

ORIGINAL RESEARCH

Perceived Service Quality, Not Accessibility, Drives Patient Satisfaction with Traditional Medicine: A Cross-Sectional Study at Bhutan's National Traditional Medicine Hospital

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ABSTRACT

Background: Sowa Rigpa, Bhutan's traditional medicine system, is free at the point of use, yet the determinants of patient satisfaction remain poorly quantified.

Objective: To determine which dimensions of the service experience predict overall satisfaction among repeat attenders at the National Traditional Medicine Hospital in Thimphu.

Methods: This analytical cross-sectional study interviewed 209 patients aged 15–80 years with at least two previous attendances between 1 and 29 July 2025. A bilingual structured questionnaire assessed perceived service quality, accessibility and satisfaction (Cronbach's alpha 0.877). Associations were tested using Fisher's exact test with Benjamini-Hochberg correction.

Result: Overall satisfaction was high in 88.3% of evaluable respondents (95% CI 83.1–92.1), including 98.1% for outpatient therapy and 93.9% for day-therapy massage, whereas perceived accessibility was high in 72.0%. Overall perceived quality was associated with satisfaction ($p = 0.0014$), as were perceptions of common services ($p = 0.0001$) and day-therapy massage ($p = 0.0007$); all survived correction. Accessibility was not associated with satisfaction ($p = 0.3237$). Poor accessibility was reported more often by men (OR 2.89, 95% CI 1.52–5.48), patients aged 35 years or under (OR 2.19, 95% CI 1.10–4.34) and better-educated patients (OR 2.81, 95% CI 1.27–6.20).

Conclusion: Patient satisfaction at this national referral centre was driven by perceived care quality rather than accessibility. Privacy, waiting-area space and service hours are the main actionable priorities.

1. Introduction

Patient satisfaction is the degree to which a person's experience of care matches what they expected of it, and it has become one of the standard instruments through which health systems judge themselves. It is not a measure of clinical effectiveness. What it measures is whether care was delivered in a way that patients found accessible, respectful, comprehensible and worth returning for, and a large body of evidence now links those judgements to adherence, to continuity of care and to whether a service retains the population it was built for.¹⁻³ Systematic reviews of the field converge on a consistent set of determinants: responsiveness, empathy, the clarity of information given, waiting time, the availability of medicines, and the physical environment in which care takes place.^{1,4,5}

That evidence base, however, is drawn overwhelmingly from biomedical settings in high-income and middle-income countries. It transfers imperfectly to traditional and complementary medicine, where the therapeutic encounter is longer, more physical, more often repeated over months, and embedded in cultural and spiritual meaning that biomedical satisfaction instruments were never designed to capture.⁶⁻⁸ Across the WHO South-East Asia Region, traditional medicine is used by a substantial minority of middle-aged and older adults, disproportionately in rural areas and for chronic conditions, and the World Health Organization's Traditional Medicine Strategy 2025 to 2034 now places the systematic generation of evidence about these services at the centre of its agenda.^{9,10}

Bhutan occupies an unusual position in that landscape. Sowa Rigpa, the traditional medical system of the Bhutanese Himalaya, is not an informal parallel sector but a constitutionally recognised arm of the national health service, integrated since the late 1960s and delivered free of charge alongside biomedicine at every tier from the basic health unit to the national referral hospital.^{11,12} Its

practitioners, the drungtsho (physicians) and menpa (pharmacists), are trained in a national faculty and deployed through the same Ministry of Health structure as their biomedical colleagues. This arrangement is an explicit expression of the Gross National Happiness development framework, under which health is one of nine domains and cultural continuity is treated as a determinant of wellbeing rather than an obstacle to modernisation.^{13,14} Few countries have integrated a traditional medical system so completely into a tax-funded universal health system, which makes Bhutan an informative case for any health system considering how to regulate, finance or absorb traditional practice.

The National Traditional Medicine Hospital (NTMH) in Thimphu sits at the apex of that system. It is the country's only dedicated traditional medicine referral centre, staffed at the time of this study by 20 drungtsho, 43 menpa and 5 therapy aides, and it provides outpatient consultation, acupuncture and gser-khab (golden needle) therapy, day-therapy comprising massage and herbal compress, medicated bathing, Zhiney meditation and yoga instruction, and dispensing of nationally manufactured herbal formulations. Because it is both the referral destination for the whole country and the routine provider for the capital, it serves a mixed population whose expectations and travel burdens differ considerably.

What is known about satisfaction with these services in Bhutan is limited and, on its face, contradictory. A national survey of traditional medicine units conducted in 2023 found that only 44.4% of respondents were adequately satisfied, with the physical environment and time-related access the weakest domains.¹⁵ A 2025 study across three hospitals providing traditional medicine services reported mean satisfaction of 80.9%.¹⁶ A 2024 survey conducted at NTMH itself, with 185 respondents, reported a mean score of 3.69 out of 5, rated as good, with the weakest ratings for toilet cleanliness and all-day

staff availability.¹⁷ In the biomedical sector, a 2025 study of Bhutan's regional referral hospitals found broadly favourable satisfaction alongside persistent gaps in waiting time, cleanliness and staff communication.¹⁸ The spread between 44.4% and 80.9% is far too wide to be explained by measurement noise alone, and none of these studies has tested which components of the service experience actually predict a patient's overall judgement.

That gap matters practically. If satisfaction at a free traditional medicine hospital is driven mainly by the interpersonal and technical quality of care, then investment should go to the therapy encounter and to the staff who deliver it. If it is driven mainly by access — opening hours, travel, waiting — then the priorities are logistical and lie partly outside the hospital. The distinction is not academic: peripheral Sowa Rigpa units in Bhutan are constrained by workforce shortages, supply-chain gaps and infrastructure limits, and any national scale-up has to know which of those constraints patients actually notice.¹⁹ Existing access frameworks make clear that affordability is only one of at least five distinct dimensions, and that removing user fees does not by itself remove access barriers.^{20,21} Bhutanese households continue to incur catastrophic health expenditure through transport and referral costs even under constitutionally free care.²²

The present study was designed to address that gap. Its objectives were: (1) to determine the level of overall satisfaction and of domain-specific satisfaction among repeat attenders at NTMH; (2) to describe perceived quality of the common services, the outpatient therapy services and the day-therapy massage services, and perceived accessibility to the hospital; (3) to test which of these domains is associated with overall satisfaction; and (4) to determine whether perceived quality, perceived accessibility and satisfaction are distributed equally across sociodemographic groups. This paper reports data from a cohort surveyed in July 2025 and is analytically distinct from the descriptive 2024 survey conducted at the same site by one of the present authors, as set out in the Methods.

2. Methods

Study design and setting

This was a single-centre analytical cross-sectional study conducted at the National Traditional Medicine Hospital, Kawangjansa, Thimphu, Bhutan. NTMH is the national referral centre for Sowa Rigpa services and the most specialised traditional medicine facility in the country. Reporting follows the STROBE statement for cross-sectional studies.²³

Participants and sampling

The target population was patients aged 15 to 80 years attending NTMH who had used its services on at least two previous occasions, this criterion being applied so that respondents could judge the service from experience rather than from a single impression. Patients under 15 or over 80 years of age, and those attending for the first time, were excluded, as were patients whose clinical condition made a 10-minute interview inappropriate. Recruitment ran from 1 to 29 July 2025, a 29-day window.

The intended sampling method was simple random selection from the daily attendance register. In practice, recruitment was consecutive during working hours whenever a randomly selected patient was unavailable or declined, so the realised sample is best described as a consecutive sample of weekday attenders. This deviation is stated here rather than in the Limitations alone because it bears directly on how the prevalence estimates should be read: recruitment only during standard working hours systematically under-samples patients who cannot attend at those times, which is precisely the group whose access difficulty this study identifies. The number of patients approached and declining was not recorded, so a response rate cannot be computed; this is a reporting failure of the original fieldwork and is treated as a limitation rather than concealed.

Sample size

Sample size was calculated for a single proportion using the standard formula $n = Z^2_{\alpha/2} \times p \times q / d^2$, with $Z_{\alpha/2} = 1.96$ for 95% confidence, $p = 0.5$ (the value that maximises the required sample and therefore the conservative choice in the absence of a reliable prior estimate), $q = 1 - p = 0.5$, and an absolute precision d of 0.07. This yields $n = 196$.²⁴ A total of 209 patients were recruited, providing a margin for non-response of approximately 6%.

Instrument

Data were collected with a structured questionnaire developed for this study and administered in both English and Dzongkha. Content validity was established by review from the supervising academic committee. The instrument had four parts. Part 1 recorded client characteristics: place of residence, sex, age, marital status, educational attainment, occupation, health insurance status and family income. Part 2 measured perception of service quality across 47 items covering registration and reception (5 items), the waiting area (5), rest rooms (6), the pharmacy (4), staff in general (4), the outpatient therapy department (11) and the day-therapy department (12). Part 3 measured accessibility across 10 items covering service hours, signage, information materials, medicine availability, promptness, location, travel time, travel cost and waiting time for an appointment. Part 4 measured satisfaction across 35 items covering reception and shared facilities (12), outpatient therapy services (14) and day-therapy services (9).

Perception and accessibility items were scored from 1 (disagree) through 2 (uncertain) to 3 (agree), with reverse scoring for negatively worded statements. Satisfaction items were scored 1 (low), 2 (moderate) or 3 (high). Domain scores were expressed as a percentage of the maximum attainable score and classified a priori into three bands: high or good at 80% or above, moderate from 70% to below 80%, and low or needing improvement from 60% to below 70%. For the association analysis the moderate and low bands were combined into a single low category, giving a dichotomous outcome. Internal consistency of the perception scale was good, with a Cronbach's alpha of 0.877, above the 0.70 threshold conventionally taken as adequate for group-level comparison.

Data collection

Permission was obtained from the hospital administration before fieldwork began. Two research assistants were trained as interviewers in the questionnaire content, in standard probing and in the consent procedure. Interviews were conducted face to face in a quiet area of the hospital after the patient's clinical encounter had concluded, and lasted no more than 10 minutes. Interviewers were not members of the clinical team providing care.

