Knowledge on Ethnomedicinal Practices among School Youths in Banke, Nepal [1]

Ankit Kumar Singh , Amarnath Prasad, Pramod Nag, Ravi Singh Mahatara, Keshab Chokhal, Yogendra Shah, Budhan Chaudhary, & Gyanu Thapa Magar

Abstract

Traditional healing practices are in rare use along city areas as there remains easy access to modern treatment system and drugs than cultural ones. The declining ethnomedicinal knowledge among youths is of great threat to this knowledge and their possible future scopes and aptitudes towards drug synthesis in near future. The present survey aimed to document the status of ethnomedicinal knowledge among school youths in city with multicultural people in the community. Study was carried out in five schools of three municipalities in Banke district. The mode of data collection was via questionnaire survey. Questionnaire was open ended and selection of youth was in such a way that both male, female of different ages was included. Plant and animal species of medicinal significance were listed with their parts used, uses, method and experience to those practices. In total 87 informants (47 female and 40 male) were participated in interview. The data were entered in Excel and analyses were made. In total 45 plant species belonging to 31 families and 21 animal species belonging to 16 families were known among youths for the treatment of 36 symptoms under 14 ailment categories. Furthermore, two types of mode of use were mentioned: oral (for 19 animal and 41 plant species) and topical (for 4 animal and 26 plant species). Among them oral consumption was higher for both cases of plant and animal species use. The herb was a common life form for reported medicinal plants (n=22) and few were shrubs and climbers (n= 5).

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While, in case of animal parts used, flesh (15) was quite common, followed by honey, wax, and urine (n=1). There were two preparation methods mentioned; the raw form was common for plants and the cooked one for animal products. Since every student participated actively in the interview, a common recommendation to similar species results in the smaller number of species enumeration was interesting. It shows sharing of common traditional knowledge still in use at their own premises, repeatedly heard of. This survey implied to the existence and sharing of common traditional medicinal practices among youths in city areas. This work serves as a pioneer work to document ethnomedicinal knowledge among school youths in city areas. Furthermore, detailed interviews with parents and students of respective families may help to understand the status of inter-generational transmission of traditional healing practices and their future exploration to hidden opportunity and potential modernization with technology.

***Keywords*:** Animals, plants, traditional medicine, youths

Introduction

Plant and animals in relation with human being shows the evolutionary paradigm of civilization, traditional practices, and cultural advancement (Balick & Cox, 2020). Meanwhile, medicinal use of available plant and animal resources in the area has facilitated the human population for their longer and healthier sustenance in the earth. Indigenous people have always experimented on their need and passed useful practices and medicinal remedies from generation to generations (Gurib-Fakim, 2006). In the context of Nepal, more than 2500 plant species are useful for various medicinal and aromatic purposes (Rokaya et. al., 2012), and more than 100 animal species, have been long practiced for their use in medicines and food (Lohini, 2011; 2012; Shrestha & Gurung, 2019).

Previous researches claim for the use of meat products from fish, birds, mammals, amphibians, and reptiles for 1500 years by human beings (Hamblin, 1985; Masson, 1999).And recent recommendations for the biological sources of medicine is of worldwide priority, with its fewer side effects and longer efficacy (WHO, 2015). Beside these all traditional and recently upraising priorities, traditional medicines are rarely in use among people, and the transfer of knowledge is limited. Meanwhile, continuity of these knowledge is inevitable for its conservation and potential source of income generation for upcoming generations. Aiding advance technologies, and searching new

ideas to explore its significance away from its use for sustenance and daily livelihood can bring opportunity to youths (Shackleton, et al. 2011).

Unfortunately, these knowledge are in threat of annihilation due to discontinuity of these ethnomedicinal practices among younger generations and lack of sharing of knowledge with youth, as well least interest of youths on these medicinal practices. Contrastingly, some provinces and organizations are raising voice for the continuity, conservation, and exploration of these knowledge for the better option to modern drugs and opportunity to natural healing via Ayurveda, homeopathy, and therapies (Mallick, 2024). Meanwhile, youths' interest on these practices are rare as they are grown with solo believe on modern drugs rather than natural remedies (Wanzala et al. 2005). To promote these ethnomedicinal practices and healing through natural resources, youth, and their interest on it is vital and most interesting presentation of its paradigm is of younger demand.

