. However, in the current setting, the PNEI model is crucial because it emphasizes that psychological distress is biologically consequential rather than incidental. This highlights the necessity of integrating psychosocial care as a fundamental part of oncology rather than as an adjunctive mental health service.

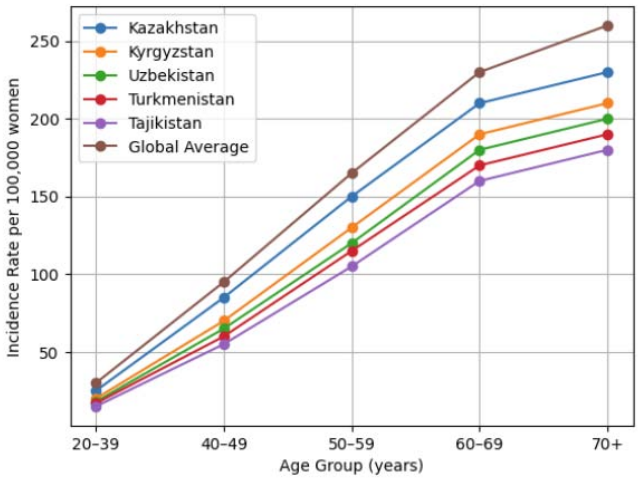

Figure 1: Age-Specific Breast Cancer Incidence: Central Asia Vs Global Pattern: The figure illustrates the age-specific incidence rates per 100,000 women in five Central Asian countries compared with the global average. Incidence rises steadily with age, with Kazakhstan consistently showing the highest rates and Tajikistan the lowest, while all countries remain below the global average across all age groups.

For women in Central Asia battling breast cancer, the journey is made even harder by cultural pressures that many outsiders might not fully understand [8]. Beyond the physical toll of the disease, these women carry the weight of societal judgment, traditional expectations around modesty, and deep-seated cultural beliefs that can make their struggle feel incredibly isolating [8]. Many of these women live with intense fears—not just about surviving cancer, but about what comes after. They worry about how their bodies will look after surgery, whether they will still feel like women, whether they can still have children, and perhaps most painfully, whether their families and communities will see them differently [9-12]. In societies where a woman's role in her family and her standing in the community mean everything, these concerns can be overwhelming. The good news is that when healthcare providers offer the right kind of emotional support—counselling that respects their culture, therapy that gives them a safe space to process their feelings, and practical tools to manage their stress—these women show remarkable improvement [13,14]. They cope better emotionally, stick with their treatment plans, and ultimately experience a better quality of life. When, one combines these healthcare system gaps with the cultural and emotional challenges women face, a troubling picture emerges: fewer cases of breast cancer are being reported in Central Asia, yet far too many women are dying from it [19]. The numbers don't add up because women simply aren't getting screened—and this is where psychological support becomes absolutely vital [20].

Consider this: if a woman is terrified of what a cancer diagnosis might mean for her life, if she's ashamed to seek help because of what others might think, if cultural modesty makes it difficult for her to see a doctor, or if she believes cancer is her fate—she won't get screened, no matter how available the service is [21]. This is where psycho-oncology—the bridge between mental health and cancer care—can make all the difference. By helping women work through these fears and beliefs, healthcare providers can encourage them to seek screening earlier,

recognise warning signs in their own bodies, make informed choices about their health, and actually trust the healthcare system enough to use it. This is especially crucial in places like Tajikistan (Figure **1**), where psychological support for cancer patients is virtually non-existent, and where deeply held cultural beliefs about cancer and mental health keep women suffering in silence, feeling hopeless and alone [22]. At the same time, there are no organized breast cancer screening programs, diagnostic tools are scarce, and there's almost no psychosocial support available. The result? Many women with breast cancer are never diagnosed, and the official statistics paint an incomplete and misleading picture of how serious the problem really is. The low numbers one sees do not mean breast cancer is rare in Tajikistan they mean it is hidden. This paper tackles that hidden crisis head-on. By examining both the emotional barriers women face and the practical obstacles of the healthcare system, it fills a crucial gap in understanding. It makes the case that integrating mental health support into cancer care in Tajikistan is not just a nice addition—it is essential. It will help women cope better and stick with their treatment, yes, but it will also help catch cancer earlier, improve how one tracks and understands the disease, and ultimately save lives across Central Asia. It is important to note what this paper is and is not. It does not present new research data or the results of a clinical trial. Instead, it draws on real clinical experiences from Tajikistan and combines them with proven psycho-oncology approaches from India and East Africa—places that have faced similar challenges—to propose a practical, culturally appropriate model that can actually work in a resource-limited setting like Tajikistan. The focus is on making a real-world impact: building local capacity, developing services, and creating something sustainable—not just testing theories.

