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Socioeconomic Inequalities in Utilisation of AYUSH Systems of Medicine in North-East India: Evidence from NSS 79th (2022–2023) Round on AYUSH

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Abstract

Background: *Socioeconomic inequality in healthcare Utilisation continues despite policy focus on universal health coverage and Sustainable Development Goal 3. India's traditional, complementary, and alternative medicine systems are generally termed as AYUSH. AYUSH has been consolidated into the national health policy; however, empirical findings on its distributive equity persist as limited. This study estimates and decomposes socioeconomic inequality in Utilisation of AYUSH systems of medicine among the adult age group 15 to 59 years in North-East India.* ***Methods****: Data were taken from the National Sample Survey (NSS) 79th round on AYUSH. The sample consists of 64,211 individuals aged 15 to 59years in North-East India. Descriptive statistics presented the population profile. The logit regression was applied to estimate the odds of AYUSH Utilisation by socioeconomic variables. The degree and factors of inequality were analyse using the Concentration Index and Wagstaff decomposition (2005).* ***Results:*** *The logit analysis exhibits that AYUSH Utilisation is associated with age, gender, education, and region-specific economic status. Older adults (45–59 years) and females showed higher odds of Utilisation. The Concentration Index (CI) indicated a significant pro-rich inequality (CI = 0.0211) in AYUSH Utilisation. Decomposition analysis exhibited that around 94 per cent of overall inequality was explained by observed factors. The age, gender and education factors contribute a major part to overall inequality.* ***Conclusion:*** *Utilisation of AYUSH healthcare in North-East India remains socially unequal, with preference for affluent classes. To achieve equity, supply-side measures should expand the AYUSH infrastructure in rural and tribal areas, enrich human resources, and start more community-based AYUSH health insurance schemes to reduce out-of-pocket expenditure. Demand-side interventions may include structured awareness programs, cultural initiatives, and incorporating AYUSH education in the school curriculum, etc. Such demand and supply-side drivers are important not only for achieving "Health for All" but also for appreciating AYUSH's full competence as a public health equaliser.*

Keywords: AYUSH, socioeconomic inequalities, concentration index, decomposition analysis, logit regression

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INTRODUCTION

Health is globally recognised as the backbone of human development. Even after decades of reform and investment, health inequity remains a key challenge for public health. Attaining universal health coverage (UHC), ensuring access to standard health services without financial burden, is one of the major targets under Sustainable Development Goal (SDG 3). The principal objective of SDG 3 is "Ensure healthy lives and promote quality of life for all at all ages" [1]. Irrespective of so many policy

efforts and access-related programmes on a worldwide basis, inequality persists in access and Utilisation of healthcare within and across countries. What type of healthcare people want strongly depends on their demographic, socioeconomic status and the extent to which they bear their financial burden. Meanwhile, global health policy has broadly centred on allopathic/biomedical systems; an analogous domain of traditional, complementary, and alternative medicine (TCAM) continues to play an important role, though often underrated, contribution in health-seeking behavior. The World Health organisation (WHO) defines TCAM as "the sum of knowledge, skills, and practices based on the beliefs, theories, and experiences indigenous to different cultures, applied in the sustaining of health and in the treatment of illness and for diagnosis" [2]. WHO computed that many residents in developing countries depend on some form of TCAM for basic healthcare needs [3, 4]. Worldwide, the institutionalisation and equity of the TCAM system vary significantly. Traditional Chinese Medicine and Korean traditional medicine perform within state-regulated systems and have reached significant equity advancement in resource allocation in East Asia [5–9]. In contrast, in Sub-Saharan Africa, where TCAM use is significant, its practice persists largely informally, excessively utilised by lower-income people, rural population and still it is under-regulated [4]. TCAM is broadly unified into mainstream healthcare systems supported by patient demand and availability of practitioners in Germany [10]. These worldwide studies significantly highlight that equitable access and Utilisation of TCAM particularly depend on financing, regulation, cultural legitimacy, and integration. Acknowledging this importance, WHO formulated "Traditional Medicine Strategy 2014-2023" [11] and, in 2025, it made a call for evidence-centric integration of TCAM into the formal healthcare system to enhance quality, accessibility, and safety [12].

