



Public Perception of Traditional Bone Setters and Medical Risk Among Indonesian Respondents

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ABSTRACT

Traditional bone setters (TBS) continue to be a highly utilized source of care for musculoskeletal disorders in Indonesia. However, there is an absence of systematic evidence on public perceptions of their effectiveness and safety, and how such perceptions shape treatment decisions. The study aimed to determine the prevalence and distribution of TBS use by sociodemographic characteristics and to explore public perceptions of TBS effectiveness and safety and the impact of these perceptions on treatment decisions. The research design used was cross-sectional. The sampling technique used was purposive sampling with 107 respondents through an online questionnaire using social media. Data were analyzed with descriptive statistics, chi-square tests and Mann-Whitney U tests. The lifetime use rate of TBS was 76.6%, and 42.1% were still active users at the time of the study. The most common reasons for choosing TBS were family or peer influence (57.9%), cost-effectiveness (43.9%) and cultural beliefs (35.5%). More than half of respondents believed TBS to be as or more effective than formal medical care but knowledge of devastating complications such as gangrene and compartment syndrome was critically low. Bivariate analysis showed that TBS use was not significantly correlated with any of the sociodemographic variables studied including gender, religion, education, occupation, ethnicity, income, and age ($p > 0.05$). These findings suggest that TBS use in Indonesia is a culturally normalized, cross-cutting behavior, sustained by social networks, positive perceptions of effectiveness, and limited awareness of severe clinical risks. There is a need for culturally appropriate community-based interventions and targeted public education on TBS-related complications.

Keyword: traditional bone setters; musculoskeletal disorders; health-seeking behavior; cultural beliefs; medical risk.

ABSTRAK

Praktik pengobatan tulang tradisional (TBS) masih menjadi sumber pelayanan kesehatan yang banyak digunakan untuk gangguan muskuloskeletal di Indonesia. Namun, bukti sistematis mengenai persepsi masyarakat terhadap efektivitas dan keamanan praktik ini, serta bagaimana persepsi tersebut mempengaruhi keputusan pengobatan, masih sangat terbatas. Penelitian ini bertujuan untuk menentukan prevalensi dan distribusi penggunaan TBS berdasarkan karakteristik sosiodemografi, serta mengeksplorasi persepsi masyarakat terhadap efektivitas dan keamanan TBS dan dampaknya terhadap keputusan pengobatan. Desain penelitian yang digunakan adalah cross-sectional. Teknik pengambilan sampel yang digunakan adalah purposive sampling dengan 107 responden melalui kuesioner daring menggunakan media sosial. Data dianalisis menggunakan statistik deskriptif, uji chi-square, dan uji Mann-Whitney U.

Tingkat penggunaan TBS seumur hidup tercatat sebesar 76,6%, dan 42,1% responden masih aktif menggunakan TBS pada saat penelitian berlangsung. Alasan terbanyak dalam memilih TBS adalah pengaruh keluarga atau teman sebaya (57,9%), efisiensi biaya (43,9%), dan keyakinan budaya (35,5%). Lebih dari separuh responden menganggap TBS sama efektifnya atau bahkan lebih efektif dibandingkan layanan medis formal, namun pengetahuan tentang komplikasi



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serius seperti gangren dan sindrom kompartemen masih sangat rendah. Analisis bivariat menunjukkan bahwa penggunaan TBS tidak berkorelasi secara signifikan dengan variabel sosiodemografi yang diteliti, termasuk jenis kelamin, agama, pendidikan, pekerjaan, etnis, pendapatan, dan usia ($p > 0,05$). Temuan ini mengindikasikan bahwa penggunaan TBS di Indonesia merupakan perilaku yang telah ternormalisasi secara budaya dan bersifat lintas kelompok, yang dipertahankan oleh jaringan sosial, persepsi positif terhadap efektivitas, dan rendahnya kesadaran akan resiko klinis yang serius. Diperlukan intervensi berbasis komunitas yang sensitif terhadap budaya serta edukasi publik yang ditargetkan mengenai komplikasi terkait TBS.