Breast Cancer Burden in Central Asia: Incidence–Mortality Discordance and the Hidden Epidemiology

Breast cancer epidemiology in Central Asia reveals a paradox: relatively low reported incidence coexists with disproportionately high mortality, indicating substantial under-diagnosed and late-stage disease (Table **2** and Figure **2**). Age-specific incidence rises steadily after 40 years across all countries, mirroring global biological risk patterns, yet Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, and Tajikistan report rates consistently below global averages, reflecting systemic under-diagnosis due to limited screening, delayed help-seeking, and incomplete cancer registries [23].

Mortality patterns further reveal a hidden burden. Despite lower incidence, substantial deaths persist across the region (Table **2** and Figures **2-3**). Kazakhstan and Uzbekistan, with higher incidence, show comparatively lower mortality-to-incidence ratios (MIRs), suggesting better detection yet persistent late-stage presentation and treatment gaps [24]. Kyrgyzstan and Turkmenistan exhibit intermediate MIRs, while Tajikistan presents the lowest incidence and absolute mortality but the highest MIR, indicating that most diagnosed cases result in death, consistent with late detection, limited oncologic care, and weak follow-up [25]. The inverse relationship between incidence and MIR highlights that low reported incidence does not indicate better outcomes. In Tajikistan, sociocultural

Table 2: Age-Standardized Incidence Rate (ASIR), Age-Standardized Mortality Rate (ASMR), and Mortality-to-Incidence Ratio (M/I) for Breast Cancer Across Global, Asian, and Selected Central Asian Regions in 2022

Region/Country (2022)	Age-Standardized Incidence Rate (ASIR) per 100,000	Age-Standardized Mortality Rate (ASMR) per 100,000	Mortality-to-Incidence Ratio (M/I)
Global	46.8	12.65	~0.27
Asia	34.34	10.46	~0.32
Kazakhstan	36.94	12.31	~0.33
Kyrgyzstan	25.31	8.19	~0.32
Tajikistan	19.47	7.38	~0.38
Turkmenistan	31.13	15.57	~0.50
Uzbekistan	27.79	12.98	~0.47

ASIR and ASMR are expressed per 100,000 population and standardized to the world standard population. The mortality-to-incidence ratio (M/I) serves as a proxy indicator of case fatality and health system effectiveness, with higher values reflecting delayed diagnosis, limited access to timely treatment, and poorer survival outcomes. From a psycho-oncology perspective, elevated M/I ratios—particularly in Tajikistan, Turkmenistan, and Uzbekistan—also suggest the influence of psychosocial barriers such as stigma, cancer fatalism, low symptom awareness, fear of diagnosis, and reduced treatment adherence, which collectively contribute to late presentation and increased mortality despite lower reported incidence.