The Indian health system is diverse, comprising allopathic, traditional, alternative, and indigenous systems. TCAM are collectively integrated under AYUSH healthcare systems, which comprise of Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa, and Homoeopathy. India has a strong cultural and traditional legacy in AYUSH. AYUSH embodies both curative and preventive perspectives, aligned with holistic well-being. The Utilisation of AYUSH vividly bounced back as a preventive healthcare system in the COVID-19 pandemic. This incident gradually enriched the public's faith and dependency on traditional and alternative medicine. However, despite policy focus, socioeconomic disparities in AYUSH Utilisation remain insufficiently measured. A Previous study on the NSS 71st (2014) round exhibited only 6.9% AYUSH use among outpatients, with steep gradients by income and education [13]. The first dedicated AYUSH survey covering preference, awareness, and use marks in the NSS 79th (2022–23) round. Preliminary results of this data set revealed that 60% preference and more than 95% awareness are present in the sample about the AYUSH systems of medicine. AYUSH Utilisation is highest in southern states and moderate in eastern states. Older persons, women, and urban people reported higher AYUSH use [14].

Yet Utilisation remains skewed towards urban, educated and rich groups. This pattern highlighted that huge acceptance but unequal access, endures inequality in India's TCAM healthcare field. Although AYUSH exhibits significant acceptance and is guided by policy, access to authorised AYUSH care remains regionally varied and socially stratified. Regionally, India is divided into six regional parts: northern, eastern, western, central, southern and north-eastern parts. A total of eight states are present in the north-east region. It has a unique socio-cultural tradition, folk medicine practices, and local healing practices. Despite this rich cultural foundation, the institutionalisation and Utilisation of AYUSH systems remain regionally limited, maybe because of weak health infrastructure, economic inequality, difficult terrain, etc. Despite ongoing policy Prioritisation on mainstreaming and integration of AYUSH within India's health system, very little empirical evidence is available on the degree and responsible factors of socioeconomic inequality in AYUSH Utilisation in India or parts of India. This study, therefore, endeavors to quantify and decompose socioeconomic inequities in Utilisation of AYUSH in North-East India, analysing how educational, caste, demographic, and income disparities shape access across north-eastern regions. By identifying key factors, this study seeks to identify evidence-based policy action that strengthens affordability, equitable access and finance-driven protection within AYUSH systems, advancing toward attainment of UHC and SDG 3: Good Health and Well-Being.

METHODS

Data Source

For this study, data were taken from the National Sample Survey (NSS) 79th round, 2022–23 on AYUSH, a nationwide household survey conducted by the Ministry of Statistics and Programme Implementation (MoSPI) under the Government of India [15]. This analysis is done for the North-Eastern region of India, comprising Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim. The sample for this present study is bounded with individuals aged 15 to 59 years, excluding senior citizens and children. Under this survey, there are two data subsets present at the individual-level and household-level, respectively. The NSS follows a multistate stratified sampling design. The NSS 79th survey multiplier is responsible for nationwide representative estimates. This study draws 64211 records, and the merged file contains 30,484,450 individuals/observations (after weighting, where the weight = "Multiplier/100") in North-East India.

Variable

Dependent Variable: The study outcome of interest was Utilisation of AYUSH healthcare, which was drawn from the NSS question "Where used AYUSH (Ayurveda, Yoga, Naturopathy, Unani, Siddha, Sowa-rigpa, Homoeopathy) systems of medicine in the last 365 days (yes – 1, no – 2). Independent variable: a diverse set of socioeconomic and demographic covariates was included, comprising the Andersen Behavioral Model of Health Service use and past equity studies [16, 17]. Each variable was recoded into well-balanced statistical categories to improve interpretability and model consistency. Age group coded as 15–29, 30–44, 45–59 years. This segmentation captures age-oriented variation in chronic illness, preventive care Utilisation, and health awareness. Gender categorised as Male and Female. Gender variations in healthcare-seeking behavior and adherence to TCAM are properly documented in prior global and Indian studies [18, 19]. Relationship to head of household coded into head, spouse, child/grandchild, others to capture intra-household decision-making stratifications that explain health choices. Marital status was categorised into two parts: currently married and others. This status was incorporated to determine its effect on economic dependency and healthcare-seeking behavior. Education level recoded as illiterate, primary level, secondary level, and graduate/above; these levels sometimes serve as a proxy for awareness and health literacy [20, 21]. Social group segmentation affects both access to and attitudes toward healthcare Utilisation. Groups are ST, SC, OBC, and others [22, 23]. Place of residence is marked as rural and urban [24]. Economic status was derived from the usual monthly household consumer expenditure. This allows us to make a continuous socioeconomic rank for the concentration index [25–27]. Economic status is classified as poor, lower middle, upper middle and rich class. The combined effect of place of residence with economic class makes an intra-urban and intra-rural income expenditure gradient in Utilisation. Household size group is small, medium, and large. Employment-oriented household types were stratified as self-employed/ casual laborers and regular salaried laborers.

