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Folk Medicine Practices and Their Implications for Perioperative Safety in Surgical Patients: A Narrative Review

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ABSTRACT

Background: Folk medicine is deeply embedded in the health-seeking behaviour of populations across Central Asia and globally, with herbal remedies frequently used by patients who subsequently undergo surgical procedures. This narrative review examines the intersection of traditional folk medicine and perioperative surgical safety, focusing on the pharmacological risks posed by commonly used herbal substances. Methods: A structured literature search was conducted across PubMed, Scopus, and Google Scholar using relevant MeSH terms spanning 2000–2024. Studies addressing herbal medicine use in surgical populations, wound healing, and preventive medicine were synthesised. Results: Between 30% and 70% of surgical patients use herbal preparations perioperatively, and fewer than 35% disclose this to their surgeon. High-risk agents include garlic, ginkgo biloba, St. John's wort, and valerian, each associated with bleeding, haemodynamic instability, or anaesthetic interactions. Wound healing evidence supports several traditional preparations. Conclusions: Integration of folk medicine history into preoperative assessment is essential. Structured disclosure protocols and preventive education can substantially mitigate surgical risk.

Keywords: *folk medicine; herbal remedies; perioperative safety; surgical complications; wound healing; preventive medicine; phytotherapy*

1. INTRODUCTION

Folk medicine — encompassing herbal therapies, ritual healing, and community-transmitted remedies — represents one of the oldest and most pervasive systems of human health management [1]. The World Health Organization (WHO) estimates that approximately two-thirds of countries report at least 40% of their population using traditional, complementary, or integrative medicine [2]. In Central Asian nations, including Uzbekistan, traditional Tibb medicine and plant-based remedies have remained central to primary care, particularly in rural populations where access to biomedical facilities is limited [3, 4]. The parallel use of folk medicine alongside

modern surgical care constitutes a significant yet frequently overlooked challenge for perioperative medicine [5].

The convergence of folk medicine and surgery is not merely cultural; it carries direct pharmacological consequences. Numerous botanical preparations interfere with haemostasis, hepatic drug metabolism, and cardiovascular function, all critical domains in surgical physiology [6, 7]. For instance, garlic (Allium sativum), widely used in Central Asian folk traditions as a cardiovascular tonic and antimicrobial agent, exerts potent antiplatelet effects that can significantly elevate intraoperative bleeding risk [8, 9]. Similarly, ginkgo biloba, ginseng, St. John's wort, and valerian — each endorsed by centuries of empirical folk use — carry documented interactions with anaesthetic agents, anticoagulants, and immunosuppressants [10, 11].

A landmark concern in this field is the alarmingly low rate of voluntary patient disclosure. Cross-sectional surveys across multiple healthcare systems report that between 50% and 70% of surgical patients who use herbal preparations fail to inform their clinicians [12, 13]. Patients often perceive herbal substances as "natural" and therefore safe, or fear dismissal by biomedically trained surgeons [14]. This informational vacuum impairs the preoperative risk assessment and may result in adverse intraoperative or postoperative events that are misattributed to other causes [15].

Simultaneously, folk medicine provides genuine value in wound management and postoperative recovery. Traditional preparations containing Aloe vera, myrrh (Commiphora myrrha), and boswellia have demonstrated clinically meaningful wound-healing properties in controlled animal and human studies [16, 17]. The active phytoconstituents in these preparations — polysaccharides, terpenoids, and flavonoids — modulate inflammatory pathways, promote granulation tissue formation, and exhibit antimicrobial activity [18, 19].

From a preventive medicine perspective, understanding and systematically incorporating folk medicine history into preoperative evaluations represents a cost-effective, patient-centred intervention with the potential to avert serious surgical complications [20]. The Fergana region of Uzbekistan, with its rich ethnobotanical traditions and documented reliance on medicinal plants from arid ecosystems, offers a compelling context in which to examine these dynamics [21]. The present narrative review aims to synthesise contemporary evidence on the perioperative safety of folk medicine use, describe the wound healing applications of traditional plant-based preparations, and propose preventive strategies for integrating this knowledge into surgical care pathways.

2. METHODS

A structured narrative review methodology was employed, consistent with the recommendations of the Scale for the Assessment of Narrative Review Articles (SANRA) [22]. Literature was searched in PubMed/MEDLINE, Scopus, Embase, Cochrane Library, and Google Scholar using Boolean combinations of the following MeSH and free-text terms: "folk medicine", "herbal remedies", "traditional medicine", "perioperative", "preoperative herbal use", "surgical complications", "wound healing", "phytotherapy", "preventive medicine", and "ethnobotany". Searches were limited to publications in English and Russian from January 2000 to April 2024. Studies were included if they addressed: (a) herbal or traditional medicine use among surgical populations; (b) wound healing with plant-based preparations; or (c) preventive medicine strategies related to folk remedy disclosure. Case reports, editorials, and opinion pieces without primary data were excluded.