Kata kunci: pengobatan patah tulang tradisional; gangguan muskuloskeletal; perilaku mencari pelayanan kesehatan; keyakinan budaya; risiko medis.

1. Introduction

Fractures are a prevalent and increasing problem for healthcare systems worldwide, affecting millions of people of all ages and representing an important cause of long-term disability and economic cost (Cauley, 2021). However, the geographical distance and cost barriers for receiving formal orthopedic care in low- and middle-income countries (LMICs) usually lead to a high number of fracture patients seeking care from Traditional Bone Setters (TBS) as their primary source of services (Abang et al., 2016; Garikapati et al., 2023). This is well exemplified by the Indonesian context, where TBS practices can be incorporated into community health systems, locally called *sangkal putung*, *ba'urut* or *topu bara* (Binnerts et al., 2025), given its large archipelagic setting, high social stratification and profound cultural diversity. These continued practices could be attributed to lack of access to formal services or deep-rooted socio-cultural beliefs and practices that influence health-seeking behaviors in communities (Binnerts et al., 2025).

TBS use is not restricted to one area in Indonesia. In North Sumatra, 72.8% of patients with fractures reported TBS as their choice of therapy (Angkat & Sitorus, 2025) and in North Minahasa 55.2% reported the use of traditional bone-setting healers, with hospital treatment as the third option (Umboh et al., 2021). Similar phenomena have been reported in Gorontalo, South Kalimantan, and Java, where TBS-seeking behavior is perceived as more of a national than a local phenomenon (Hasanah et al., 2020; Hidayat & Adam, 2023). The lifetime TBS use rate in some communities is over 70%, showing the deep-rootedness of this practice in Indonesian society.

This treatment-seeking behavior is due to a complex combination of interconnected causes. The perception of TBS practitioners being more affordable and flexible in payment arrangements compared to formal healthcare facilities highlights economic accessibility (Kusbari & Sitompul, 2023; Mbada et al., 2020). This preference is made worse by the physical distance from hospitals, especially in rural and remote areas (Maulidya & Miskawi, 2024; Munir et al., 2025). The use of TBS is supported by family and peer recommendation networks across socioeconomic tiers (Hasanah et al., 2020). In many communities, traditional and biomedical care are not seen as competing systems but as complementary ones, with people drawing on both depending on the nature and severity of their condition (Zank & Hanazaki, 2017). In West Sumatra, the cultural aspect of TBS practices is framed as aspects of Islamic values (Yulianti & Zuska, 2022). In Maluku, *Topu Bara* is ethnic identity (Wabula et al., 2022), and in Makassar, *ba'urut* and *manangkir* are embedded in communal life (Hailemicheal et al., 2026).

Fracture care with TBS is deeply rooted in the culture, widespread, and carries with it several important and well-known health risks. Garikapati et al. (2023) conducted a systematic review of 15 publications with 1389 participants and showed that 1470 adverse effects developed after TBS treatment and access to formal care was significantly delayed. This indicates a substantial impact of TBS on this population. Another study reported the following complication rates in a developing country setting: 20.8% malunion, 20.1% amputation, 16.2% gangrene, 13.3% non-union and 1.3% death (Musthofa et al., 2018). In a previous study on clinical data from Dr. Hasan Sadikin General Hospital Bandung, malunion was also found to be among the most frequent clinical complications related to treatment with TBS in patients (Warman et al., 2018), with 36% of emergency referrals from TBS treatment requiring amputation (Hantonius et al., 2018). Additional evidence of irreversible effects of delayed official treatment comes from case reports from Indonesia showing permanent loss of limbs following TBS treatment (Winanto & Tirta, 2024). Collectively, these observations enhance the understanding that TBS as the primary management method is a significant risk factor for severe morbidity and avoidable mortality.