Statistical Analysis

- *Descriptive Analysis:* The total frequencies and percentages were calculated for all categorical variables. Weighted frequencies and percentages were estimated using sampling weights as per the NSS 79th guideline.
- *Logistic Regression:* To analyse determinants of AYUSH Utilisation, fitted in logistic regression. The model is specified.

$$logit(p_i) = \ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \sum_{k=1}^{K} \beta_k X_{ik} + \varepsilon_i$$

where p_i stands for the probability of AYUSH Utilisation of individual i, whereas, X_{ik} denotes explanatory variables, and ε_i is the error term.

- *Odds Ratios Computed as:* $OR_k = e^{\beta_k}$. It indicated the adjusted likelihood of AYUSH Utilisation as comparison with the reference category.

- *Concentration Index (CI):* To measure income-oriented inequality in AYUSH Utilisation, the Concentration Index (CI) was calculated. CI estimates the degree of socioeconomic inequality in a health variable y_i ranked by usual monthly household consumer expenditure R_i (taken as pseudo income).

$$CI = \frac{2}{\mu} Cov(y_i, R_i)$$

where y_i = AYUSH Utilisation, μ = mean Utilisation rate, R_i = fractional rank of individuals by usual monthly household consumer expenditure. Cov = covariance.

A Positive concentration index indicates pro-rich inequality (higher Utilisation among rich individuals), a negative concentration index indicates pro-poor inequality. The Wagstaff Concentration was used applied to maintain bounds between –1 and +1 [28].

- *Wagstaff Decomposition of the Concentration Index:* To decompose the calculated inequality into contributors from individual factors. In this study, the Wagstaff decomposition technique [28–30] was applied.

Considering a linear approximation to the logistic model

$$y_i = \alpha + \sum_{k=1}^{K} \beta_k x_{ik} + \varepsilon_i$$

The concentration index of y_i can be expressed as:

$$CI_y = \sum_{k=1}^{K} \left(\frac{\beta_k \overline{x_k}}{\mu_y} \right) CI_{x_k} + \frac{G_\varepsilon}{\mu_y}$$

where CI_y = concentration index of AYUSH Utilisation, CI_{x_k} = concentration index of determinants x_k, $\overline{x_k}$ = mean of variable x_k, μ_y = mean AYUSH Utilisation, Gε = generalized concentration index of residual (unexplained).

Each term $\left(\frac{\beta_k \overline{x_k}}{\mu_y} \right) CI_{x_k}$ denotes the absolute concentration of determinant x_k to overall inequality.

The percentage contribution was then:

$$\%C_k = 100 \times \frac{(\beta_k \overline{x_k}/\mu_y)\, CI_{x_k}}{CI_y}$$

The residual component represents inequality not explained by the included covariates.

Implementation employed O'Donnell et al. (2008) and applied predicted probabilities from the logit model to estimate a linear relationship [31]. All analysis was conducted in R and Python.

RESULTS AND DISCUSSION

Table 1 represents the socioeconomic distribution of individuals aged 15 to 59 years who stated using any AYUSH systems of medicine during the past 365 days in North-East India, excluding children and senior citizens. Around 41 per cent of AYUSH users were between 15 to 29 years, while the older adult age group represents approximately 23 per cent. The distribution of gender was almost balanced, with 49 per cent females and 51 per cent males. In terms of educational status, many AYUSH users had finished primary school education, followed by higher education. Around 7 per cent of respondents were illiterate, while 9 per cent of respondents held graduate or higher qualifications.

Table 1. Socioeconomic and demographic profile.