In some cities, youths from various area gather at a single location, bringing their ethnomedicinal knowledge with them, but the knowledge slowly replaced by modern drugs and easy consumptions. Such educational hub could be platform for the documentation of diverse ethnic knowledge and ethnomedicinal practices. It could be of their interest to explore new ideas away from printed books and learning by experience from real life. However, limited studies were known to explore ethnomedicinal knowledge among youths. Thus, present study aimed to explore the ethnomedicinal knowledge among the school youths in Nepalgunj, Banke district.

Materials and Methods

Banke district lies between 81°37' east to 81°42' east longitude and 27°90' north to 28°20' north latitude ranging from 127 to 1248 m elevation above sea level (Fig 1). It covers a total area of 2,337 sq. Km with population of 1,66,258 (NPHC, 2021). The area serves as common hub for the diverse communities from various region of Nepal offering job, education, and trade opportunities. The most common communities were Brahmin, Chettri, Madhesi, Tharu, and Magar (NPHC, 2021). The survey was carried out in different private and public educational institutions in Nepalgunj Sub metropolitan city, Kohalpur and Khajura municipalities of Banke district, Lumbini Province.

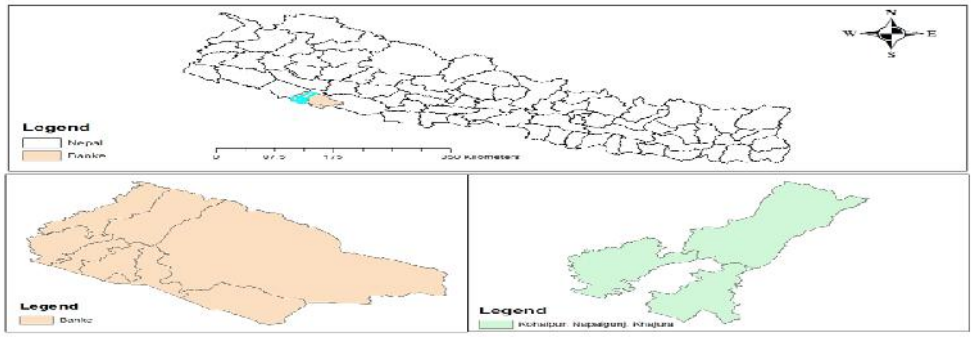


Fig: 1 Map of Study Area

The present study was conducted in purposively selected five schools; two in Nepalgunj sub metropolitan city, one in Khajura and two in Kohalpur municipality (Fig 1). In total 870 students; 463 female and 407 males were there studying in five schools at the level of grade 11 and 12. From the total students, 1% of the youths with age group 15-24 were interviewed; 47 were female and 40 were male youths; ~1% of each gender. The data collection was carried out in the month of July, 2024 via interview. Two ways of data collection was employed; interview with semi-structured questionnaire and in-depth individual interview. Ethical approval and prior oral consent were taken from institutional heads and youths in the classroom. Regarding ethnicity and native locality of youths, Brahmin were dominant (n=34), followed by Chhetri (20), Madhesi (n=15), Tharu (10), and Magar (8); and most of them (66%) were from hilly region of western Nepal and remaining were local inhabitants.

The collected data were entered in Microsoft Office Excel 2011 and graphical presentation was made to give information on life form, mode of use, application, parts used, ailments, and higher classification of the species recorded. Recent trend of use of those ethnic medicine among youths were also displayed. Further analysis was completed via SPSS (version 20.0). Species were confirmed by their local name relevant scientific names of plant and animal species. Further confirmation was made via experts and published literature from the respective region where youth belong.

Results

The present study recorded total of 36 disease and symptoms were recorded under twelve broad ailment categories with multiple related diseases and symptoms (Table 1). Most of the plant and animal products were known to be used in respiratory disease,