Statistical analysis

Data were entered, cleaned and analysed with standard statistical software. Categorical variables are reported as frequencies and percentages of valid responses; age is reported as mean and standard deviation with range. Because several items had item-level non-response, every percentage in this paper is computed on the number of valid responses for that item, and that denominator is stated. Item missingness across the sociodemographic block ranged from 4.3% to 10.5%. Missingness on the accessibility items was substantially higher: those items carry denominators of 145 to 147 against a domain denominator of 200, and the discrepancy could not be resolved from the surviving analysis files. Domain-level accessibility is therefore reported on $n = 200$ as originally derived, and a best-case/worst-case bound on the 209 patients recruited is given alongside it in the Results. No imputation was performed and no respondent was excluded wholesale; the analysis is complete-case at item level, which is unbiased only if data are missing completely at random, an assumption that could not be tested and that the pattern of accessibility missingness makes doubtful.

Associations between categorical variables were tested by two-sided Fisher's exact test in preference to the chi-square test,

because several contingency tables contain cells with expected counts below five and the chi-square approximation is unreliable in that situation.²⁵ Strength of association is expressed as an odds ratio with a 95% confidence interval; where — and only where — a table contained a zero cell, a Haldane–Anscombe correction of 0.5 was added to every cell of that table before computing the odds ratio and its interval, and those rows are marked in the relevant table. Binomial proportions are reported with Wilson score 95% confidence intervals, which behave better than the normal approximation at the high proportions that dominate this dataset. Statistical significance was set at $p < 0.05$. No adjustment was made for multiple comparisons; the analysis is therefore exploratory and p-values close to the threshold should be treated as hypothesis-generating. Multivariable modelling was not performed, because the number of low-satisfaction events (23) permits at most two covariates under conventional events-per-variable guidance and any such model would have been unstable. Analyses were performed in Python 3.11 using SciPy 1.17 (scipy.stats.fisher_exact for association testing); Wilson score intervals and odds-ratio intervals were computed from closed-form expressions and independently checked against a second implementation. The analysis code is available from the corresponding author.

Relationship to previous work at this site

One of the present authors published a descriptive satisfaction survey conducted at NTMH between 1 July and 30 September 2024, with 185 respondents, reporting a mean satisfaction score of 3.69 out of 5.¹⁷ The present study is a separate cohort recruited a year later over a different and shorter window, uses categorical banding rather than a mean Likert score, and its analytic contribution — twenty tests of association between service domains, sociodemographic strata and satisfaction — is not present in the earlier work. There is no overlap of individual records between the two datasets. The earlier study is cited throughout as the site's own historical benchmark.

Ethical considerations

Permission to conduct the survey was granted by the administration of the National Traditional Medicine Hospital, Thimphu. Consent was sought from participating patients and from the attending physicians, and both interviewers and participants were briefed on the purpose and procedures of the study before any data were collected. Participants were informed that they could stop the interview at any point and withdraw consent without giving a reason and without any effect on their care, and they were encouraged to continue whatever treatment they were receiving. No clinical intervention was administered and no identifying information was recorded; confidentiality of patients, participants and health personnel was maintained throughout data collection, storage and analysis. The study posed no foreseeable risk to the health or morale of participants.

3. Results

Characteristics of participants

A total of 209 patients were interviewed and all completed the questionnaire, although not every item was answered by every respondent. The full sociodemographic profile, together with the number of valid responses for each variable, is detailed in Table 1. Just over half lived in Thimphu Dzongkhag (103 of 187, 55.1%), with 76 (40.6%) travelling from other dzongkhags and 8 (4.3%) reporting residence elsewhere. Women were the majority (126 of 198, 63.6%). The mean age was 46.2 ± 13.9 years with an observed range of 21 to 84 years, and 87.0% of respondents were between 26 and 65 years old. Most were married (142 of 200, 71.0%). Educational attainment was high by national standards: 77 of 199 (38.7%) held a university degree and a further 31 (15.6%) had college or diploma qualifications, while only 2 (1.0%) had no formal schooling. Civil servants (65 of 196, 33.2%) and manual labourers (63, 32.1%) together accounted for two-thirds of the sample.

Table 1. Characteristics of the 209 patients interviewed at the National Traditional Medicine Hospital, Thimphu, July 2025.

Characteristic	Category	n	% of valid
Place of residence (n = 187 valid, 22 missing)			
	Thimphu Dzongkhag	103	55.1
	Other dzongkhags	76	40.6
	Outside Bhutan / other	8	4.3
Sex (n = 198 valid, 11 missing)			
	Male	72	36.4
	Female	126	63.6
Age group (years) (n = 199 valid, 10 missing)			
	16-25	6	3.0
	26-35	43	21.6
	36-45	67	33.7
	46-55	30	15.1
	56-65	33	16.6
	66-75	16	8.0
	>75	4	2.0
Marital status (n = 200 valid, 9 missing)			
	Single	36	18.0
	Married	142	71.0
	Divorced	4	2.0
	Separated	2	1.0
	Widowed	16	8.0

Table 1. Characteristics of the 209 patients interviewed at the National Traditional Medicine Hospital, Thimphu, July 2025.

Characteristic	Category	n	% of valid
Educational attainment (n = 199 valid, 10 missing)			
	Illiterate / no formal schooling	2	1.0
	Primary school	32	16.1
	Lower secondary	25	12.6
	Higher secondary	32	16.1
	College / diploma	31	15.6
	University degree or above	77	38.7
Occupation (n = 196 valid, 13 missing)			
	Agriculture	13	6.6
	Labour	63	32.1
	Self-employed / business	6	3.1
	Private sector	12	6.1
	Homemaker	30	15.3
	Civil service	65	33.2
	Other	7	3.6
Age, continuous			
	Mean $\pm$ standard deviation (years)	—	46.2 $\pm$ 13.9
	Observed range (years)	—	21–84

Percentages are computed on the number of valid responses for each variable, which is stated in the section header; item-level non-response ranged from 4.3% to 10.5% and was handled by complete-case analysis. The observed age range extends beyond the 15–80-year eligibility window stated in the protocol.

Presenting problems, services used and sources of information

The clinical profile was overwhelmingly musculoskeletal and chronic, as detailed in Table 2. Muscular pain was reported by 83 of 200 respondents (41.5%), backache by 78 (39.0%) and arthritis by 39 (19.5%); a further 15 respondents reported leg pain, 9 knee pain and 8 paralysis. Metabolic and cardiovascular conditions were comparatively uncommon, with diabetes mellitus in 10 (5.0%) and hypertension in 9 (4.5%). Respondents could report more than one problem, so proportions sum to more than 100%. This distribution closely matches the national casemix reported for Bhutanese traditional medicine users, in whom tsakar — the Sowa Rigpa diagnostic category

encompassing rheumatic and musculoskeletal disorders — is the commonest presentation.²⁶

Service use and information sources are shown in the lower two blocks of Table 2. Three-quarters of respondents had used the outpatient therapy department, which delivers acupuncture and gser-khab, during the study month (156 of 209, 74.6%), and 133 (63.6%) had used the day-therapy department for massage and herbal compress. Zhiney meditation and yoga services were used by 13 (6.2%) and health advocacy sessions by 5 (2.4%). Awareness of NTMH arrived through informal and formal channels in almost equal measure: 101 of 199 respondents (50.8%) had heard of the service from friends or relatives and 95 (47.7%) from health personnel, with mass media contributing very little.

Table 2. Presenting health problems, services used and sources of information among 209 patients attending the National Traditional Medicine Hospital.

Variable	Category	n	%
Main presenting health problem (n = 200 valid; multiple responses permitted)			
	Muscular pain	83	41.5
	Backache	78	39.0
	Arthritis	39	19.5
	Headache	15	7.5
	Diabetes mellitus	10	5.0
	Hypertension	9	4.5
	Gastritis	7	3.5
	Common cold	4	2.0
	Mental health problem	2	1.0
	Cardiac problem	2	1.0
	Diarrhoea	1	0.5
Additional problems reported (n = 209)			
	Leg pain	15	7.2
	Knee pain	9	4.3

Table 2. Presenting health problems, services used and sources of information among 209 patients attending the National Traditional Medicine Hospital.

Variable	Category	n	%
	Paralysis / hemiplegia	8	3.8
	Other muscle problem	3	1.4
	Hip pain	2	1.0
	Allergy	1	0.5
	Single reports (back, toe, renal, neck, migraine, shoulder pain)	6	2.9
Service used during the study month (n = 209; multiple responses permitted)			
	Outpatient department / therapy (acupuncture, moxibustion, gser-khab)	156	74.6
	Inpatient / day-therapy department (massage, herbal compress, bathing therapy)	133	63.6
	Zhiney (meditation) and yoga services	13	6.2
	Health advocacy and wellbeing education	5	2.4
Source of information about NTMH (multiple responses permitted)			
	Friends and relatives	101	50.8
	Health personnel	95	47.7
	Other unspecified sources	11	5.5
	Radio	3	1.5
	Spouse	3	1.5
	Hospital signage / notice board	3	1.5
	Television news	1	0.5
	Sibling	1	0.5
	Self-referral	1	0.5

Because respondents could report more than one health problem, more than one service and more than one information source, percentages within each block sum to more than 100%. Service-use percentages have been recomputed on n = 209.

Perceived quality of services

Perceived quality was high across almost every domain, as detailed in Table 3. Overall perception of service quality was rated high by 197 of 200 respondents (98.5%), and perception of the common services by 191 (95.5%). Within the common services, reception and registration scored highest (98.5%) and the rest rooms lowest (164 of 200, 82.0%). Clinical service domains scored at the ceiling: every one of the 156 outpatient therapy users rated that domain highly (100%), and 129 of 133 day-therapy users did so (97.0%).

Item-level analysis, given in the lower panels of Table 3, locates the weaknesses precisely. Three items fell below 80% agreement: the availability of enough rest rooms (141 of 198,

71.2%), the availability of enough seats in the waiting area (149 of 200, 74.5%), and privacy in the day-therapy area (105 of 133, 78.9%). A fourth, whether the day-therapy space was clean and large enough, reached only 81.2%. By contrast, four therapy-department items achieved unanimous agreement among all 156 users: the cleanliness of therapy equipment, the physician's expertise, the physician's attention to the patient's problem, and the courtesy with which the physician provided the service. The conceptual structure linking these domains to the satisfaction outcome is set out in Figure 1, and the domain-by-domain profile, with confidence intervals and the two published Bhutanese benchmarks, is shown in Figure 2.