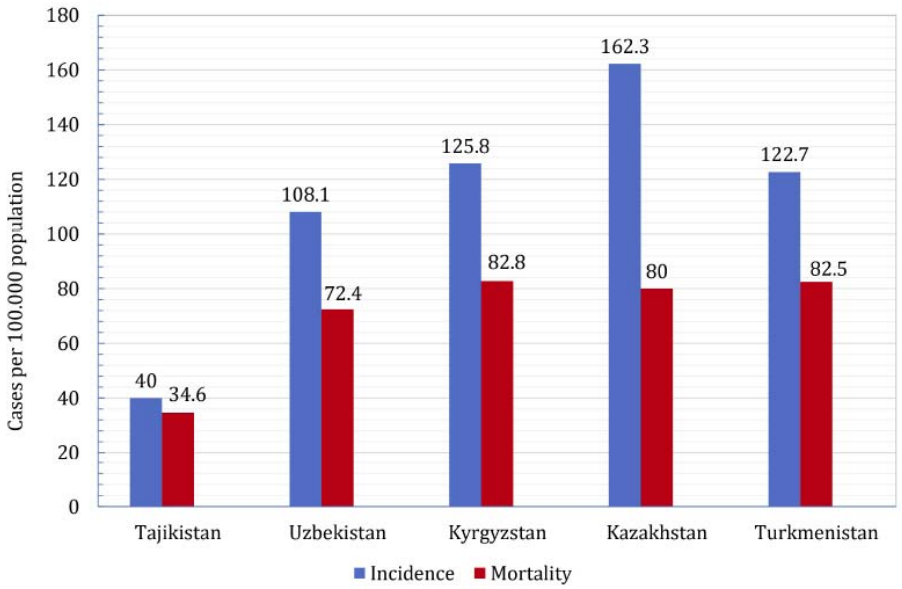

Figure 2: Burden of cancer in Central Asia (2010–2020): The figure illustrates age-standardized cancer incidence (blue bars) and mortality (red bars) rates per 100,000 populations across selected Central Asian countries—Tajikistan, Uzbekistan, Kyrgyzstan, Kazakhstan, and Turkmenistan. Considerable inter-country variation is observed, with lower reported incidence and mortality in Tajikistan compared to neighboring countries, likely reflecting under-diagnosis, limited screening infrastructure, and incomplete cancer registration rather than a true lower disease burden.

factors—stigma, fear, modesty norms, and care avoidance—likely contribute to delayed or non-institutionalized diagnosis, with deaths often misclassified or underreported.

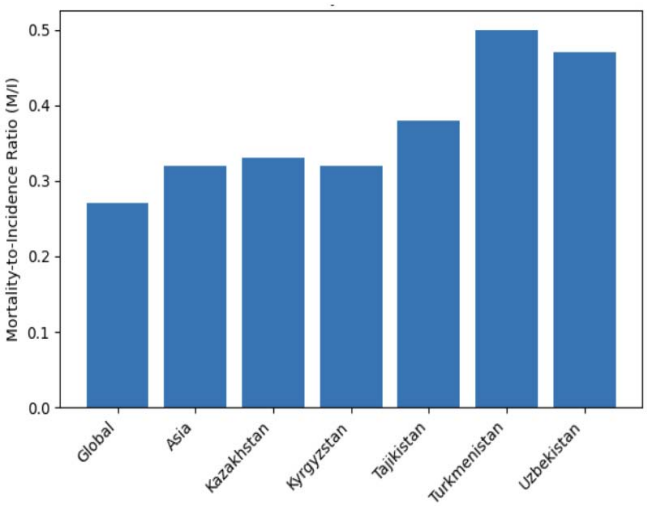

Figure 3: Mortality-to-Incidence Ratio (MIR) for Breast Cancer Across Central Asia: This figure illustrates the mortality-to-incidence ratio (MIR) for breast cancer across five Central Asian countries—Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, and Tajikistan—using age-standardized incidence and mortality estimates. The dashed horizontal line represents the global average MIR. Tajikistan demonstrates the highest MIR despite having the lowest reported incidence, indicating substantial under-diagnosis, delayed presentation, and limited access to timely cancer care. Across the region, MIR values exceed the global benchmark, underscoring poor survival outcomes and systemic gaps in early detection, treatment access, and supportive care.

Together, these patterns underscore a "hidden" breast cancer burden, emphasizing that incidence or mortality alone underestimates true disease impact. Addressing these gaps requires expanding diagnostic capacity and integrating psycho-oncology interventions to overcome fear, stigma, and delayed health-seeking, thereby improving early detection, adherence, and survival in culturally conservative, low-resource settings—an issue explored in the following section.

Psycho-Oncology as a Catalyst for Early Detection and Improved Outcomes in Tajikistan

The epidemiological pattern in Tajikistan—low reported breast cancer incidence, relatively low absolute mortality, yet the highest mortality-to-incidence ratio in the region—points to a predominantly psychosocially and structurally mediated disease burden [26-28]. As illustrated in Figure **1**, Tajikistan reports the lowest breast cancer incidence among Central Asian countries, while Figure **2** demonstrates that mortality remains substantial despite this apparently low incidence. Figure **3** further captures this contradiction by showing that Tajikistan has the highest mortality-to-incidence ratio, indicating poor survival outcomes relative to the number of diagnosed cases. Together, Figures **1**, **2**, and **3** depict a clear epidemiological paradox in which low reported incidence coexists with disproportionately poor outcomes, reflecting a "hidden" burden of disease driven by delayed diagnosis, under-reporting, and barriers to timely care.