Despite increasing evidence on the risks and use of TBS, there are still important gaps in the current literature. Most studies to date have been essentially descriptive, single site or regionally restricted in scope, which may have implications for the ability to generalise beyond the samples studied (Hantonius et al., 2018; Warman et al., 2018). It is not known if the use of TBS is differentially distributed among sociodemographic sub-groups (e.g., gender, age, education, income, occupation, religion, ethnicity) or if TBS use is larger than such sub-groups and is a general societal behavior. Naturally, public perceptions of the effectiveness and safety of TBS versus orthodox orthopedic care have been limited, despite their obvious impact on the treatment decision process. Furthermore, stakeholder and policy-level views on TBS regulation and its integration into formal health systems have seldom been translated into actionable evidence-based guidelines (Binnerts et al., 2025). Therefore, this study intends to address the following research questions specifically:

1. What is the prevalence of TBS use among respondents, and how does it vary across sociodemographic characteristics such as gender, age, education, income, occupation, religion, and ethnicity?
2. How do respondents perceive the effectiveness and safety of TBS relative to formal medical care, and how do these perceptions influence their treatment decisions?

2. Method

2.1. Research Design

This study employs a quantitative approach with a cross-sectional study design (Creswell & Creswell, 2018). Its aim is to explore public perceptions of traditional treatments for bone fractures, focusing on cultural parameters influencing management decisions and public awareness of medical risks associated with such treatment. Cross-sectional designs are particularly appropriate for examining the prevalence of health-related behaviors and attitudes at a single point in time across diverse population groups (Polit & Beck, 2017). The study was conducted across several regions in Indonesia.

2.2. Participants

The study sample consisted of 107 respondents from various areas across Indonesia. Participants were members of the general public aged 15 years and above who reported either having experienced musculoskeletal disorders themselves, or having family members or neighbors with similar experiences, and were willing to participate voluntarily. A purposive sampling technique was used for recruitment. Data collection was conducted via Google Forms, distributed through social media platforms including WhatsApp, TikTok, Instagram, and Twitter, as well as through community networks across Indonesia. All participants were informed about the nature and purpose of the study prior to completing the questionnaire, and informed consent was obtained through the Google Forms survey. Participant identities were kept strictly confidential throughout all stages of data collection.

2.3. Instrument

A structured questionnaire adapted from Mbada et al. (2020) was used as the data collection instrument. The original questionnaire was translated into Indonesian and culturally adapted to reflect the local context of traditional bone-setting practices in Indonesia, including terminology and expressions familiar to Indonesian respondents. The questionnaire covered five main domains: (1) sociodemographic characteristics, including age, gender, religion, educational status, employment status, ethnicity, and monthly income; (2) prevalence and patterns of musculoskeletal disorders experienced, including affected body parts; (3) patterns of traditional healer service use, including history of use, type of treatment received, reasons for choosing traditional services, perceived effectiveness compared to medical treatment, and level of satisfaction; (4) respondents' knowledge of potential complications arising from traditional healer treatment, such as gangrene, malunion, non-union, paralysis, compartment syndrome, and wound infection; and (5) respondents' beliefs and attitudes toward traditional healer treatment compared to conventional medical treatment. Items within the Attitude and Beliefs domain were evaluated using a three-point scale consisting of Agree, Not Sure, and Disagree. The instrument underwent expert review prior to use in data collection to ensure content validity and cultural appropriateness.

Prior to data collection, the instrument was reviewed by two expert judges to assess content validity and cultural appropriateness. Based on their feedback, minor adjustments were made to ensure that the wording and context of each item were suitable for Indonesian respondents. Validity and reliability testing were subsequently conducted using data from all 107 respondents. Validity was assessed using Pearson's correlation coefficient for the 12 attitude items against the total attitude score. All 12 items were found to be valid at the

0.01 and 0.05 significance levels ($p < 0.05$), with correlation coefficients ranging from 0.305 to 0.718, indicating good consistency across items in measuring attitudes toward traditional medicine practices. Reliability was assessed using Cronbach's Alpha, which yielded a value of 0.845 exceeding the minimum threshold of 0.69 and falling within the high reliability category according to Guilford's classification. These psychometric properties are consistent with the original instrument used by Mbada et al. (2020), supporting its suitability for use in this study.