Background characteristics	Category	Weighted frequency	Unweighted frequency	%
Age	15–29 years	1,26,56,037	25,902	41.52
	30–44 years	1,07,82,168	23,051	35.37
	45–59 years	70,46,245	15,258	23.11
Gender	Male	1,53,75,255	32,322	50.44
	Female	1,51,09,195	31,889	49.56
Education	Illiterate	21,82,961	3,534	7.16
	Primary/Middle School	1,42,86,344	24,970	46.86
	Secondary/Higher Secondary	1,10,20,148	26,283	36.15
	Graduate and above	29,94,997	9,424	9.82
Relationship of Household members with head of the household	Head	79,80,557	17,268	26.18
	Spouse	73,52,999	15,191	24.12
	Child/Grandchild	1,38,16,047	28,805	45.32
	Others	13,34,847	2,947	4.38
Marital Status	Currently married	1,98,12,543	39,912	64.99
	Others	1,06,71,907	24,299	35.01
Religion Group	Hindu	1,64,18,844	25,340	53.86
	Muslim	72,78,066	7,670	23.87
	Others	67,87,540	31,201	22.27
Social Group	ST	96,73,953	33,803	31.73
	SC	24,71,447	4,674	8.11
	OBC	79,57,869	12,087	26.10
	Others	1,03,81,180	13,647	34.05
Economic Group with Place of Residence	Lower Middle Rural	93,30,369	12,272	30.61
	Lower Middle Urban	12,17,658	5,445	3.99
	Upper Middle Rural	60,59,378	9,715	19.88
	Upper Middle Urban	12,77,735	6,096	4.19
	Poor Rural	69,79,489	10,865	22.90
	Poor Urban	6,78,280	4,373	2.23
	Rich Rural	31,43,845	6,726	10.31
	Rich Urban	17,97,696	8,719	5.90
Household Size	Large	60,14,603	12,641	19.73
	Medium	1,12,57,851	22,802	36.93
	Small	1,32,11,996	28,768	43.34
Means of Livelihood	Self-employed and Others	2,31,19,296	46,837	75.84
	Salaried/Regular wage	73,65,154	17,374	24.16

Source: Self-elaboration of data from the NSS 79th Round on AYUSH.

According to household relationships, around half of the respondents were grandchildren or children of the head of household, followed by the head of the household and spouses. The marital status revealed that around 64 per cent of AYUSH users were currently married. With respect to religion, 53.86 per cent identified as Hindu, and 23.87 per cent as Muslims. By social caste group status, individuals belonging to the general and others capture the largest group of AYUSH users, where the ST and OBC groups capture around 31 per cent and 26 per cent, respectively. Economic stratification was based on the usual monthly household consumer expenditure. Around one-third of AYUSH users belonged to the lower-middle group in rural areas, followed by the poor rural group, 22.9 per cent. Around 10 per cent were from rich rural groups. According to household size, approximately 43.34 per cent of respondents stayed in a small household. ≤four members of people are treated as a small category, and ≥ eight members are in a large category. Regarding means of livelihood classification, three-fourths of

the AYUSH users were self-employed or casual workers; meanwhile, around one-fourth were regular wage earners or in salaried employment.

In this logit model analysis (Table 2), the dependent variable is taken as "whether any of the AYUSH systems was used in the last 365 days". In this study based on the north-eastern region, socioeconomic factors are independent variables such as age, gender, education, respondent's relationship to household head, marital status, religion, social status, economic group based on UMHCE and place of residence, household size, and means of livelihood. Both age categories 30 to 44 years (OR = 1.300, 95% CI: 1.242–1.361) and 45 to 59 years (OR = 1.790, 95% CI: 1.693–1.892) have higher odds ratios around 30per cent and 79per cent, compared to the younger adults. This higher odds ratio for older adults compared to the youngest adult may be because older adults have higher chronic diseases like joint disorders, non-communicable diseases, musculoskeletal pain, etc and may prefer long-term lifestyle therapies like yoga, Ayurveda, etc. This need-oriented pattern also influences higher Utilisation in other countries [32]. Older adults may prefer this alternative medicine due to cultural familiarity and have more autonomy to pursue these therapies. Females (OR = 1.585, 95% CI: 1.520–1.652) have more than fifty per cent higher odds than males. Women prefer integrative, holistic care services and seek preventive care. AYUSH provides all, may for this reason, females utilize it more. This gender specific pattern is visible for both TCAM and biomedical care in a worldwide pattern [33, 34]. Education positively increases the ability to choose and judge different types of medicine, including AYUSH. Educated respondents have higher health literacy and are more inclined to be aware of AYUSH evidence and its options. Education correlates with formal employment and income; this is because more educated persons have the means to afford AYUSH healthcare and treatments. In a family, heads are generally older adults with strong healthcare needs, and thus they utilize more.