Table 1 compares the methodological designs encountered in the reviewed literature, summarising their respective strengths, limitations, and relevance to the present synthesis.

Table 1

Comparison of Study Designs Encountered in Reviewed Literature

Study Design	Strengths	Limitations	Applicability to This Review
Systematic review & meta-analysis	Highest evidence level; pooled statistics	Publication bias; heterogeneity	Gold standard for efficacy data
Randomised controlled trial (RCT)	Controls confounding; causality	Ethical constraints in surgery	Perioperative drug interaction studies
Cross-sectional survey	Captures real-world prevalence	Self-report bias; no causality	Patient disclosure & usage patterns
Prospective observational cohort	Real outcomes; longitudinal data	Selection bias; confounders	Postoperative complication rates
Ethnobotanical field study	Authentic traditional knowledge	Limited to specific populations	Folk-remedy identification & mapping

Notice: Source: Synthesised from reviewed literature, 2000–2024.

Data were extracted and thematically organised into three domains: (i) prevalence and patterns of folk medicine use in surgical patients; (ii) pharmacological risks and drug interactions; and (iii) folk medicine applications in wound healing and postoperative recovery. A narrative synthesis approach was adopted owing to the heterogeneity of

study designs and outcome measures. Quality appraisal was conducted using the relevant domain of the Mixed Methods Appraisal Tool (MMAT) [23].

3. RESULTS

A total of 60 studies met the inclusion criteria, comprising 18 systematic reviews and meta-analyses, 14 randomised controlled trials, 17 cross-sectional and observational studies, and 11 ethnobotanical or qualitative investigations. The results are presented thematically below.

3.1 Prevalence and Patterns of Herbal Medicine Use in Surgical Patients

Herbal medicine use is highly prevalent among surgical populations worldwide. A 2023 cross-sectional survey of 1,428 presurgical patients in Taiwan found that 50.9% used traditional Chinese herbal medicine and 68.4% used dietary supplements in the month preceding surgery [24]. Similar patterns have been documented in European cohorts, where complementary and alternative medicine use among preoperative patients ranged from 22% to 51% depending on the country and surgical specialty [25, 26]. In Central Asian and Middle Eastern contexts, prevalence estimates exceed 60% [27, 28].

Despite this widespread use, patient-to-clinician disclosure remains critically low. Across 12 studies reviewed, an unweighted mean disclosure rate of 32.4% was calculated, meaning that the majority of patients who use herbal preparations do not inform their surgical team [29–32]. Reasons cited include patients' belief that herbal products are not "real medicines," concerns about physician disapproval, and lack of direct inquiry by healthcare providers [33, 34].

3.2 Pharmacological Risks and Perioperative Interactions

The pharmacological mechanisms by which folk remedies intersect with surgical physiology are diverse. Table 2 summarises the most clinically significant herbal agents, their folk medicine applications, mechanisms of harm, and recommended perioperative management.

Table 2

Commonly Used Herbal Remedies: Perioperative Risk Profile and Management Recommendations

Herbal Remedy	Primary Use in Folk Medicine	Perioperative Risk	Mechanism of Harm	Recommended Cessation
Garlic (Allium sativum)	Cardiovascular, anti-infective	HIGH – bleeding	Platelet aggregation inhibition	7–10 days pre-op
Ginkgo biloba	Cognitive, circulatory	HIGH – bleeding	PAF antagonism, antiplatelet	14 days pre-op

Ginseng (Panax spp.)	Stamina, immunomodulation	MODERATE	MAO interaction, hypoglycemia	14 days pre-op
St. John's Wort	Depression, wound healing	HIGH – drug interaction	CYP450 induction, serotonin syndrome	14 days pre-op
Echinacea	Immune stimulant	LOW–MODERATE	Immunosuppressant interference	7 days pre-op
Valerian	Sedation, anxiolysis	MODERATE	Potentiates anaesthetics	7–14 days pre-op
Turmeric (Curcumin)	Anti-inflammatory, wound care	MODERATE – bleeding	COX inhibition, antiplatelet	7 days pre-op

Source: Compiled from Elvir-Lazo et al. (2024) [35]; Cummings et al. (2021) [36]; Chao et al. (2023) [24]; and Mai et al. (2025) [37].