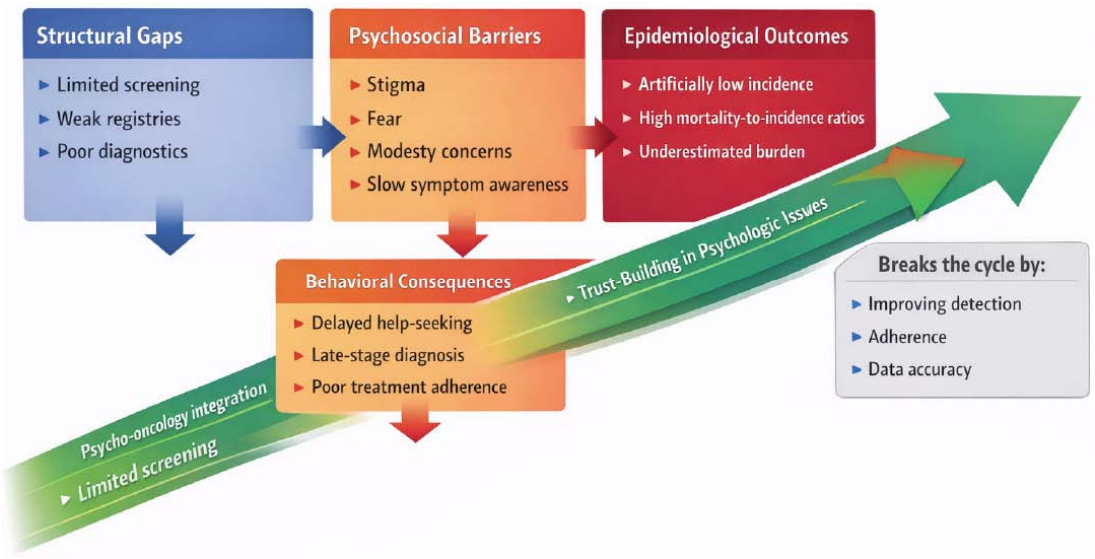

Figure 4: Hidden epidemiology of breast cancer in Central Asia: Structural gaps (limited screening, weak registries, poor diagnostics) and psychosocial barriers (stigma, fear, modesty concerns, low symptom awareness) contribute to delayed help-seeking, late-stage diagnosis, and poor treatment adherence. These factors result in artificially low incidence, high mortality-to-incidence ratios, and underestimated burden, particularly in Tajikistan. Psycho-oncology interventions (screening, counseling, education, trust-building) can break this cycle by improving detection, adherence, and data accuracy.

As conceptualized in Figure **4**, this paradox emerges from the interaction of system-level constraints—such as limited screening coverage, weak cancer registries, and restricted diagnostic access—with powerful psychosocial and cultural barriers, including stigma, fear of diagnosis, modesty concerns, and fatalistic beliefs. These factors collectively drive delayed help-seeking, screening avoidance, and late-stage presentation, sustaining poor outcomes despite apparently low incidence [29]. Figure **4** highlights psycho-oncology as a cross-cutting intervention capable of disrupting this cycle at multiple points along the cancer care continuum [30].

By addressing preclinical psychological thresholds through distress screening, culturally sensitive counselling, and psychoeducation, psycho-oncology facilitates earlier symptom recognition and greater willingness to engage with diagnostic services [31]. At the health-system interface, empathetic communication and trust-building improve adherence to referral and treatment pathways, reducing attrition in care [32,33]. In contexts where cancer is associated with social threat, bodily exposure, and perceived loss of femininity or marital stability, psycho-oncology directly mitigates fear-driven avoidance by reframing cancer as a treatable condition within culturally appropriate and socially acceptable frameworks [34].

Crucially, by enabling earlier and sustained engagement with formal healthcare services, psycho-oncology brings previously "hidden" cases into the health system, improving cancer registration accuracy and reducing artificially inflated mortality-to-incidence ratios [35,36]. In Tajikistan—where preventive care exposure is limited and sociocultural norms strongly shape health-seeking behaviour—psycho-oncology is therefore not adjunctive but foundational. Without addressing fear, stigma, and avoidance, investments in screening and treatment infrastructure alone are unlikely to translate into meaningful survival gains or improved epidemiological visibility.

Breaking the Cycle of Hidden Breast Cancer in Tajikistan: Adapting Indian and African Psycho-Oncology Models

The successful establishment of psycho-oncology in Tajikistan requires models that are both evidence-based and adaptable to low-resource, high-stigma settings. In this regard, the experiences of India and several African countries offer complementary and highly transferable frameworks, addressing both hospital-based care and community-level engagement—two critical gaps identified in Tajikistan's cancer care continuum.

The Indian Model: Structured Psycho-Oncology and Biomarker Correlates

India represents one of the most mature psycho-oncology ecosystems among low- and middle-income countries (LMICs) [37]. Major tertiary centres such as AIIMS, NIMHANS, Tata Memorial Centre, and regional cancer institutes have institutionalized psycho-oncology

as an integral component of oncology care through routine distress screening, individual and family-based counselling, psychoeducation, and survivorship support [38]. Importantly, psycho-oncology in India is not positioned as optional mental health care but as a clinical service embedded within oncology pathways, improving diagnosis acceptance, treatment adherence, and continuity of care [6,39].