AYUSH types of healthcare systems, which provide preventive and curative healthcare. Children or grandchildren (OR = 0.522, 95% CI: 0.494–0.553) may be comparatively younger than the head of a household and less likely to prefer AYUSH Utilisation. Single, widowed and divorced people (OR = 0.962, 95% CI: 0.918–1.008) have lower odds of AYUSH Utilisation compared to currently married persons. Married respondents may be more inclined to seek a holistic lifestyle and preventive care compared to their counterparts. With respect to Hindus, Muslims (OR = 1.172, 95% CI: 1.100–1.249), and other religious groups (OR = 1.209, 95% CI: 1.144–1.277) like Christianity, Jainism, Buddhism in North-East India had higher odds of AYUSH Utilisation. This may reflect increasing cross-community acceptance of AYUSH healthcare systems of medicines. Scheduled Tribes population very often clusters in a particular region in North-Eastern states, where some traditional healthcare systems, like traditional healers, folk medicine, are present and have some strong cultural beliefs; for that reason, they utilize more AYUSH systems. For this study, economic group stratification is done based on usual monthly household consumer expenditure, which is often treated as pseudo income. This analysis found a clear rich gradient in AYUSH Utilisation. Rich urban (OR = 1.472, 95% CI: 1.383–1.564) and rich rural (OR = 1.486, 95% CI: 1.393–1.585) groups have substantially higher odds of AYUSH Utilisation. Economically wealthier people can spend a huge number of resources on AYUSH medicines and consultations compared to the low-income group people. Among the wealthier group, AYUSH Utilisation frequently plays as a preventive and holistic healthcare systems, which potentially increase Utilisation beyond need-driven care services. Utilisation of AYUSH systems of healthcare is huge among economically enriched people maybe because of practitioners and clinics are available in areas with high-income residents. With respect to household size, medium and small households have higher odds than large households. Medium (OR = 1.292, 95% CI: 1.232–1.356) and small (OR = 1.366, 95% CI: 1.296–1.439) households commonly correspond to nuclear families with higher disposable income; for this reason, they may increase the AYUSH Utilisation rate. Salaried/regular wage (OR = 1.060, 95% CI: 1.020–1.102) may have flexibility to avail AYUSH clinics or consultation compared to self-employed or casual laborers and suggest a more health-conscious lifestyle. This logit analysis highlighted that AYUSH Utilisation in North-East India is notably shaped by age, gender, educational status, resident-specific economic status, social caste status, and other factors.

Table 2. Association between socioeconomic factors and Utilisation of AYUSH system of medicine in Northeast India.

Background characteristics	Category	Odds ratio
Age	15–29 years (Ref)	1.000
	30–44 years	1.300 (1.242–1.361)***
	45–59 years	1.790 (1.693–1.892)***
Gender	Male (Ref)	1.000
	Female	1.585 (1.520–1.652)***
Education	Illiterate (Ref)	1.000
	Primary/Middle School	1.309 (1.215–1.411)***
	Secondary/Higher Secondary	1.390 (1.286–1.502)***
	Graduate and above	1.444 (1.324–1.576)***
Relationship of Household members with head of the household	Head (Ref)	1.000
	Spouse	0.755 (0.712–0.800)***
	Child/Grandchild	0.522 (0.494–0.553)***
	Others	0.549 (0.501–0.601)***
Marital Status	Currently married (Ref)	1.000
	Others	0.962 (0.918–1.008)*
Religion Group	Hindu (Ref)	1.000
	Muslim	1.172 (1.100–1.249)***
	Others	1.209 (1.144–1.277)***
Social Group	ST(Ref)	1.000
	SC	0.901 (0.833–0.975)**
	OBC	0.906 (0.852–0.962)***
	Others	0.844 (0.788–0.903)***
Economic Group with Place of Residence	Lower Middle Rural (Ref)	1.000
	Lower Middle Urban	0.939 (0.877–1.005)**
	Upper Middle Rural	1.085 (1.025–1.148)***
	Upper Middle Urban	1.075 (1.007–1.148)**
	Poor Rural	0.798 (0.755–0.844)***
	Poor Urban	0.796 (0.739–0.858)***
	Rich Rural	1.486 (1.393–1.585)***
	Rich Urban	1.472 (1.386–1.564)***
Household Size	Large (Ref)	1.000
	Medium	1.292 (1.232–1.356)***
	Small	1.366 (1.296–1.439)***
Means of Livelihood	Self-employed and Others (Ref)	1.000
	Salaried/Regular wage	1.060 (1.020–1.102)***

Note: Ref – Reference category; ***p ≤ 0.001, **p ≤ 0.01, *p ≤ 0.10; Number of Observations (n) = 64211, LR chi2 (25) = 4335.540; Probchi2 p ≤ 0.000; PseudoR2 = 0.052; Loglikehood = –43775.392.
Source: Self-elaboration of data from the NSS 79th Round on AYUSH.