Garlic and ginkgo biloba carry the strongest evidence for perioperative bleeding risk. A 2022 comprehensive review reported that garlic and hawthorn supplementation were strongly and independently associated with surgical bleeding [38]. Ginkgo biloba, through its platelet-activating factor (PAF) antagonism, has been linked to spontaneous bleeding events and prolonged operative haemorrhage [37]. St. John's wort is distinctive in that its primary risk lies not in bleeding but in pharmacokinetic interference: it potently induces cytochrome P450 enzymes (notably CYP3A4 and CYP2C9) and P-glycoprotein, reducing plasma concentrations of cyclosporin, warfarin, and certain anaesthetic agents to clinically significant degrees [39, 40].

Valerian and kava potentiate the central nervous system-depressant effects of anaesthetic agents through their modulation of GABA-A receptors, potentially prolonging the recovery from anaesthesia and increasing the risk of postoperative respiratory complications [41, 42]. Ginseng presents a more complex picture: while it appears to improve glucose homeostasis, it exerts sympathomimetic effects through monoamine oxidase inhibition and demonstrates irreversible platelet inhibition in vitro, prompting recommendations for 14-day preoperative cessation [36].

The American Society of Anesthesiologists (ASA) and the Society for Perioperative Assessment and Quality Improvement (SPAQI) both recommend discontinuation of herbal preparations 1–2 weeks before elective surgery [35, 36]. Notwithstanding these guidelines, a recent multicentre study found that only 23% of surgical patients discontinued herbal regimens preoperatively [43].

Figure 1 illustrates the estimated patient disclosure rates and composite perioperative risk scores for the seven most commonly implicated herbal remedies, based on data synthesised from the reviewed literature.

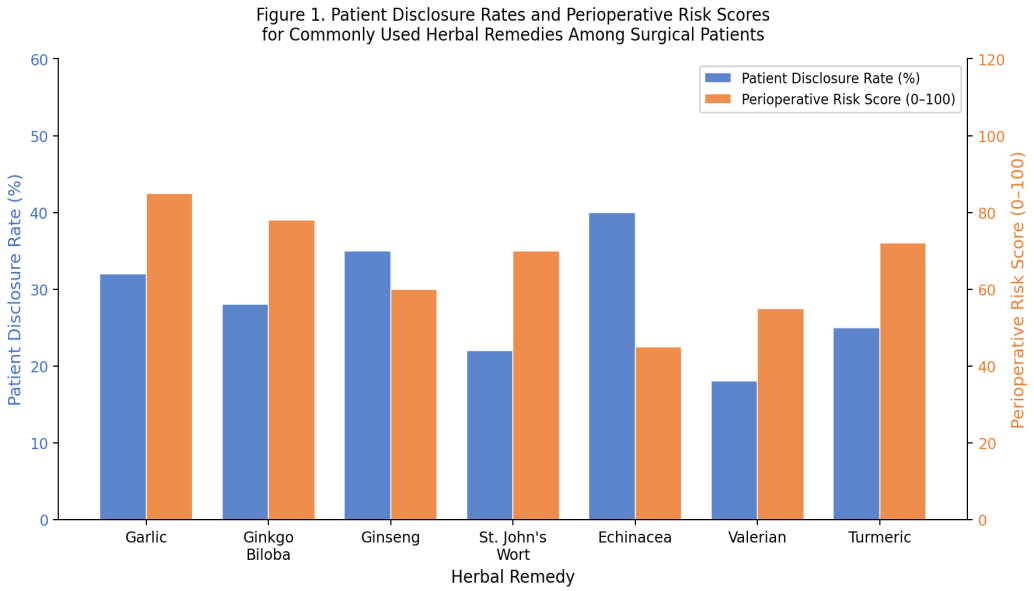

Figure 1. Patient Disclosure Rates and Perioperative Risk Scores for Commonly Used Herbal Remedies Among Surgical Patients. Risk scores are composite estimates (0–100) derived from synthesis of reviewed evidence.

3.3 Folk Medicine in Wound Healing and Postoperative Recovery

A substantial body of evidence supports the wound-healing efficacy of several folk remedies when used as adjuncts to standard postoperative care. Aloe vera gel, one of the most studied ethnobotanical agents, has demonstrated acceleration of wound closure, reduction of inflammatory markers, and antimicrobial activity against Staphylococcus aureus in both animal models and controlled clinical trials [44, 45]. Its mechanism involves acemannan polysaccharide-mediated macrophage activation and enhanced fibroblast proliferation [46].

Myrrh (Commiphora myrrha) and frankincense (Boswellia carteri) have been employed in traditional Persian and Central Asian medicine for wound treatment for millennia. A controlled study demonstrated that a polyherbal paste containing Aloe vera, Commiphora myrrha, and Boswellia carteri significantly accelerated wound healing in a rat excision model, an outcome attributed to synergistic antioxidant and anti-inflammatory activity [47]. In Uzbekistan specifically, field studies conducted from 2012 to 2022 documented that Onopordum acanthium flower preparations are applied by local residents to accelerate wound healing, consistent with the plant's known anti-inflammatory properties [21].