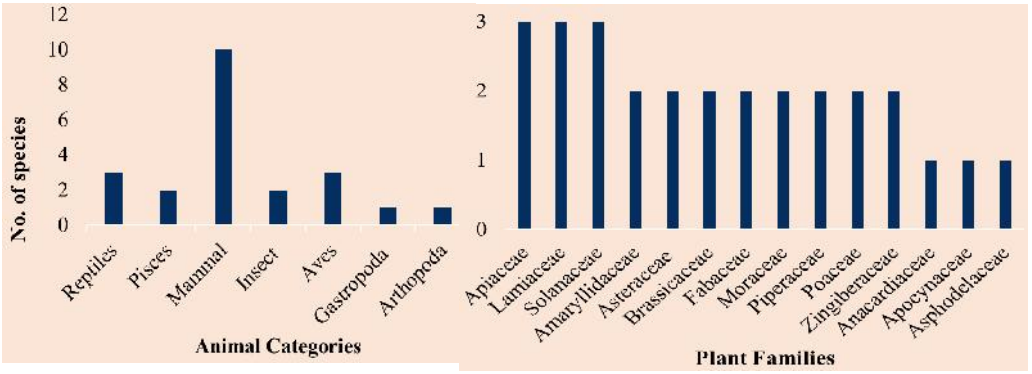
followed by gastrointestinal disorder, cardiac, skin, neuro-disorder while, least of them used in endocrine problems (Table 1).

Table 1

List of ailment categories and included symptoms

Ailment Categories	Disease and symptoms
Respiratory Disorder	Tuberculosis, Common Cold, Flue, Asthma, Tonsilitis, Travelling Sickness
Gastrointestinal Disorder	Emesis, Gastritis, Body ache
Cardiac Problem	Heart Problem, Circulatory System, Blood Purification
Renal Problem	Kidney problem
Skin Problem	Fungal Infection, Burn
Ear& Eye Problem	Eye infection, Ear infection
Non- Communicable disease	Dengue, Malaria, Fever, Cancer
Endocrine Problem	Diabetes
Neuro-Disorder	Memory loss, Epilepsy, Seizures, Traveling Sickness, Paralysis
Reproductive Problem	Sexual problems, Sexual dysfunction, Menstrual disorder
Musculo-Skeleton System	Arthritis, Muscular pain
Others	Body ache, Insect bite, Snake bite, Weakness

The total of 66 species with 45 plant and 31 animal species belong to 31 and 16 families respectively (Table 2 & 3). Mammal's species were highest among animals followed by Aves and Reptiles for medicinal purposes (Fig 2a). Apiaceae, Lamiaceae, and Solanaceae were families with highest number of medicinal species followed by Amaryllidaceae, Asteraceae, Brassicaceae, Fabaceae, and Moraceae among plants (Fig 2b).



(2a) **(2b)**

Fig2: Number of species with families **(a)** Animal species **(b)** Plant species

Among the 45 plant species most of the species were herbs (49%) followed by trees (29%), shrub (11%) and climber (11%)**(Fig3)**. All four types of life form were recorded for the species.

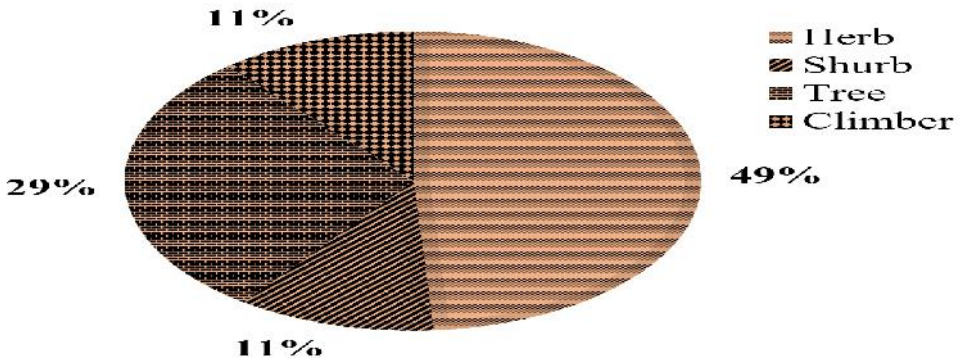


Fig3: Life form of plant species

The eleven different plant parts and nine different animal parts/products were known to be used for medicinal purposes (Fig 4). Among the plant products, fruits were commonly used part followed by leaf, bark, seed, and bulb (**Fig 4a**). Similarly, among animal species, most used part/product was flesh followed by egg, dung, wax, and milk (**Fig4b**).