The exhibits of the logit made a notable association between UMHCE-based economic class and AYUSH health seeking behavior, demonstrating the prevalence of socioeconomic inequality in Utilisation of AYUSH healthcare services. In this part, measure the socioeconomic inequalities in Utilisation of AYUSH healthcare systems among the 15 to 59 years age group in North-East India by applying the Concentration Index (CI) from the NSS 79th round, 2022–23 dataset on AYUSH. The Concentration Index (CI) for AYUSH Utilisation was computed at 0.0211. This value reveals a mild pro-rich distribution of AYUSH healthcare Utilisation in North-East India. More precisely, Utilisation of AYUSH healthcare

services is likely to be concentrated among respondents to higher income strata, as defined by usual monthly household consumer expenditure. Usually, a positive CI fairly denotes that AYUSH users are concentrated among rich populations. The Concentration Index do not reflect any track of which factors make the inequity occur. For that reason, in this study, applied decomposition analysis and used Wagstaff decomposition analysis. This decomposition analysis (Table 3) further subdivided the total inequality (CI = 0.0211) into an explained part of 0.0199 and a residual component of 0.0013. Thus, around 94 per cent of the overall inequality in AYUSH healthcare Utilisation can be explained by observed socioeconomic variables, while 6 per cent remains unexplained. This residual part may be due to unobserved factors like regional health policy differences, cultural preferences, measurement error, etc. Age-oriented differences in AYUSH healthcare systems Utilisation are a significant contributor to inequality. The age groups 30 to 44years and 45 to 59 years contributed (Absolute contribution ~ AbsCont = 0.00548,25.98%) and (AbsCont = 0.00727, 34.45%), respectively, to the total inequality. The CI and positive elasticity values denote that AYUSH Utilisation among 30 to 59 years adult groups is disproportionately higher among the affluent classes. It may signify that economically sound older adults have higher health needs and financial potential to access AYUSH services regularly. This reveals that age acts as both an opportunity and a need-based factor. Similar observations were reported in earlier works in rural Indonesia, middle-aged adults had persistently greater use of traditional healthcare services, predominantly reflecting economic capability and chronic illness burdens [35].

Table 3. Contribution of independent variable to the inequity in AYUSH Utilisation.

Background characteristics	Category	Elasticity	CI	Absolute contribution to CI	% Contribution
Age	30–44 years	0.06515	0.08418	0.00548	25.97898
	45–59 years	0.07812	0.09311	0.00727	34.45429
Gender	Female	0.13981	0.08957	0.01252	59.31969
Education	Primary/Middle School	0.07389	0.08985	0.00664	31.44977
	Secondary/Higher Secondary	0.05904	0.08090	0.00478	22.62464
	Graduate and above	0.01247	0.06917	0.00086	4.08728
Relationship of Household members with head of the household	Spouse	–0.02559	0.07821	–0.00200	–9.48166
	Child/Grandchild	–0.17534	0.08768	–0.01537	–72.82662
	Others	–0.01423	0.20320	–0.00289	–13.69912
Marital Status	Others	0.01467	0.10669	0.00157	7.41602
Religion Group	Muslim	0.01047	0.08458	0.00089	4.19589
	Others	0.00539	0.08519	0.00046	2.17414
Social Group	SC	–0.00969	0.00855	–0.00008	–0.39250
	OBC	–0.03639	0.10700	–0.00389	–18.4446
	Others	–0.01913	0.07088	–0.00136	–6.42249
Economic Group with Place of Residence	Lower Middle Urban	0.00348	0.18710	0.00065	3.08256
	Upper Middle Rural	–0.00113	0.05698	–0.00006	–0.30607
	Upper Middle Urban	0.00361	0.13711	0.00049	2.34280
	Poor Rural	–0.01397	0.10550	–0.00147	–6.98362
	Poor Urban	–0.00372	0.11034	–0.00041	–1.94476
	Rich Rural	0.00382	0.10301	0.00039	1.86463
	Rich Urban	0.01206	0.03328	0.00040	1.90128
Household Size	Medium	0.02810	0.10232	0.00288	13.62138
	Small	0.02595	0.07232	0.00188	8.89065
Means of Livelihood	Salaried/Regular wage	0.00253	0.09573	0.00024	1.14877
			Residual	0.00126	5.94865

Source: Self-elaboration of data from the NSS 79th Round on AYUSH.

Gender, female (AbsCont = 0.01252, 59.31%), was the single largest contributor to total inequality. The CI value 0.0896 and positive elasticity show that while AYUSH Utilisation is more among females, it is significantly concentrated among affluent women. Out of the total inequality variable like education itself, reflected around 58 per cent.