Beyond strengthening clinical service delivery, these institutional frameworks have also created a foundation for integrating psychosocial care with translational and biomarker-driven cancer research, enabling psychological distress to be examined not only as a behavioural outcome but also as a biologically relevant factor within oncology.

Recent Indian research has further strengthened the biomedical legitimacy of psycho-oncology by demonstrating biological correlates of psychological distress, particularly cytokine dysregulation involving IL-6 and IL-17, which are associated with depression, fatigue, and poorer quality of life in cancer patients [6,39]. These findings are highly relevant for Tajikistan, as they provide a scientific rationale to integrate psycho-oncology alongside biomarker-driven oncology care rather than treating it as a purely psychosocial add-on.

Institutional frameworks such as the Indian Psycho-Oncology Society (IPOS) and initiatives like the Cancer Patients Aid Association (CPAA) psycho-oncology community provide structured models for workforce development, training, mentorship, and advocacy [40, 41). Drawing on evidence from recent Indian psycho-oncology research [6,39], this study emphasizes a stepped-care model of psychological intervention for cancer patients that integrates supportive counselling, cognitive–behavioural techniques, stress-management training, mindfulness-based practices, and family-inclusive counselling within routine oncology care. These interventions are shown to significantly reduce depression, anxiety, and cancer-related distress while enhancing coping capacity, treatment adherence, and overall quality of life.

A key contribution discussed is the feasibility of task-shifting, whereby trained nurses, social workers, and lay counsellors deliver structured psychological support under specialist supervision. For Tajikistan, this evidence supports a pragmatic implementation roadmap that embeds basic distress screening and culturally adapted psychoeducation into oncology services, gradually scaling toward multidisciplinary psycho-oncology units as workforce capacity and policy support expand. Through targeted collaborations, Tajikistan can leverage Indian expertise to establish its first psycho-oncology unit, develop training curricula for clinicians, nurses, and counsellors, and initiate pilot distress-screening and counselling programs within tertiary oncology centres. Such collaborations can also facilitate capacity building in psycho-oncology research, allowing Tajikistan to generate local evidence linking distress, immune dysregulation, and cancer outcomes.

The Ugandan Model: Community-Based and Palliative Integration of Psycho-Oncology

African psycho-oncology models provide critical insights for addressing the community-level and cultural barriers that dominate the Tajikistan context. Across Sub-Saharan Africa, where breast cancer is frequently diagnosed at advanced stages, psycho-oncology has evolved through pragmatic adaptation to limited resources, workforce shortages, and strong sociocultural influences [42].

A defining feature of the African model is the integration of psychosocial care into routine oncology and palliative services, ensuring that distress screening and referral occur at the point of cancer care rather than in separate mental health systems [43]. Task-sharing is central to this approach, with nurses, social workers, lay counselors, and community health workers trained to deliver psychoeducation, supportive counseling, problem-solving therapy, and basic cognitive-behavioral techniques [43, 44]. This strategy is particularly relevant for Tajikistan, where specialist mental health professionals are scarce and centralized.

African programs also emphasize culturally adapted interventions, incorporating family involvement, spiritual care, stigma reduction strategies, and the use of local idioms of distress [45-51]. Community-based peer support, survivor networks, and mHealth interventions have been shown to improve emotional well-being, coping capacity, and engagement with cancer care in countries such as Uganda, Nigeria, Kenya, and South Africa [52-56] These approaches directly address the fear, modesty concerns, and fatalistic beliefs that drive delayed presentation in Tajikistan.

Although large-scale randomized trials from Africa remain limited [57] the accumulating evidence demonstrates that psycho-oncology is feasible, acceptable, and beneficial even in highly constrained settings. Building on evidence from recent psycho-

Table 3: Figure-Linked Policy and Implementation Framework for Adapting Indian and African Psycho-Oncology Models to Tajikistan