Table 3. Perceived quality of services at the National Traditional Medicine Hospital, by domain and by item.

Domain / item	High or agree, n	Total valid	%	95% CI
Domain-level perception of quality				
Overall perception of service quality	197	200	98.5	95.7–99.5
Perception of common services	191	200	95.5	91.7–97.6
Reception and registration	197	200	98.5	95.7–99.5
Waiting area	185	200	92.5	88.0–95.4
Rest rooms	164	200	82.0	76.1–86.7
Pharmacy	193	200	96.5	93.0–98.3
Staff in general	188	200	94.0	89.8–96.5
Outpatient / therapy services	156	156	100.0	97.6–100.0
Inpatient / massage services	129	133	97.0	92.5–98.8
Item level — registration and reception				
Reception staff treat patients with respect	195	199	98.0	94.9–99.2
Registration staff explain procedures clearly	188	199	94.5	90.4–96.9
Registration staff take the history politely	196	199	98.5	95.7–99.5
Registration is conducted fairly and in order	191	199	96.0	92.3–97.9

Table 3. Perceived quality of services at the National Traditional Medicine Hospital, by domain and by item.

Domain / item	High or agree, n	Total valid	%	95% CI
Waiting time before consultation is not long	188	199	94.5	90.4–96.9
Item level — waiting area				
The waiting area is clean	177	197	89.8	84.8–93.3
The temperature in the waiting area is comfortable	184	200	92.0	87.4–95.0
Ventilation in the waiting area is good	186	198	93.9	89.7–96.5
There are enough seats for waiting patients	149	200	74.5	68.0–80.0
The hospital premises are comfortable	197	200	98.5	95.7–99.5
Item level — rest rooms				
There are enough rest rooms for patients	141	198	71.2	64.5–77.1
The rest rooms are clean	168	200	84.0	78.3–88.4
Ventilation in the rest rooms is good	172	199	86.4	81.0–90.5
Lighting in the rest rooms is adequate	184	200	92.0	87.4–95.0
Water is always available in the rest rooms	187	200	93.5	89.2–96.2
Soap is always available in the rest rooms	172	200	86.0	80.5–90.1
Item level — pharmacy				
Pharmacy staff dispense cleanly packaged medicines	191	197	97.0	93.5–98.6
Explanations about the medicines are clear	192	196	98.0	94.9–99.2
Medicines are always available in the pharmacy	189	196	96.4	92.8–98.3
Traditional medicines benefit physical and mental health	184	196	93.9	89.6–96.5
Item level — staff in general				
Staff are available at all times	185	200	92.5	88.0–95.4
Staff are helpful and kind	190	200	95.0	91.0–97.3
There are enough staff at NTMH	181	199	91.0	86.2–94.2
Staff are always concerned about the patient's problem	192	199	96.5	92.9–98.3
Item level — outpatient department / therapy (acupuncture) services				
There is enough privacy in the therapy department	126	155	81.3	74.4–86.6
The therapy department is clean	153	156	98.1	94.5–99.3
Bed covers and pillow cases are always clean	154	156	98.7	95.4–99.6
Equipment used for therapy is clean	156	156	100.0	97.6–100.0
The therapy service is effective	155	156	99.4	96.5–99.9
Lighting in the therapy room is adequate	153	156	98.1	94.5–99.3
The therapy room is well ventilated	149	156	95.5	91.0–97.8
The physician is expert in the treatment	156	156	100.0	97.6–100.0
The physician pays attention to the patient's problem	156	156	100.0	97.6–100.0
The physician provides the service courteously	156	156	100.0	97.6–100.0
Item level — inpatient / day-therapy (massage) services				
There is enough privacy in the day-therapy area	105	133	78.9	71.3–85.0
Day-therapy improves wellbeing and health	130	133	97.7	93.6–99.2
Herbal compress is effective for muscular disorders	130	132	98.5	94.6–99.6
The day-therapy area is clean and spacious enough	108	133	81.2	73.7–86.9
Bed covers and pillow cases are clean	129	133	97.0	92.5–98.8
The duration of day-therapy sessions is convenient	119	132	90.2	83.9–94.2
Lighting in the day-therapy room is adequate	129	131	98.5	94.6–99.6
The day-therapy room is well ventilated	129	132	97.7	93.5–99.2
The therapist is skilful	124	132	93.9	88.5–96.9
Therapists pay attention to patients	129	132	97.7	93.5–99.2
Therapists are friendly	131	132	99.2	95.8–99.9
Therapists provide the service courteously	129	132	97.7	93.5–99.2

Item-level figures give the number agreeing with the statement; the balance were uncertain or disagreed. Confidence intervals are Wilson score intervals. The three items falling below 80% agreement are enough rest rooms (71.2%), enough seats in the waiting area (74.5%) and privacy in the day-therapy area (78.9%).

Gross National Happiness framework · Constitutionally guaranteed free health care

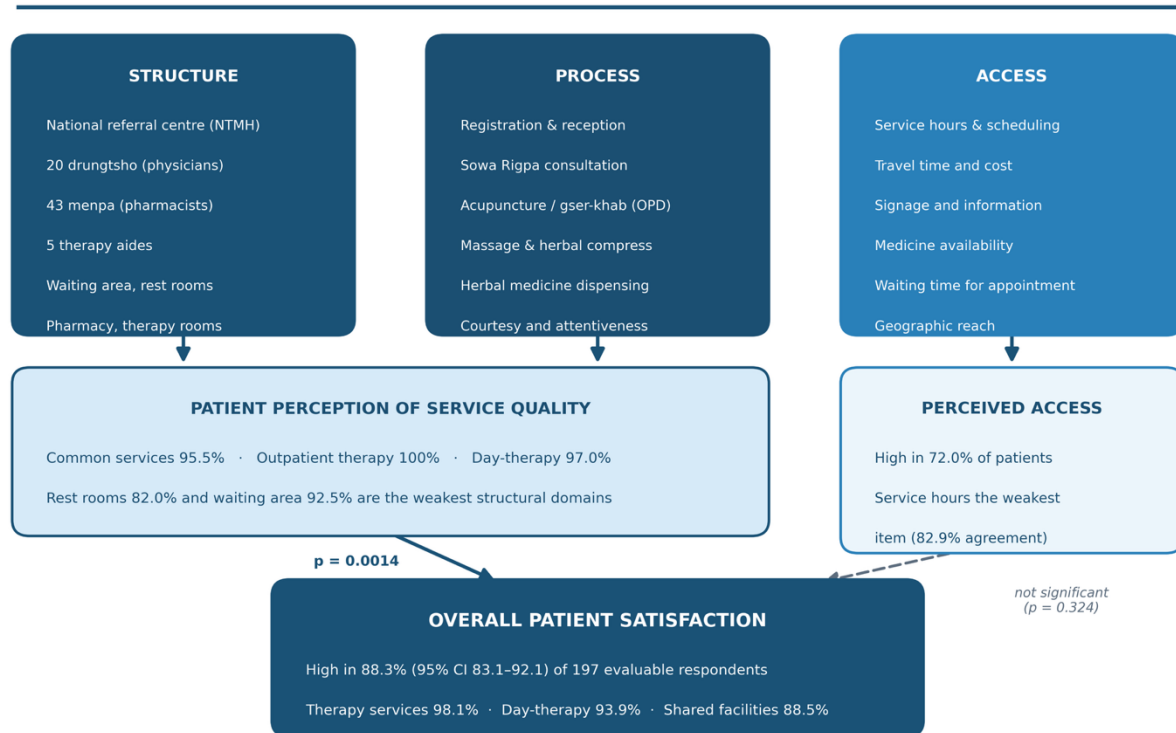


Figure 1. Conceptual framework linking service structure, process and access to patient satisfaction at the National Traditional Medicine Hospital, with the observed value of each construct. Perceived service quality was significantly associated with overall satisfaction ($p = 0.0014$); perceived accessibility was not ($p = 0.3237$).

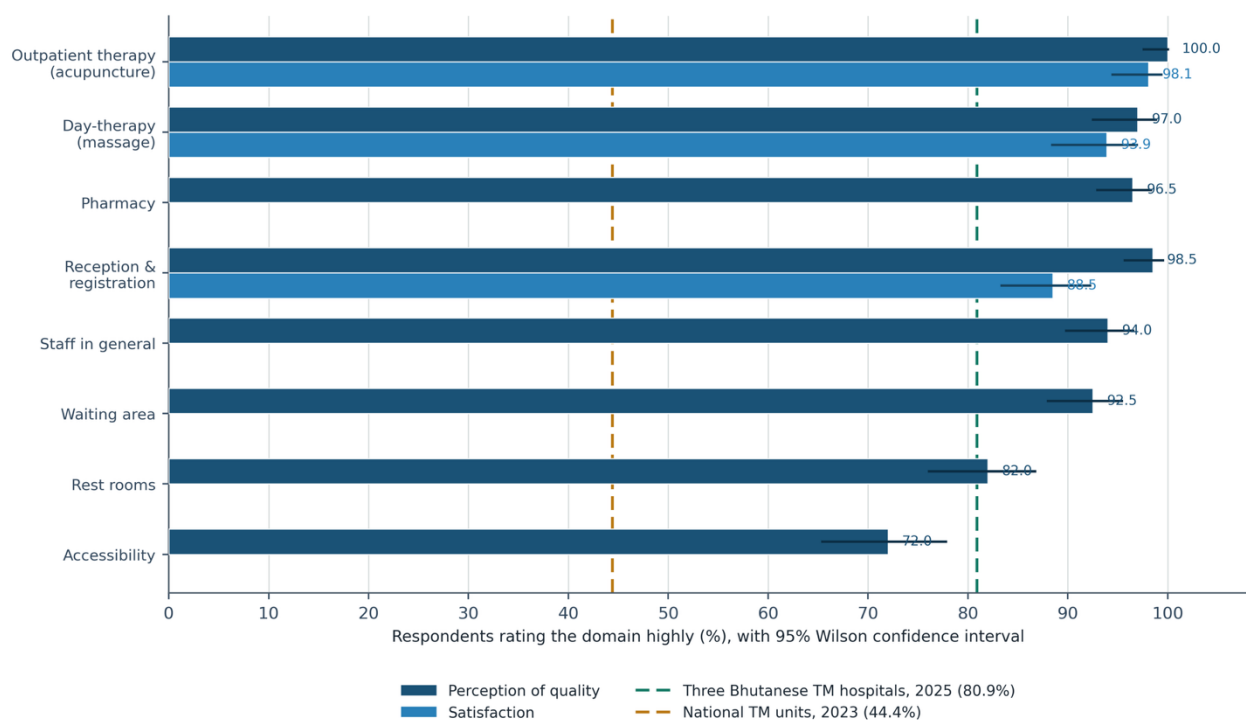


Figure 2. Perceived quality and satisfaction by service domain, with Wilson 95% confidence intervals, benchmarked against two published Bhutanese studies. Clinical therapy domains sit at the ceiling while accessibility is the clear outlier at 72.0%.