2.4. Data Analysis

Data analysis was conducted in two stages using SPSS software. In the first stage, descriptive analysis was performed to summarize the sociodemographic characteristics of respondents and to report responses from each domain in terms of frequencies and percentages. In the second stage, bivariate analysis was conducted to examine whether significant associations existed between sociodemographic variables and TBS utilization. Chi-square tests were applied for categorical variables, while the Mann-Whitney U test was used for continuous variables, specifically age and total attitude score, given that normal distribution could not be assumed. The significance level was set at $p < 0.05$ for all analyses.

3. Result and Discussion

3.1. Prevalence and Sociodemographic Distribution of Traditional Bone Setter Use

To understand who the respondents are and whether sociodemographic background plays any role in TBS use, it is first necessary to describe the characteristics of the sample. The demographic composition of a study sample is important not only for contextualizing the findings, but also for assessing whether the results may be generalizable to broader populations. In this study, respondents were drawn from various regions across Indonesia, representing a diverse range of backgrounds in terms of gender, religion, education, occupation, ethnicity, and income. Table 1 presents the full distribution of respondents across these demographic variables.

Table 1. Frequency Distribution of Respondents' Demographic Characteristics (N = 107)

Variables	Category	Frequency (n)	Percentages (%)
Gender	Male	14	13.1
	Female	93	86.9
Religion	Islamic	89	83.2
	Christian	9	8.4
	Catholic	7	6.5
	Buddhist	2	1.9
	Others	0	0.0
Education	No schooling	1	0.9
	Elementary school	1	0.9
	Middle school	1	0.9
	High school/vocational school	30	28.0
	Diploma	6	5.6
	Bachelor's degree	69	64.5
Occupational status	Civil servant / private employee	9	8.4
	Self-employed	10	9.3
	Farmer / Fisherman	1	0.9
	Laborer	1	0.9
	Student / Collage Students	79	73.8
	Others	2	1.9
Ethnicity	Java	65	60.7
	Sunda	22	20.6
	Batak	4	3.7
	Minangkabau	2	1.9

Variables	Category	Frequency (n)	Percentages (%)
Monthly income	Betawi	3	2.8
	Bugis	2	1.9
	Dayak	1	0.9
	Chinese	5	4.7
	Others	3	2.8
	< Rp 1.000.000	39	36.4
	Rp 1.000.000 – Rp 3.000.000	41	38.3
	Rp 3.000.000 – Rp 5.000.000	16	15.0
	> Rp 5.000.000	11	10.3

The sample was predominantly female (86.9%), Muslim (83.2%), held a bachelor's degree (64.5%), and identified as students (73.8%). Javanese ethnicity dominated at 60.7%, followed by Sundanese at 20.6%, reflecting geographic concentration from West and Central Java. Most respondents earned below Rp 3,000,000 per month (74.7%), placing them in the low-to-middle income category. At first glance, this might seem like a sample that would lean toward formal healthcare education, relatively young, and mostly urban-adjacent. Yet as the findings below will show, education and income did not meaningfully predict TBS use, which itself says something important about the nature of this practice in Indonesian society (Hasanah et al., 2020; Taqiya et al., 2025).

Beyond categorical demographics, age is another variable that warrants separate attention, as it is often assumed to correlate with health-seeking preferences and openness to traditional versus formal care. Younger populations are sometimes presumed to gravitate more toward modern healthcare, while older individuals are expected to hold stronger ties to traditional practices, an assumption that this study will put to the test. Understanding the age profile of the sample also helps contextualize the broader findings on TBS use. Table 2 presents the descriptive statistics for respondents' age.

Table 2. Descriptive Statistics of Respondents' Age

N	Minimum	Maximum	Mean	Std. Deviation
107	15	40	22.40	3.691

The mean age was 22.40 years (SD = 3.691), ranging from 15 to 40 years, consistent with the student-dominated profile of the sample. What is worth reflecting on here is that this is not an older, less-educated population the group typically assumed to rely on traditional healers. These are young people, many of them university students, and yet TBS engagement remains high among them. This challenges a common assumption in public health that modernization and education naturally erode traditional health-seeking behavior. Research by Hidayat and Adam (2023) suggests that in Java, TBS use among younger generations persists precisely because health beliefs are transmitted within families from early childhood, long before formal health education shapes individual decision-making.