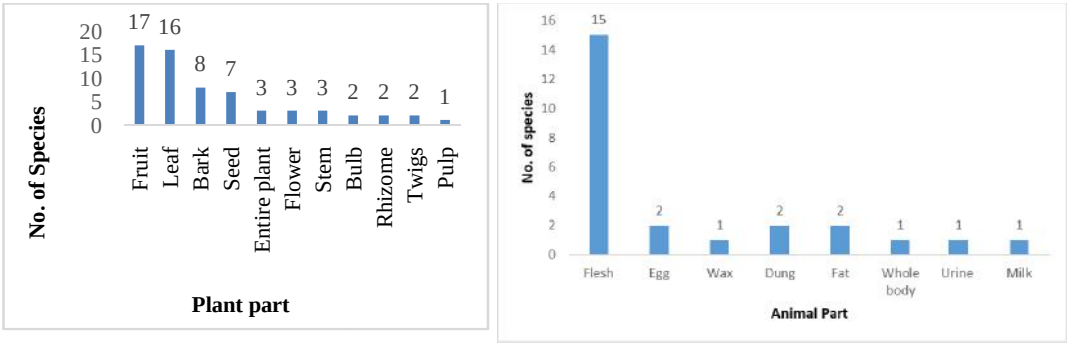
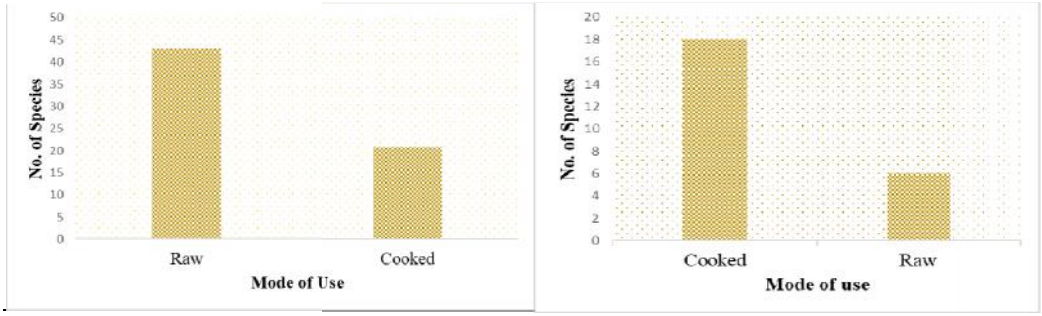


Fig 4: (a) Plant parts used in reported species (b) Animal parts used in reported species

Mode of preparation

The mode of preparation for medicinal mixture was categorized into two forms:cooked and raw forms (Fig 5). In the case of plants, most (68%) species were used in their raw form, and remaining (32%) were used after cooking, either boiled or fried (Fig 5a).In contrast,among animals, most (75%) species were used after cooking and only (25%) species products were consumed in their raw form basically, secretions such as milk, honey, urine, and eggs (Fig 5b).



(5a) (5b)

Fig 5: Preparation mode of **(a)** plant products; **(b)** animal products

Mode of application

Furthermore, the two major routes of application were known; oral and topical (Fig 6). The application methods were different in plant and animal species and species specific as well. The plant products from 16 species were consumed via oral means while 7 species with topical application, and 22 species with both oral and topical modes (Fig

6a). In case of animal products, 17 species were suitable for oral consumption, 2 species products applicable topically and 2 species with both oral and topical apply (Fig 6b).

(6a) **(6b)**

Fig 6: Mode of apply for **(a)** plant products **(b)** animal products

Participants' experience on ethnomedicinal practices

The participants' experience on ethnomedicinal practices showed sources of knowledge and their own experiences to those traditional practices of ethnic biomedicines (Fig 7). The different plant and animal products are now in market with publicity to their use for health benefit, meanwhile real experience of youth on its use for medicinal purpose in recommendation of family members and elders were of major concern and their responses were recorded under three options; (i) at least once used oneself any one of them, (ii) Still using at least one of them, (iii) Never used any of them themselves, only heard from elders. Out of the 87 participants most (n=46) youths replied for their use of at least one ethnomedicinal products at some point in their lives for the medicinal purpose. Among remaining, some (n=23) stated use of at least one of these animal & plant-based remedies still at current time, while some youths (n=18) responded these practices to be heard from elders but never been used themselves or not experienced them personally yet (Fig 7).