Barrier Node in Figure 4 (Hidden Epidemiology Pathway)	Indian Model Strategy (Hospital-Based)	African Model Strategy (Community-Based)	Tajikistan Adaptation & Policy Action	Expected Impact on Figure 4 Cycle
Pre-diagnostic fear, stigma, and symptom denial(Figure 4: Psychosocial barriers)	Structured psychoeducation; family-inclusive counselling at first clinical contact	Community psychoeducation; stigma-reduction messaging using culturally resonant narratives	Introduce culturally adapted psychoeducation at first oncology contact; involve family members to normalize help-seeking	20–30% increase in symptom recognition and first-contact consultations; measurable reduction in delay from symptom onset to first medical visit
Screening avoidance and delayed presentation(Figure 4: Delayed help-seeking)	Routine distress screening embedded within oncology clinics; stepped-care counselling	Task-shared distress screening by nurses and community health workers	Implement distress screening at diagnosis and referral points; train non-specialists to deliver basic psychological support	15–25% increase in screening uptake; shift toward earlier-stage diagnosis in newly detected cases
Diagnostic disengagement and referral drop-out(Figure 4: Health-system attrition)	Empathetic communication; trust-building within oncology pathways	Patient navigation and peer support at community level	Embed counselling at referral and diagnosis disclosure points; pilot peer-navigator models	25–40% reduction in referral drop-out and diagnostic non-completion rates
Treatment non-adherence and abandonment(Figure 4: Poor treatment adherence)	Individual and family-based counselling; stress-management and CBT-informed interventions	Caregiver-centered counselling; community and spiritual support	Scale family-inclusive counselling and caregiver support to sustain adherence	20–30% improvement in treatment adherence and completion of prescribed therapy
Under-registration of cases and distorted MIR(Figure 4: Weak registries)	Integration of psycho-oncology into routine care pathways	Community linkage facilitating case visibility	Link psychosocial screening data with oncology records; improve patient retention	Improved cancer registry completeness by 20–30%; progressive reduction in inflated mortality-to-incidence ratio (MIR)
Limited survivorship and palliative support(Figure 4: Care-continuum gaps)	Survivorship counselling; long-term follow-up models	Palliative-integrated psycho-oncology; community support	Integrate psycho-oncology into survivorship and palliative services	Measurable improvement in quality-of-life scores; increased utilization of survivorship and palliative support services by 20–30%

This table operationalizes the conceptual pathway depicted in Figure **4** (Hidden Epidemiology of Breast Cancer in Tajikistan) by mapping key psychosocial and health-system barrier nodes to evidence-based psycho-oncology strategies derived from Indian (hospital-based) and African (community-based) models. For each barrier, contextually adapted policy and implementation actions for Tajikistan are proposed together with concrete, measurable impact indicators, including projected improvements in screening uptake, reductions in diagnostic drop-out and loss to follow-up, increases in treatment adherence, enhancement of cancer registry completeness, and improvements in survivorship and quality-of-life outcomes. The "Expected Impact" column now presents quantifiable programmatic benchmarks (e.g., percentage increases in screening uptake, percentage reductions in referral attrition, improvements in treatment completion, and progressive reductions in inflated mortality-to-incidence ratios) to guide future pilot studies, monitoring, and implementation research. These values are indicative rather than predictive and are intended to translate the hybrid psycho-oncology framework into actionable and evaluable targets. Collectively, the table demonstrates how integrating psycho-oncology into clinical, community, and policy domains can produce measurable system-level and patient-centered outcomes, thereby strengthening early detection, improving continuity of care, enhancing cancer registration accuracy, and increasing epidemiological visibility of breast cancer in Tajikistan.

oncology research conducted at the Uganda Cancer Institute and Mbarara Regional Referral Hospital, psychological well-being among cancer caregivers was assessed using standardized instruments—the NEO-Five Factor Inventory (NEO-FFI) to evaluate personality dimensions and the General Health Questionnaire (GHQ-28) to measure psychological distress. The study demonstrated that personality traits such as extroversion, neuroticism, openness, and introversion significantly shaped caregivers' psychological well-being, underscoring the need for individualized psychosocial support strategies. Elevated levels of anxiety and depressive symptoms among caregivers highlight the necessity of embedding routine psychosocial screening, structured counseling**,** stress-management interventions, and family-inclusive support models within oncology care [58]. This African model illustrates a feasible, low-resource methodology for caregiver-centered psycho-oncology and offers a transferable framework for Tajikistan to strengthen cancer care through culturally responsive psychological support systems. Importantly, African experiences underscore the role of psycho-oncology in improving treatment adherence, reducing stigma, supporting

families and caregivers, and strengthening palliative and survivorship care, all of which are currently underdeveloped in Tajikistan.

Toward a Hybrid Psycho-Oncology Model for Tajikistan: Translating Evidence into System-Level Action

Addressing Tajikistan's concealed burden of breast cancer requires a psycho-oncology framework that operates across clinical, community, and policy domains. As outlined in Figure **4**, delayed help-seeking, diagnostic attrition, treatment non-adherence, and under-registration of cases arise from the interaction of psychosocial barriers with structural health-system constraints. These interlinked challenges call for an integrated response rather than isolated interventions. Drawing on complementary strengths from Indian and African psycho-oncology models, Tajikistan can develop a hybrid framework capable of intervening across the cancer care continuum.