The largest portion came from primary/middle school and secondary/higher secondary variables. So, education enhances the inequality in favor of affluent class. The exhibits conform with decomposition analysis from Indonesia [26], where it is consistently recognized that education is a key contributor to determinants of healthcare inequality. Moreover, positive elasticity specifies that AYUSH Utilisation increases significantly with escalating levels of health awareness and health literacy.

An individual's relation to the head of the household revealed negative contributions. Consistently negative contributions, signifying that AYUSH use among dependents is more evenly distributed among all income groups. Marital status (AbsCont = 0.00157) variable contributed around 7.5% positively. It indicates that the married individuals who fall under the affluent class use more AYUSH healthcare services. Muslim (AbsCont = 0.00089, 4.19%), and other religious (AbsCont = 0.00046, 2.17%) groups contributed positively. It shows that higher AYUSH Utilisation among economically stable classes adherents in these groups.

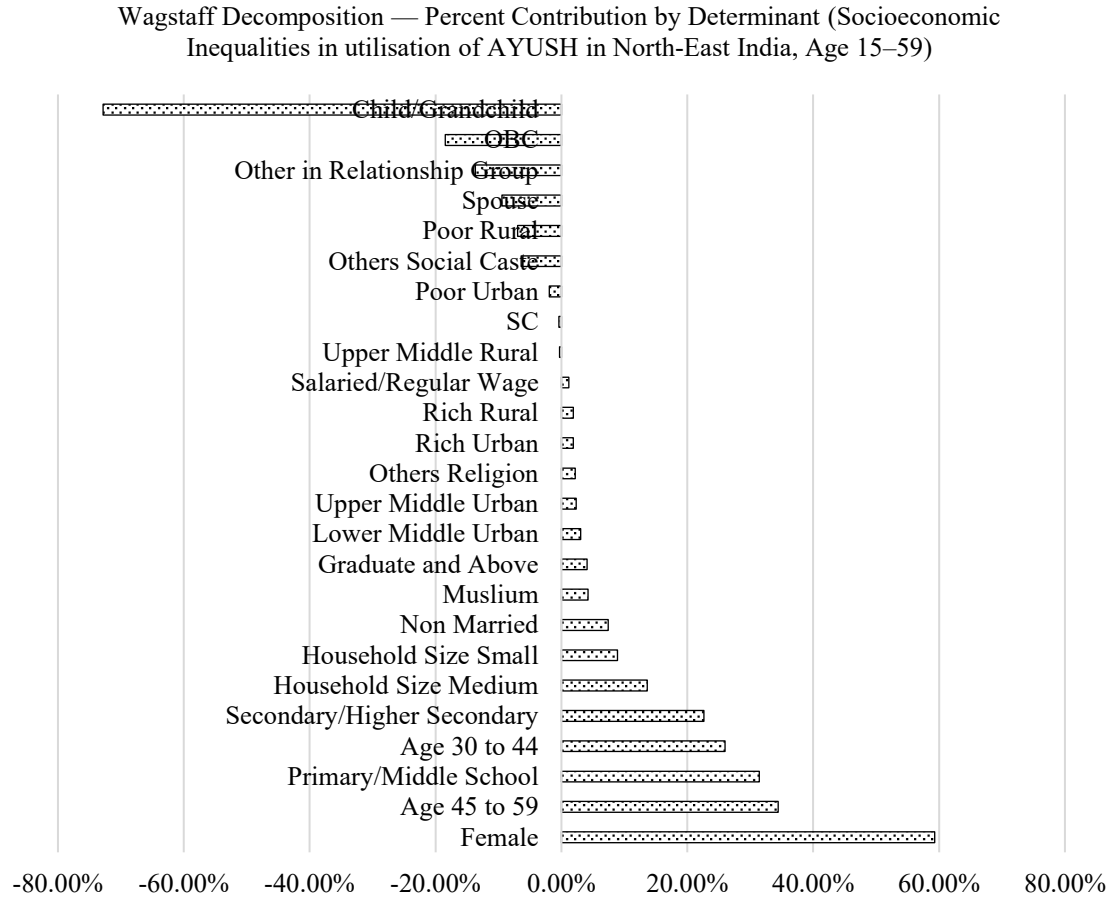

Figure 1. Self-elaboration of data from the NSS 79th Round on AYUSH.