Having established the demographic profile of the sample, the analysis now turns to the central question of how prevalent TBS use actually is among respondents. Prevalence data is essential for understanding the scale of the phenomenon and for situating this study's findings within the broader literature on traditional bone-setting in Indonesia and other LMIC contexts. Both lifetime use and current active use are examined here, alongside respondents' personal and family history of musculoskeletal disorders, which may serve as a contextual factor shaping their familiarity with and exposure to TBS. Table 3 presents the frequency distribution of musculoskeletal disorder history and TBS utilization patterns.

Table 3. Frequency Distribution of History of Musculoskeletal Disorders and Use of TBS

Variables	Yes n (%)	No n (%)
Personal MSK history	84 (78.5)	23 (21.5)
Family MSK history	90 (84.1)	17 (15.9)
Have ever used TBS	82 (76.6)	25 (23.4)
Still using TBS	45 (42.1)	62 (57.9)

The lifetime TBS use rate was 76.6%, with 42.1% still actively using TBS at the time of the study. These numbers are hard to ignore. For comparison, Mbada et al. (2020) reported a lifetime TBS use rate of only 19.3% among rural Nigerian respondents, less than a quarter of what was found here. This gap likely reflects the distinctly strong cultural institutionalization of TBS in Indonesia, where practices like *sangkal putung* and *ba'urut* are not simply informal alternatives but community-embedded traditions with their own legitimacy and social infrastructure. Regionally within Indonesia, comparable rates have been documented: 72.8% in North Sumatra (Angkat & Sitorus, 2025) and 55.2% in North Minahasa (Umboh et al., 2021), confirming that the figure here is not an outlier but part of a consistent national pattern. The high family MSK history rate (84.1%) is particularly meaningful; it suggests that most respondents did not encounter TBS in isolation, but grew up in households where traditional bone-setting was already normalized as a response to injury. This intergenerational exposure likely functions as a form of tacit endorsement, making TBS the default first choice rather than a deliberate alternative. Rachman et al. (2020) documented a similar dynamic in South Kalimantan, where family experience with *Ba'urut* strongly shaped individual willingness to seek traditional treatment.

Having described the prevalence of TBS use, its patterns, and the perceptions surrounding it, the analysis now turns to the question of whether any of these patterns differ significantly across sociodemographic subgroups. This is the answer about how common TBS use is, but whether certain groups are more or less likely to engage in it than others. Chi-square and Mann-Whitney U tests were applied to examine associations between sociodemographic variables and TBS utilization, and the results are presented in Table 4.

Table 4. Bivariate Analysis Results (n = 107)

Variables	Test	Statistical Value	p-value	Description
Gander	Chi-Square	$\chi^2 = 0.244$	0.621	Not significant
Religion	Chi-Square	$\chi^2 = 1.562$	0.668	Not significant
Education	Chi-Square	$\chi^2 = 5.444$	0.245	Not significant
Occupational status	Chi-Square	$\chi^2 = 8.155$	0.227	Not significant
Ethnicity	Chi-Square	$\chi^2 = 9.774$	0.281	Not significant
Monthly income	Chi-Square	$\chi^2 = 0.002$	0.968	Not significant
Personal MSK history	Chi-Square	$\chi^2 = 2.133$	0.144	Not significant
Family MSK history	Chi-Square	$\chi^2 = 3.581$	0.058	Not significant
Age	Mann-Whitney	U = 881,000; Z = -1,089	0.276	Not significant
Total Attitude Score	Mann-Whitney	U = 902,000; Z = -0,908	0.364	Not significant