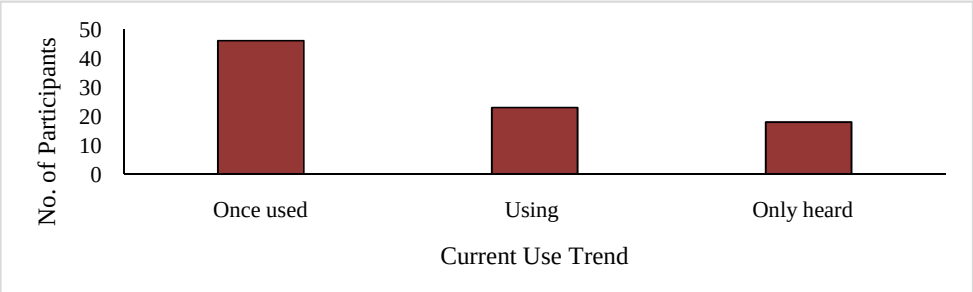


Fig: 7 Current ethnomedicinal Use Trend of Plant and Animal Species.

Discussion

The present study emphasizes crucial insights and the level of ethnomedical understanding among youths. The traditional practices of medicine preparation and application from plants and animal products are decreasing with modern medication, urbanization, and globalization (Alencar, et al., 2014; Rinto, et al., 2023). The present finding revealed knowledge distribution among school youths for ethno-bio-medicinal practices in Banke district with diverse ailments related to various organ and systems of human body (Table 1,2,3). The species recorded were for gastrointestinal to dermatological problems i.e., application for external to the internal system of human body and mental health issues among youths. It indicates that youths are though in cities and developed areas, have some level of knowledge on ethnomedicinal practices learnt from their elder (Lepcha, 2022). It might be the symbol of their interest on ethnic knowledge and unique healing practices different than general ideas in text books and available modern treatment system. Common appearance and frequent suffering from these symptoms and diseases might be another reason for the knowledge sharing and abundant information among youths. Regarding familiarity of youths, family background and believe on ethnic medicine and use history might be another cause (Roy, et al. 2004).

Although the purpose of this study was not to document species used for ethnomedicine instead it tried to reveal knowledge distribution among school youths. The total number of plant and animal species was fewer than other ethnomedicinal documentation in the area among different ethnic communities (Ghimire & Bastakoti, 2009; Singh et al., 2025). As all the youths were from western part of Nepal, similarity in their knowledge is anticipated (Singh & Hamal, 2013). The previous study in nearby area had also reported few medicinal plants, only 30 plant species from Tharu community in the Banke district (Gharti et al. 2024).

However, the present number of species indicates diverse knowledge among youths. Multiple species for ailment and multiple ailments treated with single species refers to the multiple use and potential of biological resources to heal various symptoms and diseases (Kunwar et al., 2010; Nejat et al.,2015; Borah, et.al., 2017; Timilsina et al. 2020;). The diverse knowledge among youths might indicate their belonging to diverse geographical range of homeland. Result indicates mammals and flesh consumption are most common among animal species to cure ailments. It implies the use of higher organisms and meat as medicine possibly via food practice. And likewise, among plants, most were crop and cultivated species belonging to Apiaceae and Fabaceae families which indicates the use of easily and locally available resources as more obvious (Sayed-Ahmad et.al. 2017; Asfaw & Abebe, 2021). Furthermore, knowledge persistence, sharing and knowledge transfer of those species become prevalent than for other species. However, other wild species from higher elevation localities were also listed by youths which infer the significance of knowledge exchange in mixed-community. Conveniently, youths participated were also from various region of western Nepal and possibly there could be cultural exchange. The life style of people residing different geographical ranges are different and the frequency of use of biological resources among these people vary accordingly (Duram & Oberholtzer, 2010).

The common plant life form among the listed species is herb> tree> shrub> climber. It illustrates the dominance of use of herbs in medicinal practice that might be indicating smaller organisms growing approximate to the human settlements, cultivation of annual herbaceous crops and more familiarity with herbs than larger life form (Alamgir & Alamgir, 2017). It might have secret association with sustainable use practice in traditional practice, such that trees and shrubs that take longer time to grow will be less harmed to fulfill medicinal needs.