The Indian model contributes a structured, hospital-embedded approach in which routine distress screening, stepped psychological care, family-inclusive counselling, and survivorship support are integrated into oncology workflows. Importantly, evidence demonstrating biological correlates of psychological distress—particularly inflammatory dysregulation involving IL-6 and IL-17—provides a biomedical rationale for positioning psycho-oncology alongside diagnostic and therapeutic oncology rather than as an auxiliary mental health service [6,39]. This strengthens clinical and policy acceptance of psycho-oncology as a core component of cancer care in Tajikistan.

In parallel, African psycho-oncology models offer pragmatic strategies for addressing community-level barriers, including stigma, fatalism, modesty concerns, and limited specialist mental health capacity. Through task-sharing, culturally adapted counselling, peer navigation, caregiver-centered interventions, and integration with palliative care, these models demonstrate how psychosocial support can be delivered effectively in resource-constrained settings [58].

By integrating these approaches, Tajikistan's hybrid psycho-oncology model enables coordinated intervention across the psychosocial and structural drivers depicted in Figure **4**. As operationalized in Table **3**, hospital-based screening and counselling reduce diagnostic disengagement and treatment attrition, while community-embedded strategies enhance sustained engagement, improve cancer registration, and support earlier detection. Within this framework, psycho-oncology becomes a central mechanism for strengthening cancer outcomes and epidemiological visibility in Tajikistan.

DISCUSSION (POLICY INTEGRATION EMPHASIS)

The epidemiological patterns observed in Tajikistan—low reported incidence, low absolute mortality, yet the highest mortality-to-incidence ratio in Central Asia—underscore a substantial psychosocial and structural burden underlying breast cancer outcomes. This hidden burden is amplified by cultural stigma, modesty norms, fear of diagnosis, and low symptom awareness, all of which drive delayed help-seeking, diagnostic attrition, and treatment non-adherence. Addressing these challenges requires a multi-level strategy that integrates psycho-oncology across clinical, community, and policy domains. Drawing on hospital-based Indian models and community-driven African frameworks, Tajikistan can implement a hybrid approach targeting both health-system and psychosocial barriers (Figure **5**).

Policy Implications for Breast Cancer Control in Tajikistan

This analysis positions psycho-oncology as a policy-relevant intervention capable of correcting both clinical and epidemiological distortions in Tajikistan's breast cancer landscape. The following implications emerge directly from the conceptual framework and comparative evidence:

1. **Reframing psycho-oncology as essential care:** Psycho-oncology should be formally recognized within national cancer control policies as a core component of oncology services, rather than as ancillary mental health support. This aligns clinical care with evidence demonstrating the biological and behavioral impact of distress on treatment outcomes.

2. **Mandating distress screening at key care points:** Routine psychological distress screening at diagnosis, referral, and treatment initiation can reduce diagnostic disengagement, treatment abandonment, and loss to follow-up, bringing previously "hidden" cases into the healthcare system.

3. **Task-sharing to address workforce constraints:** Training nurses, social workers,