Perceived accessibility

Accessibility was the outlier. Overall accessibility was rated high by only 144 of 200 respondents (72.0%, 95% CI 65.4 to 77.8; bounded between 68.9% and 73.2% if the 9 patients missing this domain score are assigned entirely to one category or the other), which is 26 percentage points below overall perceived quality and the lowest domain score in the study. The overall figure and every constituent item are detailed in Table 4. At item level, geographic and financial access were not the problem: 146 of 147 respondents (99.3%) agreed the hospital was easy to reach, 144

of 147 (98.0%) that travel time was not long, and 142 of 147 (96.6%) that travel cost was not excessive. Medicine availability was almost universal at 98.6%. The deficit lay entirely in temporal access. Only 121 of 146 respondents (82.9%) agreed the service hours were convenient, and 19 (13.0%) actively disagreed — the highest disagreement rate recorded for any item in the questionnaire. A further 8 respondents were uncertain and 4 disagreed that appointments were obtained without a long wait.

Table 4. Perceived accessibility to the National Traditional Medicine Hospital.

Accessibility measure	Agree / high, n	Total valid	%	Disagree, n (%)
Overall accessibility				
High level of accessibility (95% CI 65.4–77.8)	144	200	72.0	56 (28.0)
Item level				
The service hours are convenient	121	146	82.9	19 (13.0)
Services are the same at any service hour	129	145	89.0	2 (1.4)
Directional signs within the hospital are clear	134	146	91.8	6 (4.1)
Leaflets, pamphlets and brochures are available and informative	135	146	92.5	0 (0.0)
The medicines needed are available	144	146	98.6	1 (0.7)
Services are provided promptly	140	145	96.6	1 (0.7)
The hospital is easy to reach	146	147	99.3	0 (0.0)
Travel time to the hospital is not long	144	147	98.0	1 (0.7)
There is no long wait for an appointment	135	147	91.8	4 (2.7)
Travel cost to the hospital is not excessive	142	147	96.6	0 (0.0)

Overall accessibility was the lowest-scoring domain in the study. The single highest disagreement rate anywhere in the questionnaire was for the convenience of service hours (13.0%). Geographic and financial access items all exceeded 96% agreement.

Satisfaction

Overall satisfaction was high in 174 of 197 evaluable respondents (88.3%, 95% CI 83.1 to 92.1) and low in 23 (11.7%). Domain satisfaction followed the perception pattern closely (detailed in Table 5): outpatient therapy services 152 of 155 (98.1%, 95% CI 94.5 to 99.3), day-therapy massage services 123 of 131 (93.9%, 88.4 to 96.9), and reception with shared facilities 177 of 200 (88.5%, 83.3 to 92.2).

The item-level satisfaction data, given in the lower panels of Table 5, reproduce the same three pressure points identified in the perception scale. Privacy during day-therapy was rated highly by only 93 of 131 respondents (71.0%), the lowest satisfaction score anywhere in the study; privacy during outpatient therapy reached 78.6%; and space in the waiting area 77.7%. Every other item exceeded 83%. At the opposite end, the physician's skill in providing therapy (98.7%) and the equipment used, particularly needles (98.1%), were the highest-rated items.

Table 5. Patient satisfaction with services at the National Traditional Medicine Hospital, by domain and by item.

Domain / item	High, n	Total valid	%	95% CI
Domain-level satisfaction				
Overall satisfaction	174	197	88.3	83.1–92.1
Reception, registration and shared facilities	177	200	88.5	83.3–92.2
Outpatient / therapy (acupuncture) services	152	155	98.1	94.5–99.3
Inpatient / massage (day-therapy) services	123	131	93.9	88.4–96.9
Item level — reception, registration and shared facilities				
Hospitality of reception counter personnel	175	193	90.7	85.7–94.0
Courtesy of reception counter personnel	178	193	92.2	87.6–95.2
Manner of reception counter personnel	178	192	92.7	88.1–95.6
Information given at the registration counter	167	192	87.0	81.5–91.0
Order of service at the registration counter	170	191	89.0	83.8–92.7
Duration of service at the registration counter	176	192	91.7	86.9–94.8
Ventilation of the waiting area	176	192	91.7	86.9–94.8
Cleanliness of the waiting area	174	193	90.2	85.1–93.6
Space in the waiting area	150	193	77.7	71.3–83.0
Cleanliness of the rest rooms	161	193	83.4	77.5–88.0
Lighting in the rest rooms	172	193	89.1	83.9–92.8
Co-ordination between hospital sections	176	191	92.1	87.4–95.2
Item level — outpatient department / therapy (acupuncture) services				
Privacy during therapy	121	154	78.6	71.4–84.3
Cleanliness of the therapy area	143	154	92.9	87.7–96.0

Table 5. Patient satisfaction with services at the National Traditional Medicine Hospital, by domain and by item.

Domain / item	High, n	Total valid	%	95% CI
Cleanliness of bed covers and pillow cases	146	153	95.4	90.9–97.8
Equipment, especially needles, used in therapy	151	154	98.1	94.4–99.3
Lighting in the therapy room	150	154	97.4	93.5–99.0
Ventilation in the therapy room	145	154	94.2	89.3–96.9
Courtesy of the physician	149	153	97.4	93.5–99.0
Communication and information from the physician	149	154	96.8	92.6–98.6
Skill of the physician in providing therapy	152	154	98.7	95.4–99.6
Hospitality of the clinicians	150	154	97.4	93.5–99.0
Courtesy of the clinicians	149	154	96.8	92.6–98.6
Manner of the clinicians	150	154	97.4	93.5–99.0
Skill of the clinicians	150	154	97.4	93.5–99.0
Item level — inpatient / day-therapy (massage) services				
Privacy during day-therapy	93	131	71.0	62.7–78.1
Cleanliness of the day-therapy area	118	131	90.1	83.8–94.1
Cleanliness of bed covers and pillow cases	121	131	92.4	86.5–95.8
Lighting in the day-therapy room	124	131	94.7	89.4–97.4
Ventilation in the day-therapy room	117	131	89.3	82.9–93.5
Cost of the day-therapy service	120	131	91.6	85.6–95.2
Expertise of the therapist	117	131	89.3	82.9–93.5
Courtesy of the therapist	122	131	93.1	87.5–96.3
Manner of the therapist	121	130	93.1	87.4–96.3

Figures give the number reporting high satisfaction; the balance reported moderate or low satisfaction. Privacy during day-therapy (71.0%) is the lowest-scoring item in the study, followed by privacy during outpatient therapy (78.6%) and space in the waiting area (77.7%).

Patient characteristics, perceived quality and access

No sociodemographic characteristic was associated with overall satisfaction. Sex ($p = 0.8147$), residence ($p = 1.0000$), age band ($p = 1.0000$), marital status ($p = 0.7007$), education ($p = 0.0875$) and occupation ($p = 0.3728$) were all non-significant, and the same was true of every characteristic tested against overall perceived quality; all four outcome blocks are detailed in Table 6. Satisfaction at this hospital does not depend on who the patient is.

Perceived access does. As shown in the fourth block of Table 6, three characteristics were significantly associated with rating accessibility poorly. Men were markedly more likely than women to do so: 30 of 72 men (41.7%) reported low accessibility compared with 25 of 126 women (19.8%), an odds ratio of 2.89 (95% CI 1.52 to 5.48; $p = 0.0016$). Younger patients were also more likely to report poor access, with 20 of 49 respondents aged 35 or under (40.8%) doing so against 35 of 146 older respondents (24.0%), an odds ratio of 2.19 (1.10 to 4.34; $p = 0.0283$). The education gradient ran in the same direction: 47 of 140 respondents with higher secondary education or above (33.6%) reported low accessibility compared with 9 of 59 with lower secondary education or below (15.3%), giving an odds ratio of 2.81 (1.27 to 6.20; $p = 0.0094$) for the better-educated group. A fourth significant association was found in the therapy domain: 9 of 126 women (7.1%) rated the outpatient therapy and day-

therapy services poorly, compared with none of the 72 men ($p = 0.0277$). All eighteen associations are displayed as odds ratios with 95% confidence intervals in Figure 3, in which the four significant results are highlighted.

Two qualifications must be attached to these results at the point of reporting rather than left to the discussion. First, occupation — the variable that most directly operationalises employment status — showed no association whatever with perceived accessibility: 33 of 119 non-office workers (27.7%) and 22 of 77 office workers (28.6%) reported low access, an odds ratio of 0.96 (0.51 to 1.81; $p = 1.0000$), the most precisely null result in the study. Any explanation of the sex, age and education gradients in terms of working hours has to account for that. Second, 28 association tests were performed in total. After Benjamini-Hochberg correction across the whole family, four results retain a false discovery rate below 5%: perception of common services ($q = 0.0025$), perception of day-therapy services ($q = 0.0103$), overall perception ($q = 0.0111$) and the sex gradient in accessibility ($q = 0.0111$). The education gradient falls just outside ($q = 0.0529$), and the age gradient ($q = 0.1132$) and the sex difference in therapy perception ($q = 0.1132$) do not survive correction and should be treated as hypothesis-generating only.