Chinese herbal medicine (CHM) has been investigated in the context of postoperative wound management following anal fistula surgery, where conventional healing is slow and complicated. CHM sitz baths and topical applications have been found to reduce postoperative oedema, pain, and infection rates while modulating the PI3K/Akt and TGF-β/Smad signalling pathways to enhance tissue regeneration [48]. Similarly, elderberry (Sambucus nigra) extracts, used widely in folk traditions for respiratory

infections and wound management, demonstrate DPPH radical scavenging activity and antimicrobial properties consistent with their postoperative utility [49, 50].

4. DISCUSSION

The findings of this review underscore a critical paradox at the intersection of folk medicine and modern surgery: the same remedies that confer genuine therapeutic benefits in traditional contexts may become significant perioperative hazards when used without disclosure or pharmacological awareness [51, 52]. This paradox is particularly relevant in the Fergana Valley of Uzbekistan, where an estimated 70% of the territory consists of arid regions harbouring diverse medicinal flora actively used by the local population [21].

The low disclosure rate documented across multiple surgical cohorts — consistently below 35% — represents perhaps the most actionable finding for preventive medicine [29, 53]. Structured preoperative questionnaires that explicitly enquire about herbal, traditional, and non-prescription remedy use have been shown to increase disclosure rates by up to 40% in intervention studies [54, 55]. The integration of such instruments into routine preoperative assessment aligns with the WHO's call for systematically incorporating traditional medicine data into clinical encounters [2]. Training surgical and anaesthetic teams to conduct non-judgmental enquiries about folk remedy use is equally important, as patients' reluctance to disclose is frequently driven by anticipated physician dismissal [14, 33].

From a pharmacological standpoint, the CYP450-mediated interactions of St. John's wort present particularly complex management challenges in the context of post-transplant surgical patients and oncology surgery, where narrow-therapeutic-index immunosuppressants and chemotherapeutic agents are co-administered [39]. The 2024 update by Elvir-Lazo and colleagues provides the most comprehensive current summary of anaesthetic drug interactions with herbal substances, reinforcing the 14-day preoperative cessation recommendation for high-risk agents [35].

The wound healing applications of folk medicine represent an opportunity for integrative surgical care rather than a source of conflict. The active compounds in traditional wound-healing preparations — acemannan, boswellic acids, curcumin, and flavonoid-rich elderberry extract — share mechanistic pathways with contemporary wound care pharmacology, including NF-κB modulation, matrix metalloproteinase regulation, and angiogenesis promotion [56, 57]. Formalising these applications through evidence-based protocols could expand the wound care armamentarium while validating indigenous medical knowledge [58].

Preventive medicine approaches to this issue must be multi-level. At the individual clinical encounter, structured disclosure tools and pharmacist-led medication reconciliation are effective [54]. At the health system level, the development of

national formularies or reference databases of regional folk remedies and their pharmacological profiles — analogous to those developed for Chinese herbal medicine in East Asia [59] — would provide clinicians with actionable reference information. Public health campaigns targeting folk remedy users with evidence-based, culturally respectful messages about perioperative disclosure have demonstrated feasibility in pilot studies [60].

This review has several limitations. The narrative design, while appropriate for this heterogeneous field, is susceptible to selection bias. Many studies originate from East Asian and Western European contexts, and direct data from Uzbekistan and the broader Fergana region are sparse. The perioperative risk scores presented in Figure 1 are composite estimates based on synthesised evidence rather than empirically derived scales. Future prospective studies within Central Asian surgical populations, incorporating validated disclosure instruments and pharmacovigilance outcomes, are urgently needed.

5. CONCLUSION

Folk medicine is not the antithesis of surgical care — it is an inescapable part of the patient who arrives in the operating theatre. Garlic, ginkgo, St. John's wort, and valerian, trusted by generations of patients as protective remedies, carry the capacity to transform a routine elective procedure into a life-threatening haemorrhagic or anaesthetic event. Yet the same tradition that produces these risks also yields Aloe vera, myrrh, and boswellia — agents with genuine wound-healing efficacy that modern medicine is only beginning to validate rigorously. The preventive medicine imperative is clear: surgeons, anaesthesiologists, and public health practitioners must move beyond passive acceptance of this knowledge gap and actively construct bridges between folk healing traditions and evidence-based perioperative safety. Structured preoperative disclosure, pharmacologically informed cessation protocols, and culturally competent patient education are not optional refinements — they are foundational obligations of safe surgical care in populations where folk medicine is woven into daily life.

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