None of the sociodemographic variables tested showed a significant association with TBS use. This is, in many ways, the most theoretically interesting finding of the study. A common intuition that often shapes public health program design is that traditional medicine use is driven by low education, poverty, or rural residence. If that were true, we would expect significant differences across education levels, income brackets, and occupational categories. We found none. This is not an isolated result. Ossai et al. (2024) in Nigeria similarly found that willingness to consult TBS was not significantly predicted by education level, and Mbada et al. (2020) reported consistently positive attitudes toward TBS regardless of respondents' socioeconomic background. What these converging findings suggest is that TBS use is better understood as a culturally normalized behavior than as a consequence of limited access or low health literacy. Hidayat and Adam (2023) describe this dynamic well in the Javanese context: when a practice is embedded in community life as a legitimate and trusted form of care, it becomes largely insulated from the sociodemographic variables that typically predict healthcare behavior. A university-educated Muslim woman from a middle-income Javanese family is just as likely to seek TBS as a low-income laborer from the same community because both have likely grown up in households where TBS was the default response to bone injury. This directly answers RQ1: TBS use in this sample is not differentially distributed across sociodemographic subgroups. Instead, it functions as a cross-cutting cultural behavior that is consistent regardless of gender, age, education, income, occupation, religion, or ethnicity suggesting that interventions must address cultural and social dimensions rather than targeting specific demographic groups.

3.2. Perceptions of TBS Effectiveness and Safety Among Respondents

Beyond prevalence, a deeper understanding of TBS use requires examining how it is actually practiced, what complaints it is sought for, what types of treatment are received, and critically, how effective respondents

perceive it to be relative to formal medical care. These patterns are directly relevant to RQ2, as perceived effectiveness and satisfaction are among the strongest behavioral drivers of continued and repeated TBS use. Table 5 presents the patterns of TBS utilization alongside data on perceived effectiveness, treatment types received, and satisfaction levels.

Table 5. Patterns of TBS Use, Perceived Effectiveness, Satisfaction, and Reasons for Utilization

Variables	Category	Values n (%)
Musculoskeletal Complaints	Neck	26 (24.3)
	Shoulder	30 (28.0)
	Upper trunk	29 (27.1)
	Elbow	12 (11.2)
	Wrist/arm	33 (30.8)
	Lower trunk	21 (19.6)
	Thumbs	15 (14.0)
	Hips / thighs	31 (29.0)
	Knees	31 (29.0)
	Others	12 (11.2)
Pattern of TBS use	TBS only	44 (41.1)
	TBS with medicine	40 (37.4)
	Medicine only	23 (21.5)
The Effectiveness	Less effective	20 (18.7)
	Equally effective	56 (52.3)
	More effective	13 (12.1)
	Not sure	18 (16.8)
Types of Treatment Received	Massage	94 (87.9)
	Splinting	7 (6.5)
	Traction	21 (19.6)
	Others	8 (7.5)
Satisfaction	Satisfied	46 (43.0)
	Unsatisfied	4 (3.7)
	Indifferent	57 (53.3)

The most frequent complaints were wrist/arm injuries (30.8%), followed by hips/thighs and knees (29.0% each). These are predominantly the extremity-based injuries that TBS practitioners are most commonly approached to treat, consistent with Garikapati et al. (2023), who found that limb fractures account for the majority of cases referred to TBS across LMICs. What stands out more, however, is the perceived effectiveness data: 52.3% of respondents viewed TBS as equally effective as hospital treatment, and 12.1% considered it more effective meaning nearly two-thirds of respondents perceive TBS as at least on par with formal orthopedic care. This is not simply a matter of people making do with what is available. It reflects a genuine belief in the efficacy of TBS, and that belief has direct consequences for treatment-seeking behavior. When people perceive a treatment as effective, they return to it, they recommend it, and they are unlikely to seek alternatives unless forced to by worsening symptoms. This helps explain the dominant role of massage (87.9%) as the treatment modality received a practice that feels immediately therapeutic, even if it carries documented risks of soft tissue damage and delayed healing when applied to fractures without proper diagnosis (Onyemaechi et al., 2021; Warman et al., 2018). The satisfaction data reinforces this: 43.0% were satisfied, and only 3.7% were dissatisfied. The large indifferent group (53.3%) is also telling it suggests that many respondents have normalized TBS outcomes to the point where they do not evaluate it through a framework of satisfaction versus dissatisfaction at all.