Table 6. Association between patient characteristics and each outcome domain.

Characteristic	Contrast	Low outcome / total (%)	OR (95% CI)	p
Overall satisfaction (low satisfaction as the outcome)				
Sex	Male vs Female	7/71 (9.9) vs 15/124 (12.1)	0.79 (0.31–2.05)	0.8147
Residence	Resident in Bhutan vs Resident elsewhere	22/177 (12.4) vs 0/7 (0.0)	2.17 (0.12–39.32)†	1.0000
Age	≤35 years vs >35 years	5/48 (10.4) vs 17/144 (11.8)	0.87 (0.30–2.50)	1.0000
Marital status	Married vs Other	22/179 (12.3) vs 1/18 (5.6)	2.38 (0.30–18.80)	0.7007
Education	Lower secondary or below vs Higher secondary or above	3/58 (5.2) vs 20/138 (14.5)	0.32 (0.09–1.13)	0.0875
Occupation	Non-office worker vs Office worker	12/118 (10.2) vs 11/76 (14.5)	0.67 (0.28–1.60)	0.3728
Overall perceived quality (low perception as the outcome)				

Table 6. Association between patient characteristics and each outcome domain.

Characteristic	Contrast	Low outcome / total (%)	OR (95% CI)	p
Sex	Male vs Female	0/72 (0.0) vs 2/126 (1.6)	0.34 (0.02–7.25)†	0.5348
Residence	Resident in Bhutan vs Resident elsewhere	3/179 (1.7) vs 0/8 (0.0)	0.34 (0.02–7.06)†	1.0000
Age	≤35 years vs >35 years	0/49 (0.0) vs 2/146 (1.4)	0.58 (0.03–12.37)†	1.0000
Marital status	Married vs Other	2/182 (1.1) vs 1/18 (5.6)	0.19 (0.02–2.19)	0.2476
Education	Lower secondary or below vs Higher secondary or above	0/59 (0.0) vs 3/140 (2.1)	0.33 (0.02–6.49)†	0.5563
Occupation	Non-office worker vs Office worker	3/119 (2.5) vs 0/77 (0.0)	4.66 (0.24–91.42)†	0.2808
Perceived quality of therapy and day-therapy services				
Sex	Male vs Female	0/72 (0.0) vs 9/126 (7.1)	0.09 (0.00–1.49)†	0.0277
Residence	Resident in Bhutan vs Resident elsewhere	8/179 (4.5) vs 0/8 (0.0)	0.84 (0.04–15.85)†	1.0000
Age	≤35 years vs >35 years	1/49 (2.0) vs 8/146 (5.5)	0.36 (0.04–2.95)	0.4541
Marital status	Married vs Other	7/182 (3.8) vs 2/18 (11.1)	0.32 (0.06–1.67)	0.1887
Education	Lower secondary or below vs Higher secondary or above	1/59 (1.7) vs 8/140 (5.7)	0.28 (0.03–2.33)	0.2855
Occupation	Non-office worker vs Office worker	4/119 (3.4) vs 5/77 (6.5)	0.50 (0.13–1.93)	0.3190
Perceived accessibility (low accessibility as the outcome)				
Sex	Male vs Female	30/72 (41.7) vs 25/126 (19.8)	2.89 (1.52–5.48)	0.0016
Residence	Resident in Bhutan vs Resident elsewhere	55/179 (30.7) vs 0/8 (0.0)	7.58 (0.43–133.62)†	0.1074
Age	≤35 years vs >35 years	20/49 (40.8) vs 35/146 (24.0)	2.19 (1.10–4.34)	0.0283
Marital status	Married vs Other	54/182 (29.7) vs 2/18 (11.1)	3.38 (0.75–15.19)	0.1069
Education	Lower secondary or below vs Higher secondary or above	9/59 (15.3) vs 47/140 (33.6)	0.36 (0.16–0.79)	0.0094
Occupation	Non-office worker vs Office worker	33/119 (27.7) vs 22/77 (28.6)	0.96 (0.51–1.81)	1.0000

p-values are two-sided Fisher's exact tests. Odds ratios are for the LOW category of the outcome in the first-named group relative to the second. Significant results are shown in bold. † a Haldane–Anscombe correction of 0.5 was applied to every cell because the table contained a zero cell; the corresponding odds ratio and interval should be read as indicative only. No correction was made for multiple comparisons.

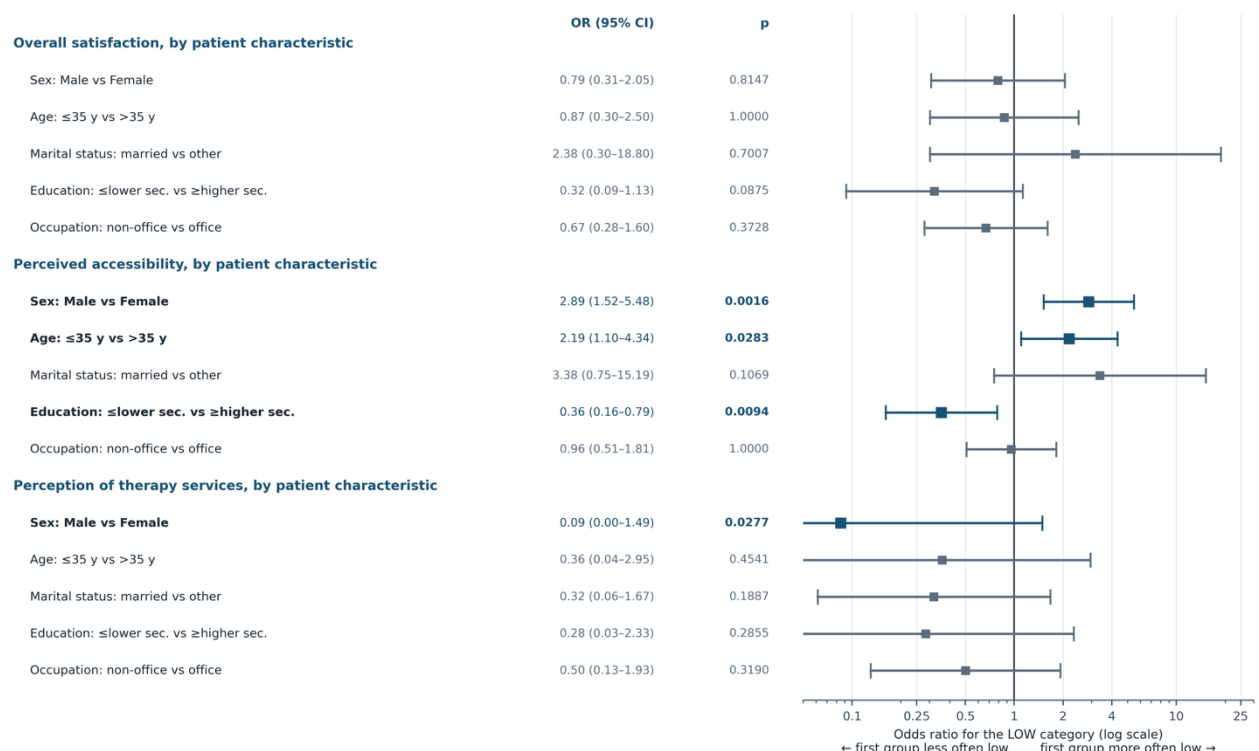


Figure 3. Odds ratios with 95% confidence intervals for the association between patient characteristics and each outcome domain. No characteristic predicted overall satisfaction, whereas sex, age and education were each significantly associated with perceived accessibility. Intervals were computed with a Haldane–Anscombe correction where a zero cell was present.

What predicts overall satisfaction

The central analysis is detailed in Table 7. Overall perceived service quality was strongly associated with overall satisfaction: all 3 respondents whose overall perception was low were also

dissatisfied, while 174 of 194 with high perception (89.7%) were satisfied ($p = 0.0014$). Perception of the common services showed the strongest association of all, with 6 of 9 respondents (66.7%) in the low-perception group dissatisfied against 17 of 188 (9.0%) in the high-perception group ($p = 0.0001$). Perception of the day-

therapy massage services was also significantly associated with overall satisfaction ($p = 0.0007$).

Perception of the outpatient therapy services could not be tested. All 154 evaluable respondents fell into the high-perception category, leaving no variance against which to test; within that single stratum, 145 (94.2%) were highly satisfied. This is a ceiling effect rather than a null result, and the frequently quoted figure of 94.2% is the satisfaction rate within the high-perception group, not a measure of satisfaction with acupuncture.

Perceived accessibility was not associated with overall satisfaction ($p = 0.3237$), and the point estimates ran mildly counter to expectation: 51 of 55 respondents (92.7%) who rated accessibility low were nonetheless highly satisfied overall, compared with 123 of 142 (86.6%) of those who rated accessibility high. The confidence intervals overlap substantially and the direction should not be over-interpreted, but the absence of any positive association is robust. These findings are translated into an importance–performance matrix in Figure 4, which identifies where remedial investment should be concentrated.

Table 7. Association between perceived service quality, perceived accessibility and overall patient satisfaction.

Predictor domain	Level	Low satisfaction, n (%)	High satisfaction, n (%)	p
Overall perception of service quality	Low	3 (100.0)	0 (0.0)	0.0014
	High	20 (10.3)	174 (89.7)	
Perception of common services	Low	6 (66.7)	3 (33.3)	<0.0001
	High	17 (9.0)	171 (91.0)	
Perception of inpatient / massage services	Low	4 (100.0)	0 (0.0)	0.0007
	High	19 (14.8)	109 (85.2)	
Level of accessibility to NTMH	Low	4 (7.3)	51 (92.7)	0.3237
	High	19 (13.4)	123 (86.6)	
Perception of outpatient therapy services	High (only stratum observed)	9 (5.8)	145 (94.2)	Not testable

p-values are two-sided Fisher's exact tests; significant results are shown in bold. Perception of the outpatient therapy services could not be tested because all 154 evaluable respondents fell into the high-perception category, leaving no variance — a complete ceiling effect rather than a null finding. The 94.2% high-satisfaction figure within that single stratum has been widely misquoted as a measure of satisfaction with acupuncture; satisfaction with the outpatient therapy service was 98.1% (Table 5).