Following the similar concept of sustainability, plants have fruit and leaves as their most useful part in medicinal practice. Further it might have assured the survival of those plants for longer and further more benefits to be taken. But in contrast, animal species seems to be killed for medicinal purposes as their flesh are most common intake (Assefa et.al. 2025). However, the development of ethnomedicinal practice seems raised from eating habit of people, food might be possible way of experiment to reach medicinal property of animals. Meanwhile, honey and wax are abundant references in historical documents of religious and social aspects (Kumar, 2024; Botelho, 2016).

As most of the animal products used are flesh, the mode preparation for its medicinal use is cooked than raw, most interestingly, only secretions are known with raw consumption and flesh of other animals after well-cooked process (Assefa et.al. 2025). Relating to traditional practices, it might indicate towards health and hygiene of consumption such that lesser infections transferred in contrary. In reverse, plant parts are consumed raw than cooked, as it is believed that many phytochemicals of higher significance to cure ailments get distilled out or different reactions may appear on it. It is of scientific significance that phytochemicals may changed or reduced after cooking (Gunathilake et al. 2018).

The mode of application for plant products are flexible as it contained both oral consumption and topical consumption mode with higher number of species (Wubetu et al., 2017; Ambu et al. 2020). While in case of animal species, most of them are known for oral consumption (Assefa et al. 2025). This result also indicates the route of ethnomedicinal property of animal products derived from food habit and practices. While, plants with less critical with oral and topical consumption as its phytochemical components might have significant impact on different use method for various ailments.

Beside these all, most interesting part of this study is youths' use practices and experience to ethnomedicinal practices. And surprisingly, result showed some of the youths are still using those ethnomedicinal practices in their life whenever needed and further most of the youths have at least once experienced the ethnomedicine in recommendation of their elders at home and their source of knowledge is not any literature or advertisement, rather elder people at their birthplace. As expected, some youths unbolted their source of knowledge as their elders' talk, and not their experience. It indicates the diversity of sources of knowledge and current use status of these ethnomedicinal practices among youths. Furthermore, knowledge persistence might be due to regular experience to these ailments and memories of traditional practices to heal them though are not available now. The general introduction to these traditional practices that are well tested by recent scientific community for the use in particular ailment could be a part of regular school text book, that allow student to be familiar with uses of those remedies and enhance conservation of these knowledge in another level (Adhikari et al. 2024).

However, this study alone cannot stand for the conclusion that youths are having experience and knowledge on ethnomedicinal practices, as the work was confined to the

five schools in the city area where youths come to continue their educational journey. It is obvious that people from diverse region when reside together have cultural exchange and possibly exchange of ethnomedicinal practices, and as youths were from their different native land with and without access to modern drug have higher chances to have an experience on it (Leonti & Casu, 2013).

These traditional practices and their future exploration and conservation rely on knowledge sharing frequency among elders and between elders and youths. Youths are future leader to shift paradigm of ethnomedicinal knowledge from local to commercial level via sustainable route, thus further research on youths and their interest on it, may help to promote youths in new direction with more advancement of technology and invest. Meanwhile, various socio-cultural transformation has created boundaries between learner and mentors of these knowledge limiting ethnomedicinal knowledge among youths (Chaudhary, 2001; Alencar et al., 2014; Rinto et al., 2023).

Conclusions

Traditional knowledge on ethnomedicinal practices is of major significance to upcoming future generations providing multiple options to modern drugs and natural care of human health and efficacy. Youths are still having good knowledge on ethnomedicinal practices and experience on it. Youths' active involvement concludes towards their interest on ethnomedicinal practices, cultural and traditional assumptions, and theories. This survey implied the existence and sharing of common traditional medicinal practices in city areas. It is a pioneer work to document ethnomedicinal knowledge among school youths in city areas. Furthermore, a detailed interview with parents and students of respective families will help to understand the status of inter-generational transmission of traditional healing practices and better understanding to their future dimensions.

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Declarations

Conflict of Interest: Authors have no conflict of interest

Ethical approval: Oral consent was taken and explained aim of study prior interview and participation of students was voluntary.

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Authors Contribution: Conceptualization: AKS, AP, PN, GTM Data Collection: AP, AKS, PN, GTM Data management and analysis: AKS, GTM, RSM, YS, KC; Manuscript writing: AKS, GTM, RSM, YS, KC, BC and finalized by all authors.

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