Perceived effectiveness alone, however, does not fully explain why people choose TBS over formal care. Behind every healthcare decision lies a set of motivations social, economic, cultural, and logistical that together

shape what a person does when they or a family member is injured. Identifying these motivations is critical for understanding not just who uses TBS, but why they continue to do so even when formal alternatives are available. Figure 1 presents the distribution of reasons cited by respondents for choosing TBS treatment.

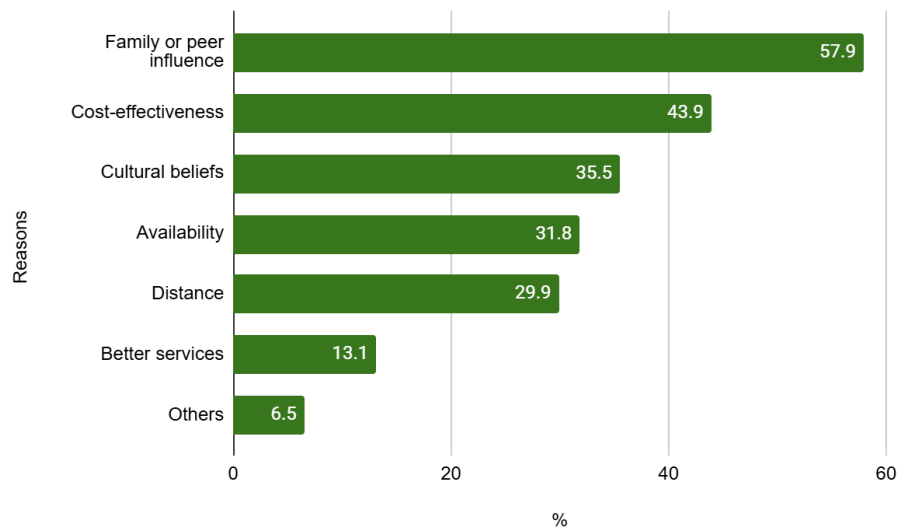


Figure 1. Reasons for Choosing Traditional Bone Setter (TBS) Treatment

Family or peer influence emerged as the most dominant reason at 57.9%, followed by cost-effectiveness (43.9%) and cultural beliefs (35.5%). This hierarchy is important because it tells us that TBS use is primarily a socially mediated behavior, not an individually reasoned one. People do not typically seek TBS after weighing clinical evidence they go because someone they trust went, and it seemed to work. This is consistent with what Hasanah et al. (2020) found in Gorontalo, where social recommendation networks were the primary conduit through which TBS use was transmitted across generations. The prominence of cost as the second factor reflects a structural barrier that should not be underestimated. With 74.7% of respondents earning below Rp 3,000,000 per month, the out-of-pocket costs of formal orthopedic consultation, X-ray, and possible hospitalization represent a genuine financial burden, whereas TBS practitioners are widely known to offer flexible, affordable, or even deferred payment arrangements (Kusbari & Sitompul, 2023; Munir et al., 2025). Cultural beliefs at 35.5% further underscores that for many respondents, TBS is not a compromise it is a legitimate expression of identity and community belonging, particularly in regions where traditional healing is tied to ethnic or religious identity (Wabula et al., 2022; Yulianti & Zuska, 2022). Taken together, these motivational factors suggest that TBS use operates through a logic that is simultaneously social, economic, and cultural and that interventions targeting only one of these dimensions are unlikely to be sufficient.

Closely related to the question of why people choose TBS is the question of what they actually know about its risks. Knowledge of complications is a key factor in healthcare decision-making or at least, it should be. In practice, the relationship between risk knowledge and behavior change is rarely straightforward, particularly when a practice is deeply embedded in social and cultural norms. Examining what respondents know and do not know about TBS-related complications helps illuminate one of the more important gaps that public health interventions need to address. Figure 2 presents respondents' knowledge of specific complications associated with TBS use.