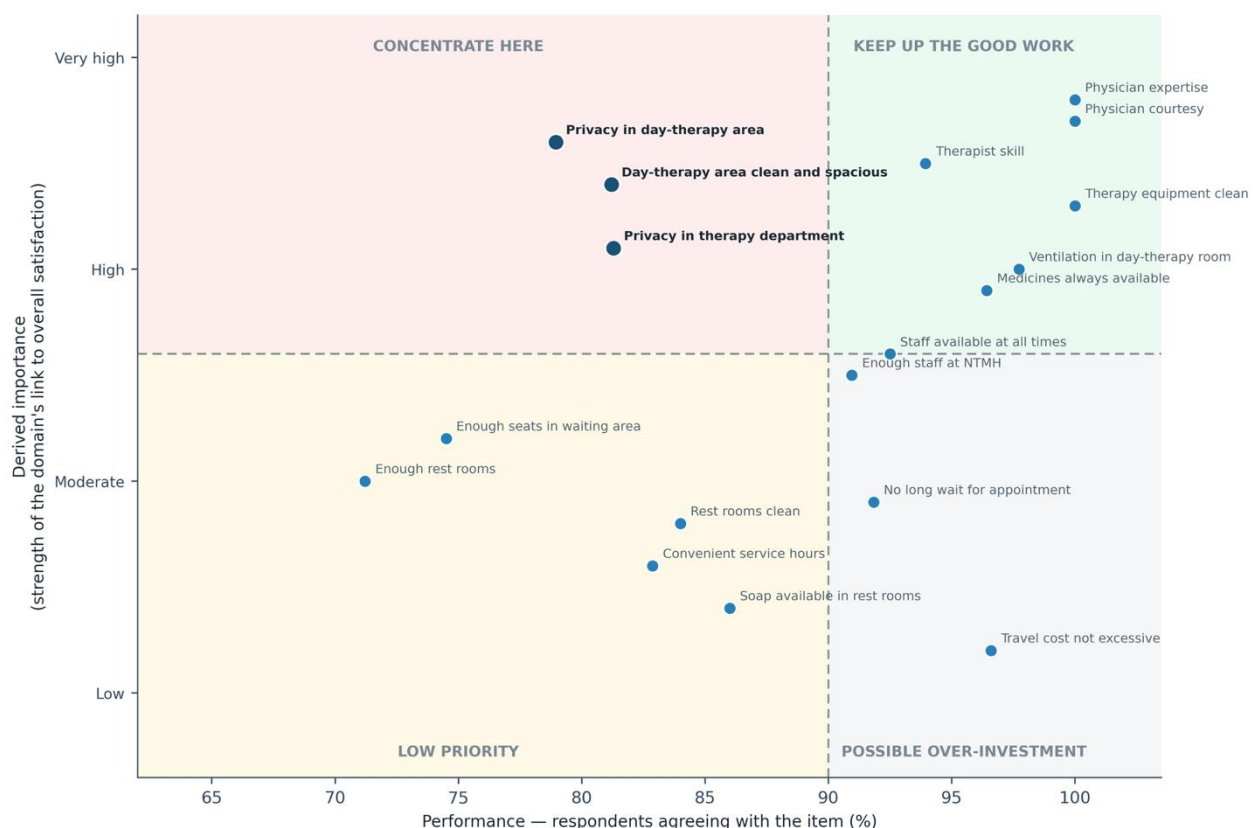


Figure 4. Importance–performance matrix for quality improvement. Performance is the proportion of respondents agreeing with each item; derived importance reflects the strength of the parent domain's association with overall satisfaction. The three items in the upper-left quadrant are the highest-return targets for remedial investment.

4. Discussion

This study set out to determine not merely how satisfied patients are with Bhutan's national traditional medicine hospital, but what their satisfaction is made of. The answer is reasonably

clear. Overall satisfaction was high in 88.3% of respondents, and it tracked perceived quality of care closely and perceived access not at all. Two further results complicate that headline in useful ways: the access deficit that does exist is concentrated in service hours rather than geography or cost, and it is distributed unequally across sex, age and education.

Interpreting an 88.3% satisfaction rate

A figure of that magnitude must be read against the long-standing critique of satisfaction measurement. Patient satisfaction surveys routinely return implausibly favourable results because of gratitude bias, social desirability and acquiescence, and because respondents are reluctant to criticise a service they depend on and may need again.²⁷ The magnitude of that inflation has since been quantified directly: weighting patient-reported experience scores for measured social desirability collapsed ceiling effects from 47% to 2.5% on one scale and from 81% to 2.5% on another, which is the order of distortion that must be assumed here.²⁸ Every one of those mechanisms is amplified here. Respondents were repeat attenders by design, and had therefore already selected themselves as people who found the service worth returning to. Interviews were conducted on hospital premises immediately after the clinical encounter. The care was free. And in a small country with a single national traditional medicine hospital, the alternative to satisfaction is not a competing provider but no comparable service at all.

The right conclusion is therefore not that NTMH is performing at 88.3% on some absolute scale, but that the internal structure of the responses is informative even when their absolute level is inflated. Ceiling effects compress variation but do not eliminate it, and the items and domains that did generate disagreement — privacy at 71.0%, waiting-area space at 77.7%, service hours at 82.9% — are precisely the ones a management team can act on. Read this way, the study's value lies in its rank ordering rather than its levels.

Comparison with the Bhutanese literature reinforces the point and resolves an apparent contradiction. The 2023 national survey of traditional medicine units reported adequate satisfaction in only 44.4% of respondents;¹⁵ the 2025 three-hospital study reported 80.9%;¹⁶ and the present study reports 88.3%. That gradient maps onto the tier of care almost exactly. Peripheral traditional medicine units operate under documented workforce shortages, supply-chain interruptions and infrastructure constraints, whereas NTMH concentrates the country's traditional medicine specialists and its most reliable pharmaceutical supply.^{12,19} The three studies are not in conflict; they are measuring different rungs of the same ladder. This has a direct policy implication, developed in section 4.6: the national satisfaction problem in Bhutanese traditional medicine is not located at the referral centre.

A musculoskeletal service in a chronic-pain population

The clinical profile of this cohort is worth stating plainly because it conditions everything else in the study. Musculoskeletal complaints dominate: muscular pain was reported by 41.5%, backache by 39.0% and arthritis by 19.5%, with leg, knee, hip, neck and shoulder pain accounting for most of the additional reports. Because respondents could name more than one problem, the proportion of patients with at least one musculoskeletal complaint cannot be derived from these data, and no such figure is claimed here. This is not incidental to traditional medicine in Bhutan — it is what the service is for, and it reproduces the national casemix in which tsakar is the leading diagnostic category.²⁶ It also aligns NTMH squarely with the largest and fastest-growing category of global disability. Low back pain affected 619 million people worldwide in 2020 and is projected to reach 843 million by 2050, remaining the single leading cause of years lived with disability; osteoarthritis affected 595 million, a 132% rise since 1990; and other musculoskeletal disorders, the category that best corresponds to the generalised muscular pain dominating this cohort, affected a further 494 million.^{29,30,31}

Three consequences follow. First, these are conditions managed rather than cured, so the patients in this sample are in a long-term therapeutic relationship with the hospital by definition — which is precisely the circumstance in which satisfaction is known to track the therapeutic relationship and perceived functional gain more closely than symptom change.⁸ Second, the treatments concerned — massage, herbal compress, acupuncture

and gser-khab — are physical, prolonged and require partial undressing, which is why privacy emerges as the binding constraint rather than as a peripheral amenity. Third, a service delivering effective, free, culturally congruent care for the world's leading cause of disability is doing something that biomedical systems find expensive and difficult, and there is contemporary trial evidence that the modality works: a meta-analysis of eight randomised trials ($n = 1,123$) found acupuncture superior to usual care for chronic low back pain both immediately (standardised mean difference -0.73, 95% CI -1.04 to -0.42) and at intermediate follow-up (-1.13, -1.82 to -0.43), albeit at low certainty of evidence.³² That is the strongest argument for extending it to the peripheral tiers where satisfaction is currently lowest.

Why perceived quality predicts satisfaction and access does not

The dissociation between quality and access is the study's most substantive finding. Donabedian's structure–process–outcome framework offers the most economical explanation: patients form a judgement of care from what they can directly observe of its structure (the cleanliness of the therapy room, the availability of medicines) and its process (whether the drungtsho listened, whether the therapist was skilful and courteous), and that composite judgement is what the satisfaction question elicits.¹⁴ Access, by contrast, is experienced before the encounter and is attributed to circumstances rather than to the hospital. A patient who travelled far or waited for an appointment may register that as an inconvenience without holding the service responsible for it.

The interpersonal findings support this reading strongly. Unanimous agreement among all 156 outpatient therapy users that the physician was expert, attentive and courteous is a striking result even after discounting for courtesy bias, and it is consistent with a substantial evidence base linking practitioner empathy and respectful communication to patient satisfaction.^{2,33,34} A systematic review of randomised trials found that empathy interventions produce small but consistent improvements in satisfaction, which matters here because it establishes that this domain is modifiable rather than merely observed, and clinician communication improves satisfaction, adherence and quality of life among precisely the older patients who dominate this cohort.^{33,35} In traditional medicine the mechanism is plausibly stronger still: consultations are repeated over months for chronic musculoskeletal complaints, the therapies are physical and hands-on, and evidence from chronic pain and manual therapy settings shows that satisfaction is driven more by the therapeutic relationship and perceived functional gain than by symptom reduction alone.⁸ The corollary is a workforce one: workload, language barriers and hierarchical culture are the documented obstacles to sustaining this kind of communication, and with 20 drungtsho and 43 menpa serving the entire national referral caseload, the interpersonal strength recorded here should be treated as a resource to be protected rather than a permanent feature.³⁶

A second explanation for the null accessibility result is structural. Bhutan provides health care free at the point of use, and the two access dimensions that dominate the international literature — affordability and availability of medicines — were effectively saturated in this cohort, at 96.6% and 98.6% agreement respectively.^{20,21} When the barriers that usually generate variation have been removed by policy, the remaining variation is small and attaches to dimensions patients weigh less heavily. This is a system working as intended, and it is worth stating plainly: the reason accessibility fails to predict satisfaction at NTMH is that Bhutan has already solved the parts of access that matter most elsewhere. The pharmacy result illustrates this: 96.5% rated the pharmacy domain highly and 98.6% agreed that needed medicines were available, against a pooled international picture in which satisfaction with pharmacy services is typically suboptimal, limited chiefly by drug availability, waiting time and counselling quality.³⁷ An earlier study at this same hospital nonetheless found that patients' knowledge of their prescribed

traditional regimens was incomplete, a reminder that a highly rated dispensing service is not the same as a well-informed patient.³⁸ The caveat is that Bhutanese households still incur catastrophic expenditure through transport and referral costs, and a hospital-based sample of people who successfully reached the hospital cannot detect those who did not.²²

Not all of the evidence points the same way, and it would be wrong to present the accessibility result as settled. Waiting time and scheduling are repeatedly identified as significant determinants of outpatient satisfaction elsewhere, including in comparable low- and middle-income settings, and a recent comparative study found longer outpatient waits significantly associated with lower satisfaction.^{39,40,41,42} That 13.0% of this cohort actively disagreed that service hours were convenient — the single highest disagreement rate in the questionnaire — suggests the domain is not unimportant so much as underpowered to show an effect in a sample of this size with an outcome this skewed. The honest conclusion is that accessibility did not predict overall satisfaction in these data, not that it cannot.