Social caste group variations exhibit a negative contribution to overall inequality. It advocates that AYUSH Utilisation among SC (AbsCont = –0.00008, –0.39%), OBC (AbsCont = –0.00389, –18.44%), and Others (AbsCont = –6.4%) groups is limited, concentrated among the economically rich classes, which may reflect limited access and cultural heterogeneity in health-seeking behavior. These exhibits

reflect trends highlighted in earlier reports in Nigeria [36], where inequality in healthcare Utilisation across ethnic groups remained meaningful despite considering income effects.

The economic category by residential location exhibited the pro-rich gradient. Rich respondents who lived in rural areas (AbsCont = 0.00039, 1.86%) and rich urban respondents (AbsCont = 0.00040, 1.90%) group together showed that AYUSH healthcare Utilisation is significantly higher among economically rich households regardless of urban–rural location. On the other hand, poor rural and poor urban group respondents contributed negatively. It reveals that lower Utilisation among economically weaker sections.

These differences may signify the availability and affordability barriers of AYUSH institutions for economically marginalized people. Utilisation of AYUSH healthcare systems is highly concentrated among the affluent categories may be because formal AYUSH care needs monetary payments like licensed practitioners, modern marketable herbal medicines, modern equipment-oriented clinics fees, etc. Similar studies on healthcare Utilisation in China [7, 37] and India [38, 39] verify that financial viability endures to mediate access even in settings with public policy and programs. Similar economic perspective studies in healthcare Utilisation exhibit higher out-of-pocket expenditure to overall healthcare expenditure, unequally restricting access for the poor in Nigeria [40–46].

Medium (AbsCont = 0.00288, 13.6%) and small (AbsCont = 0.00188, 8.89%) household typically nuclear families with higher disposable income. Maybe because of this reason, they use more AYUSH healthcare services compared to larger households with low per capita income and fewer resources. Means of livelihood or occupation category of salaried/regular wage workers contributed a small positive amount to overall inequality. It revealed that a formal type of employment is slightly correlated with higher AYUSH healthcare services Utilisation among affluent respondents. Maybe because of better access to institutional employer-linked health and wellness programs (Figure 1).

CONCLUSION

The descriptive statistics initiated the ground of the socioeconomic structure of AYUSH healthcare Utilisation among adults aged group for North-East India. The logit regression showed that age, gender, education, marital status, and economic status are significant predictors of AYUSH users. The concentration index exhibits a mild but significant pro-rich inequality (CI = 0.0211) in AYUSH healthcare Utilisation across North-East India. Decomposition analysis finds the important variables for inequality, like education, gender, age, etc. These mentioned variables endorsing the affluent advantaged. On the other hand, the social caste group and the relationship of household members with the head showed significant negative contributions. From a policy-oriented view, this result reflects that AYUSH Utilisation in North-East India is yet to operate as an equitable access to healthcare alternative services under the UHC vision. Policy action may combine supply-side enrichment and demand-side inclusion. Supply-side policy measures may expand more AYUSH infrastructure, like AYUSH Health and Wellness centres (HWCs) within Primary and Community health centres in rural and tribal districts and recruit trained AYUSH practitioners in these rural and tribal areas through incentives and proper career pathways. Start more community-based AYUSH health insurance schemes to reduce out-of-pocket expenditure. May include more subsidising of AYUSH medicine and herbal products in these areas, supported by CSR-based supply-chain network. Evidence from China shows the regional investment in TCM institutions mitigates inequality, while uneven geographic concentration intensifies it. May create and allocate a dedicated “AYUSH Equity Fund” for underperforming areas and apply “Equity Scorecard” like AYUSH Grid (digital platform for the entire AYUSH sector) and A-HMIS (AYUSH Health Management Information Systems). On the demand-side policy measure, the concerned authority implements more AYUSH awareness campaigns. Health literacy efforts that strengthen public knowledge and understanding of AYUSH’s preventive, curative, and holistic roles are of vital importance. May entail embedding AYUSH-related topics into school health education and community-centred programs in the North-East states. Inspire Accredited Social Health Activists (ASHA) workers to spread AYUSH oriented information in rural areas. Comparable experiences from

Ghana exhibit that awareness programs significantly lower inequity when cultural acceptance is present, but proper knowledge is uneven. Alongside cultural competence workshop and training for AYUSH medical practitioners to increase trust and local integration in rural and tribal areas. In Germany, similar study on CAM exhibit that holistic public information campaign and intensified research in the TCAM field increase it integration with conventional healthcare systems. India may adapt this strategy. An equitable and inclusive AYUSH healthcare system could then function as a bridge between indigenous holistic wellness and biomedical modernity, fulfilling both the promise of Health for All and SDG 3: Good Health and Well-Being.

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