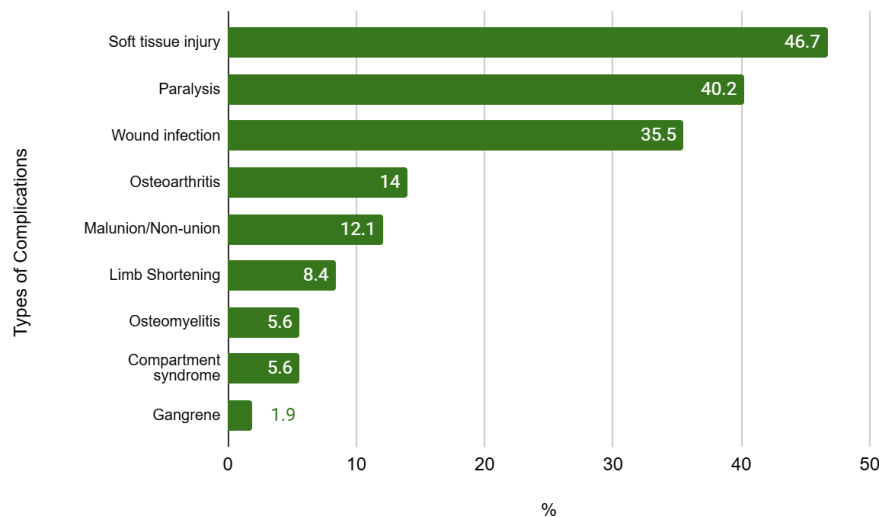


Figure 2. Respondents' Knowledge of Complications Associated with TBS Treatment

While 82.2% of respondents were aware of at least one complication, knowledge was heavily skewed toward surface-level injuries: soft tissue damage (46.7%), paralysis (40.2%), and wound infection (35.5%). Knowledge of gangrene (1.9%), compartment syndrome (5.6%), and osteomyelitis (5.6%) was alarmingly low. This is not just a trivial knowledge gap, it is clinically significant. Compartment syndrome, for instance, can develop within hours of improper splinting or tight bandaging, and if left untreated, leads to irreversible muscle necrosis and eventual amputation. Gangrene following TBS treatment has been reported in up to 16.2% of cases in some developing country settings (Musthofa et al., 2018), and Hantonius et al. (2018) found that 36% of emergency referrals to Dr. Hasan Sadikin General Hospital Bandung following TBS treatment required amputation. The respondents in this study, many of whom are educated university students, are largely unaware of these specific outcomes. This suggests a disconnect between general awareness that TBS "can have risks" and meaningful understanding of what those risks actually look like in practice. From a public health standpoint, this distinction matters enormously; vague awareness does not change behavior, but vivid, specific knowledge of irreversible consequences might. These findings collectively and directly answer RQ2: respondents perceive TBS as broadly comparable or superior to formal medical care in terms of effectiveness, and this perception reinforced by social influence, cultural familiarity, cost considerations, and critically limited awareness of severe complications like gangrene and compartment syndrome plays a central role in driving and sustaining their decision to seek TBS treatment over formal orthopedic services.

4. Conclusion

The utilization of TBS is still deeply and widely embedded among Indonesian society with a lifetime utilization of 76.6% and 42.1% of the respondents still actively seeking TBS treatment at the time of the study. What makes this finding particularly striking is that it cuts uniformly across all sociodemographic categories examined. Neither gender, age, religion, education, occupation, ethnicity nor monthly income was significantly associated with TBS use. This pattern indicates that TBS is accepted as a culturally normal practice across all levels of Indonesian society regardless of background, rather than a last resort for those who have limited access or low health literacy.

And this normalization is enhanced by how respondents perceive TBS. Most respondents felt it was as good as if not better than formal medical care. Satisfaction levels were generally positive. The choice to seek TBS was mainly dependent on family and peer influence, cost and cultural familiarity rather than any conscious clinical assessment. At the same time, awareness of severe complications such as gangrene and compartment syndrome remained alarmingly low, meaning that for most respondents the choice to use TBS is made without a full understanding of its worst possible consequences.

The findings suggest a clear need for interventions that extend beyond demographic targeting. Responding to TBS in Indonesia demands a community-centered, culturally-sensitive approach that collaborates rather than against social networks and belief systems that support it. Incorporating conventional and formal health services as well as targeted public education on severe TBS associated complications could be a pragmatic and viable way forward.

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6. Conflict of Interest

The author declares no conflict of interest related to this research or its publication.

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