The equity finding

The most unexpected result is that men, younger patients and better-educated patients were all significantly more likely to rate accessibility poorly, while none of these characteristics predicted overall satisfaction. Men had 2.89 times the odds of women, patients aged 35 or under 2.19 times the odds of older patients, and patients educated to higher secondary level or above 2.81 times the odds of those with less education.

The obvious explanation is an employment one, and it does not survive contact with the data. Occupation, dichotomised as office versus non-office work, is the variable in this dataset that most directly measures exposure to standard working hours, and it showed nothing at all (27.7% versus 28.6% reporting low access; OR 0.96, 0.51 to 1.81; $p = 1.0000$). If the mechanism were simply that employed people cannot attend during office hours, that variable should have detected it. Three readings are available. The occupational dichotomy may be too crude — Bhutanese civil servants and manual labourers can both be in fixed-hours employment, so the split may not separate the exposed from the unexposed at all. Alternatively the gradients may reflect expectations rather than logistics. Or the findings may be chance: neither the age nor the therapy-perception result survives correction for multiple testing, and only the sex gradient does. The honest position is that the mechanism is not established by these data.

With that caveat, the three gradients may still describe one underlying phenomenon rather than three. Men, younger adults and the better-educated are the groups most likely to be in formal employment — a third of this sample were civil servants — and formal employment collides directly with a hospital that operates during standard office hours. The item-level data are consistent with this: dissatisfaction concentrated on service hours and appointment waiting, not on distance or cost, which would have shown a rural rather than an occupational pattern. It is an expectations gradient as much as a logistical one: better-educated and younger patients have wider experience of other services and correspondingly higher reference standards, a pattern documented in a Nepali tertiary hospital where satisfaction profiles varied significantly by residence, education and income.⁴³ An expectations mechanism would also explain why occupation fails to detect the effect, since expectations track education and cohort rather than job title, and it has a direct precedent: among patients in general medical care, higher health literacy was independently associated with LOWER satisfaction, with the dissatisfaction concentrated specifically on appointment scheduling and waiting times — the same two items that carry the access deficit here.⁴⁴ The sex gradient has a South Asian parallel of its own, with men in Kerala significantly more aware

of primary care reforms than women (43% versus 36%) while women used government facilities for outpatient care more often (34.7% versus 27.5%), indicating that men and women encounter and evaluate the same service differently.⁴⁵ The Indian national survey data point the same way, with traditional medicine use concentrated among older and rural adults — the groups for whom the current service configuration works best.⁹

The fourth significant association runs in the opposite direction and deserves separate comment. Nine of 126 women rated the therapy services poorly, against none of 72 men ($p = 0.0277$). Given that the three lowest-scoring items in the entire questionnaire concern privacy and space in the therapy and day-therapy areas, and that massage and acupuncture require partial undressing and prolonged close contact, the most plausible interpretation is that inadequate physical privacy imposes a greater burden on women than on men. The evidence linking privacy, dignity and the physical care environment to patient experience supports this reading.⁴⁶ A dermatology outpatient study makes the mechanism concrete: despite 90.5% overall satisfaction, discomfort during physical examination (adjusted odds ratio 0.17, 95% CI 0.05 to 0.60) and the presence of observers (0.13, 0.04 to 0.42) were among the strongest independent predictors of dissatisfaction — privacy can be the binding constraint precisely where the global score looks excellent.⁴⁷ The finding rests on nine events and is fragile — the confidence interval is wide and the finding does not survive Benjamini-Hochberg correction ($q = 0.1132$) — but the convergence between a statistical signal and an independently identified item-level weakness makes it worth acting on regardless of its p -value, since the remedy is inexpensive and carries no risk.

Where improvement should be directed

Figure 4 places every item in performance–importance space, and the upper-left quadrant of that figure contains just three items: privacy in the day-therapy area, cleanliness and space in the day-therapy area, and privacy in the outpatient therapy department. All three belong to domains that are significantly associated with overall satisfaction, and all three perform below the 90% threshold. They are the highest-return targets available to NTMH management, and none requires new clinical capacity: screens, curtains, partitioned cubicles and a revised room layout would address all three.

The second tier is temporal. Extending service hours into early morning or early evening on even one or two days a week, or offering a limited Saturday clinic, would address the single most-disagreed item in the questionnaire. The evidence on this is encouraging but qualified: England's national evening and weekend access scheme produced no population-level gain in patient experience overall, yet did improve satisfaction with appointment times specifically among patients in full-time employment, while continuity of care worsened.⁴⁸ Applied here, that predicts a benefit concentrated on exactly the groups who reported the worst access, at some cost to therapeutic continuity — which matters in a service built on repeated courses of treatment. The third tier is the shared physical environment: seating capacity in the waiting area and the number of rest rooms, both of which scored in the low seventies and were flagged by the corresponding author's own 2024 survey at this hospital.¹⁷ That a specific deficit identified in 2024 was still present in 2025 is itself a finding, and it argues for the closure of the audit loop rather than the repetition of the audit: satisfaction measurement improves services only when it is tied to a redesign process with accountability.⁵

These priorities are set out against the evidence supporting each in Table 8, and the study's headline results are placed alongside the Bhutanese, South Asian and international comparators used throughout this discussion in Table 9.

Table 8. Prioritised recommendations for the National Traditional Medicine Hospital, with the finding and supporting evidence for each.

Priority	Finding in these data	Recommended action	Evidence
1. Privacy in the day-therapy and outpatient therapy areas	Lowest-scoring item in the study: privacy during day-therapy rated highly by 71.0%; privacy during outpatient therapy 78.6%; 11.6% of therapy users actively disagreed that privacy was adequate. Women were significantly more likely than men to rate therapy services poorly ($p = 0.0277$).	Install screens, curtains or partitioned cubicles in both therapy areas; separate treatment bays for procedures requiring undressing; consider sex-concordant therapist allocation where staffing permits.	Privacy, dignity and the physical care environment are established determinants of patient experience. ⁴⁶ The affected domain is significantly associated with overall satisfaction ($p = 0.0007$).
2. Service hours and appointment scheduling	Highest disagreement rate of any item: 13.0% disagreed that service hours were convenient. Men (OR 2.89), patients aged ≤ 35 (OR 2.19) and better-educated patients (OR 2.81) were all significantly more likely to report poor access.	Extend opening into early morning or early evening on one to two weekdays and pilot a limited Saturday clinic; introduce scheduled appointment slots for repeat therapy courses.	Waiting time and scheduling are repeatedly identified as modifiable determinants of outpatient satisfaction. ^{39,42} The affected groups are those most likely to be in formal employment.
3. Waiting-area seating and space	Only 74.5% agreed there were enough seats; satisfaction with waiting-area space was 77.7%, with 10.9% reporting low satisfaction.	Increase seating capacity and reconfigure the waiting area; provide covered overflow seating during peak periods.	The physical environment is a recognised component of patient experience and the domain is significantly associated with satisfaction (common services, $p = 0.0001$). ⁴⁶
4. Rest room capacity and upkeep	Only 71.2% agreed there were enough rest rooms; cleanliness 84.0%, soap availability 86.0%. The same deficit was recorded at this hospital in the 2024 survey.	Increase the number of rest rooms; introduce a documented cleaning and consumable replenishment schedule with named accountability.	A deficit persisting across two consecutive annual surveys at the same site indicates an unclosed audit loop. ^{5,17}
5. Sustain interpersonal quality	All 156 outpatient therapy users agreed the physician was expert, attentive and courteous; the physician's skill in providing therapy was the highest-rated satisfaction item (98.7%).	Protect this through structured induction for new drungtsho and menpa, periodic communication refreshers, and workload monitoring to prevent erosion.	Practitioner empathy and respectful communication are modifiable and causally linked to satisfaction in randomised evidence. ^{33,34}
6. Close the measurement loop	Three deficits identified in the 2024 NTMH survey were still present in 2025.	Convert the annual satisfaction survey into a quality-improvement cycle with a named owner, a published action plan and re-measurement of the specific items acted upon.	Patient feedback improves care only where the loop between measurement and service redesign is closed. ⁵

Priorities are ordered by the product of measured performance deficit and the strength of the domain's association with overall satisfaction, as displayed in Figure 4.

Table 9. The present findings placed alongside Bhutanese, South Asian and international comparators.