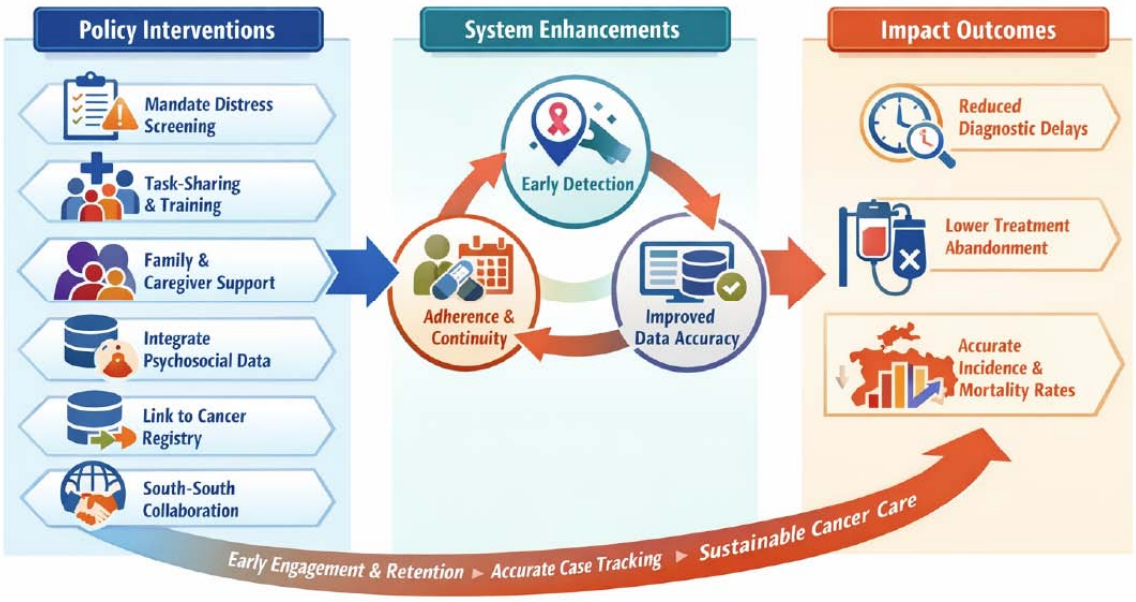

Figure 5: From Policy to Impact: Psycho-Oncology Integration for Breast Cancer Control in Tajikistan: This schematic illustrates how targeted policy interventions in psycho-oncology can translate into system enhancements and measurable impact outcomes in Tajikistan. Policy interventions (left column) include mandated distress screening, task-sharing and training of healthcare workers, family and caregiver support, integration of psychosocial data, linkage to cancer registries, and South–South collaboration. These interventions drive system enhancements (central panel) such as early detection, improved adherence and continuity of care, and enhanced data accuracy. The resulting impact outcomes (right column) are reduced diagnostic delays, lower treatment abandonment, and more accurate incidence and mortality reporting. The flow arrow at the bottom emphasizes the process of early engagement, accurate case tracking, and sustainable cancer care as the pathway from policy to tangible patient and population-level outcomes.

and lay counselors to deliver structured psychological interventions offers a scalable, low-cost strategy suited to Tajikistan's current human resource realities.

4. **Family- and caregiver-inclusive models:** Incorporating family-centered counseling and caregiver support can counter stigma, improve adherence, and sustain engagement across the care continuum, enhancing both psychosocial well-being and clinical outcomes.

5. **Linking psychosocial data to cancer registries:** Integrating psychosocial indicators into oncology records can improve case visibility, strengthen cancer registration, and reduce artificially inflated mortality-to-incidence ratios, providing more accurate epidemiological insights for policy planning.

6. **Leveraging South–South collaboration:** Strategic partnerships with Indian and African psycho-oncology programs can accelerate workforce development, implementation research, and policy translation, providing Tajikistan with a roadmap for sustainable and culturally appropriate interventions.

Incorporating these policy-oriented strategies ensures that psycho-oncology interventions are not merely ancillary services but foundational components of a broader cancer control strategy. By embedding psychosocial care into the continuum—from early detection to survivorship—Tajikistan can reduce mortality, improve adherence, and generate reliable epidemiological data, ultimately fostering a more resilient and equitable oncology infrastructure.

LIMITATIONS

This manuscript is a perspective and framework-based article rather than an empirical or interventional study. The proposed hybrid psycho-oncology model for Tajikistan is conceptual and grounded in comparative evidence from India and African settings, supported by published literature and contextual clinical insights. As such, the framework has not yet been evaluated through pilot implementation or outcome-based assessment within the Tajikistan healthcare system. Future research should include feasibility studies, pilot interventions, and implementation research to examine acceptability, effectiveness, and sustainability of psycho-oncology integration in clinical and community settings. Quantitative evaluation of outcomes such as screening uptake, diagnostic timeliness, treatment

adherence, psychological well-being, and cancer registry completeness will be essential to translate this conceptual model into measurable public health and clinical impact.

CONCLUSION

Breast cancer in Tajikistan carries a "hidden" burden: low reported incidence, high mortality-to-incidence ratios, and psychosocial barriers delaying diagnosis and treatment. Integrating psycho-oncology into care can bridge these gaps by promoting early symptom recognition, reducing stigma, and enhancing patient and family engagement. Leveraging Indian hospital-based and African community-centered models, a hybrid, culturally tailored approach—incorporating routine distress screening, counseling, and task-shared interventions—can improve adherence, psychosocial well-being, and survival. Embedding psycho-oncology also strengthens cancer registration and epidemiological accuracy, establishing it as an essential, sustainable pillar for effective breast cancer control in Central Asia.

CONFLICT OF INTEREST STATEMENT

The Authors declare that there is no relevant Conflict of Interest.

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