Study	Setting and design	n	Satisfaction reported	Relation to the present study
Present study, 2025	National Traditional Medicine Hospital, Thimphu; analytical cross-sectional, repeat attenders	209	88.3% high (95% CI 83.1–92.1)	Reference
Gaylek, 2025 ¹⁷	Same hospital; descriptive cross-sectional, Jul–Sep 2024	185	Mean 3.69/5, rated good	Separate earlier cohort at the identical site; descriptive only, no association testing. Identified the same rest room and staff-availability deficits.
Chophel et al., 2025 ¹⁶	Three Bhutanese hospitals providing traditional medicine; cross-sectional	—	80.9% mean satisfaction	Multi-site Bhutanese comparator; the present referral-centre figure sits above it, consistent with a tier gradient.
Chogyel et al., 2024 ¹⁵	National traditional medicine units, Bhutan, 2023; cross-sectional	—	44.4% adequately satisfied	Peripheral-tier national baseline. Physical environment and time access were the weakest domains, matching the item-level pattern found here.
Dorji et al., 2025 ¹⁸	Bhutanese regional referral hospitals (biomedical); cross-sectional	—	Broadly favourable, with gaps	Biomedical-sector benchmark; identified waiting time, cleanliness and communication gaps closely paralleling those reported here.
Ng et al., 2024 ⁶	Recognised traditional and complementary medicine services, Malaysia; national population survey	6,207	19.3% 12-month utilisation	Closest ASEAN analogue of traditional medicine inside a public system; shows utilisation is patterned by ethnocultural group and modality rather than by access alone.
Adhikari et al., 2021 ⁴³	Tertiary public hospital, Nepal; cross-sectional	—	Varied by subgroup	Himalayan comparator in which satisfaction varied significantly by residence, education and income — a gradient found here for access but not for satisfaction.
Bhatt et al., 2024 ⁴⁰	Tertiary public hospital outpatients, Nepal; cross-sectional	—	Driven by courtesy and information	Supports the finding that interpersonal process, rather than clinical outcome, dominates satisfaction in free public services.
Ferreira et al., 2023 ¹	Systematic review and bibliometric analysis of satisfaction measurement	—	—	Confirms responsiveness, empathy and interpersonal quality as the most consistent determinants across settings.
Sitzia & Wood, 1997 ²⁷	Conceptual review of patient satisfaction measurement	—	—	The interpretive caveat: gratitude bias, social desirability and acquiescence inflate absolute satisfaction levels and compress variance.

Sample sizes are given where the comparator study reported a figure directly comparable to the present cohort. Satisfaction figures are not directly commensurable across studies because instruments, response scales and classification thresholds differ; the comparison is intended to establish rank order across tiers of care, not to support numerical differencing.

Implications for Bhutan, for Indonesia and for the region

For Bhutan, the policy reading is that the national referral centre is not where the problem lies. If satisfaction with traditional medicine is 88.3% at NTMH, 80.9% across three hospitals and 44.4% across national traditional medicine units, then investment should follow the gradient downward to the dzongkhag and basic health unit tiers, where the documented

constraints are workforce, supply chain and infrastructure.^{15,19} Health-worker density is not a peripheral concern in this argument: suboptimal density, maldistribution and weak workforce planning translate directly into constrained coverage and inequitable access across low- and middle-income systems, and a national referral hospital staffed by 20 drungtsho cannot extend its hours without confronting that arithmetic.⁴⁹ What the present data add is a rationale for what to invest in: the domains

that actually move satisfaction are the interpersonal and immediate-environment ones, which are comparatively cheap to strengthen. Telemedicine-supported supervision of peripheral drugstho is one plausible mechanism, and patient satisfaction with remote monitoring is generally high where responsiveness is maintained.⁵⁰ This is also a concrete instance of the Gross National Happiness framework operating as health policy rather than as rhetoric: the same logic that treats cultural continuity as a determinant of wellbeing is what keeps Sowa Rigpa inside the public system in the first place.^{13,14}

For Indonesia and the wider ASEAN region, the transferable lesson is a caution rather than a template. Indonesia's traditional medicine sector, including jamu, operates largely outside the formal financing system, and utilisation is driven by knowledge and attitude rather than by institutional provision.⁵¹ Its universal coverage is delivered through the insurance-financed JKN/BPJS scheme, whose coverage still varies by region, socioeconomic status and infrastructure.⁵² Bhutan's tax-funded, free-at-point-of-use model produces the near-saturation of affordability and medicine availability seen in these data, and that is exactly the condition under which the accessibility-satisfaction link dissolves. A system that finances traditional medicine through insurance rather than general taxation should not expect the same result, and should expect affordability to remain a live determinant of satisfaction. The Malaysian experience of integrating traditional and complementary medicine units into public hospitals is the closer regional analogue, and there too practitioner communication and perceived outcome were the dominant predictors.⁶ All of this sits within the WHO Traditional Medicine Strategy 2025 to 2034, which asks member states to generate exactly this kind of service-level evidence before scaling integration.¹⁰

Strengths and limitations

The study's principal strengths are that it surveys the entire national referral tier for Sowa Rigpa in a country where that tier consists of a single institution, that its instrument achieved good internal consistency, that it restricted enrolment to experienced users capable of an informed judgement, and that its analysis moves beyond description to test which service domains actually predict satisfaction. Every association reported here was recomputed from the published contingency tables during preparation of this manuscript and reproduced to four decimal places, which establishes that the analysis is internally reproducible from the tabulated data even though the record-level dataset could not be re-interrogated.

Six limitations qualify the findings. First, the design is cross-sectional and the associations reported are not causal; it is equally possible that satisfied patients report favourable perceptions as that favourable perceptions produce satisfaction. Second, sampling was consecutive during weekday working hours rather than genuinely random, which systematically excludes patients who cannot attend during those hours — the very group whose access complaints this study identifies, so the access deficit is more likely understated than overstated. Third, the outcome distribution is severely skewed, with only 23 low-satisfaction events; this limits statistical power, prevents multivariable adjustment, and produced one untestable domain through complete separation, in which every evaluable respondent fell into a single predictor stratum — a property of the instrument, which lacks the response range to discriminate within this domain, as much as of the service. Fourth, item-level non-response of 4.3% to 10.5% means denominators vary between variables; these were handled by complete-case analysis on each item, which is unbiased only if the missingness is unrelated to the answers that would have been given. Fifth, satisfaction was self-reported to interviewers on hospital premises, with all the desirability pressure that implies, and the observed age range of 21 to 84 years indicates that the 15-to-80-year eligibility window was not applied strictly at either end. Sixth, family income and health insurance status were collected but are not reported or analysed here because the underlying distributions were not retained in analysable form. Seventh, the

analytic strata do not map cleanly onto Table 1: the age contrast divides the sample at 35 rather than 45 years, the residence contrast separates patients resident in Bhutan from the small group resident elsewhere rather than urban from rural, and the marital grouping (182 versus 18) cannot be reconstructed from the categories in Table 1 at all. These labels have been corrected to describe what was actually tested, but it follows that no urban-rural comparison was made and none should be inferred, and the marital-status row should be disregarded. Eighth, the number of patients approached and declining was not recorded, so no response rate can be given and non-response bias cannot be assessed. Ninth, accessibility item denominators (145–147) are far below the domain denominator (200), and because the scoring records that would explain this no longer exist, it cannot be excluded that domain scores were computed over answered items only — which would inflate the proportion classified as having high access. Finally, 28 tests were performed; after false-discovery-rate correction only four survive, and the age and sex-therapy findings do not.

Findings apply to repeat attenders at a single urban national referral hospital and should not be generalised to first-time users, to peripheral traditional medicine units, or to Bhutan's biomedical services.

Directions for further research

Four priorities follow. Qualitative work — in-depth interviews and focus group discussion — is needed to explain why privacy and service hours generate the dissatisfaction they do and what specific arrangements patients would accept, since a structured questionnaire can locate a problem but not its texture. A multi-site study spanning the referral, district and basic health unit tiers with a single common instrument would convert the apparent 44.4% to 88.3% gradient from an inference across incomparable studies into a measured one. A prospective before-and-after evaluation of the privacy and service-hour interventions proposed in Table 8 would establish whether the associations reported here are actionable. And validation of a Sowa Rigpa-specific satisfaction instrument, with a documented factor structure and response options designed to reduce ceiling effects, would put future Bhutanese work on a firmer measurement footing than the current reliance on adapted biomedical scales allows.^{7,27}

5. Conclusion

Among 209 repeat attenders at Bhutan's National Traditional Medicine Hospital, overall satisfaction was high in 88.3% (95% CI 83.1 to 92.1). Satisfaction was predicted by perceived quality of care — overall perception ($p = 0.0014$), perception of common services ($p = 0.0001$) and perception of day-therapy massage services ($p = 0.0007$) — and not by perceived accessibility ($p = 0.3237$). Perceived accessibility was itself the weakest domain at 72.0%, and the deficit was temporal rather than geographic or financial, concentrated in service hours and appointment waiting. That burden fell unequally: men, patients aged 35 or under and patients with higher secondary education or above were roughly two to three times more likely to rate access poorly, a pattern consistent with the working-age population's difficulty in attending during office hours. Three specific, low-cost targets emerge — privacy in the day-therapy and outpatient therapy areas, seating and space in the waiting area, and extended service hours — and the first of these was already identified at this hospital in 2024, which argues for closing the audit loop rather than repeating the audit. For health systems considering how to integrate traditional medicine, the central lesson is that removing financial and geographic barriers does not remove access barriers altogether; it relocates them into the scheduling of care, where they fall hardest on the working population.

Ethical approval statement

Permission to conduct the survey was granted by the administration of the National Traditional Medicine Hospital, Thimphu, Bhutan. Informed consent was obtained from all participating patients and from the attending physicians before

any data were collected. Participants were briefed on the purpose and procedures of the study and were informed of their right to withdraw at any point without giving a reason and without any consequence for their care. No identifying information was recorded and confidentiality was maintained throughout. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Consent for publication statement

Not applicable. No individual participant data, images or clinical details are reported.

Data availability statement

The de-identified dataset and the study questionnaire are available from the corresponding author on reasonable request.

Conflict of interest statement

The authors declare that they have no competing interests.

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Author contribution statement

KG conceived and designed the study, supervised data collection, conducted the analysis and drafted the manuscript. LD contributed to the design of the instrument and to the interpretation of the traditional medicine findings. HH contributed to the analytical design, the health services management framing and the international comparative analysis. All authors have reviewed and approved the final version of the manuscript.

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Generative artificial intelligence disclosure

The authors declare that no generative artificial intelligence tools were used in the design, conduct, analysis, or interpretation of the study or in drafting the scientific content of this manuscript.

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