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Original Research Article

A community cross-sectional study on knowledge attitude and practice of prevention of COVID-19 among traditional tribal healers in the tribal subpopulation zone of Sirohi district of Rajasthan

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ABSTRACT

Background: Due to geographical location and limited health resources, tribal people in India still majorly consult traditional tribal healers of their community for their health needs. However, data regarding the knowledge, mode of practice, and utility of these tribal healers are not explored despite their significant role in the healthcare system. Our study assessed the levels of knowledge, attitude, and practices of traditional tribal healers toward the COVID-19 pandemic and its association with sociodemographic factors.
Methods: Cross-sectional community based among the tribal healers of district Sirohi of Rajasthan. KAP study carried out with the help of a structured questionnaire about COVID-19, personal interviews, and community meetings among the tribal healers of district Sirohi of Rajasthan. A bivariate Pearson correlation analysis was performed, to identify factors related to knowledge, attitudes, and practices among socioeconomic data.
Results: A total of 682 tribal healers participated in the study. Approximately, 55% of tribal healers (TH) had a good knowledge score and 91% of TH had a good attitudinal score while 56% of TH had a good practice score. We observed that sociodemographic factors such as education status, education level, financial status in terms of income, marital status influenced the knowledge, attitude, and practices of tribal healers regarding COVID-19.
Conclusions: With proper training, tribal healers can play the role of peer educators among the tribal population.

Keywords: Coronavirus disease 2019, Knowledge, Attitude and practices, Tribal healers, Tribal, India

INTRODUCTION

Indigenous populations are one of the most marginalized communities across the India. The tribal population is still not well connected with the mainstream for their healthcare needs due to multiple reasons such as ignorance, hesitancy, illiteracy, poverty, and remoteness of living, etc. The tribal population constitutes about 8% of the total population in India and much attention to improvise their healthcare and livelihood needs keeping their traditions intact.[1] They are vulnerable to a triple burden of diseases (communicable, non-communicable,

and nutritional deficiencies diseases) because of their geographical isolation, socio-economic disadvantage, and grossly inadequate within reach healthcare facilities, reflected in their poor nutritional and health status.[2] These indigenous populations have a rich tradition of herbal healing and knowledge of traditional medicine. Due to the limited resources and healthcare facilities, tribal communities mostly depend on traditional knowledge holders or traditional tribal healers (TH) which are commonly called "bhopa" in the state of Rajasthan for managing their illness. Most of these tribal healers learned healing practices from their ancestors or traditional books and daily practices and have a substantial influence on the lives of the tribal community. In the pandemic time of limited health resources, these tribal healers played a pivotal role in providing treatment as well as educating tribals regarding COVID-19 disease. As tribal healers were also facing challenging situations due to COVID-19 apart from their regular traditional practices, therefore, understanding the knowledge, attitude, the practice of tribal healers regarding the COVID-19 might provide information regarding the status of tribal healers in pandemic time and requirement of updating their knowledge by modern public health tools. Bringing these tribal healers into the mainstream healthcare system by engaging & empowering tribal healers through adequate awareness of health & disease (COVID-19), with a vision to transform them to become instruments/facilitators in various Government (central/ state) run programs for handling pandemic situation among the tribal population. The objective of the current study is to generate information about the state of knowledge, attitude, and practices of tribal healers about the prevention of COVID-19 in the tribal subpopulation (TSP) zone of Sirohi district of Rajasthan.

METHODS

Study design, setting and ethical aspects

This was a cross-sectional study conducted among the tribal healers/traditional knowledge holders in the TSP (Tribal sub plan) zone of the Sirohi district of Rajasthan, India. There are two major TSP Zone such as Tehsil Pindwara and Abu Road in the district Sirohi. We have conducted our study in this TSP zone and recruited the tribal healers from these two blocks to assess the awareness level about COVID-19 among these tribal healers. As most of the tribal healers were illiterate-verbal consent was obtained from all the participants. All procedures performed in the study involving human participants, complied with the ethical standards framed by ICMR.

Sampling method and tools

This cross-sectional study was conducted among the tribal healers of district Sirohi, Rajasthan from August 2020 to January 2021. An empirical sample of about 600 participants was planned using a convenient (non-probability) sampling methodology. Data was collected through a validated self-reported questionnaire by using Epicollect-5 software.[3]

Inclusion and exclusion criteria

Tribal healers/traditional knowledge holders living in block Pindwara and Abu Road, aged 18 years or older, either gender, who could understand the content of the questionnaire, and agree to participate in the study were enrolled in the study. However, tribal healers/traditional knowledge holders who did not give consent for participation in the study were excluded.

Procedure

All the tribal healers/traditional knowledge holders participating in the study were instructed to complete the questionnaire. The questionnaire was divided into four parts including sociodemographic characteristics, knowledge, attitude and practices about COVID-19 and identification and managing COVID-19.

Study variables

The age variable was divided into categories20–40, 41-60, 61-80, and >80. Education status (literate/illiterate), marital status (married/unmarried) and gender (male/ female) were captured as a binary value (1/0). Education level was categorized into primary; secondary; higher secondary; and graduation & above. Average monthly income was categorized into six categories - Below 10K, 11-20K, 21-30K, 31K-40K, 41-50K, and >50K per month (K=thousand).Tribal healers were asked to respond to knowledge items as either true or false, incorrect responses were given a score of zero, and correct answers were assigned a score of one. The total score for knowledge was categorized as poor (0-6), average (7-12), and good (13-18); for Attitude was categorized as poor (0-4), average (5-8), and Good (9-11); and for Practice was categorized as poor (0-1), average (2-3) and good (4) scores for assessing the KAP status about COVID-19 among tribal healers.

Statistical analysis

The data was analyzed using statistical package for social sciences (SPSS) version 21 software. Quantitative data were summarized as means and standard deviations and categorical variables were summarized in frequency and percentage and the result was presented using tables. Frequencies and proportions were first calculated to describe the tribal healer's knowledge, attitudinal responses, and practices about COVID-19. Cross tabulation was used for sociodemographic data. A bivariate Pearson correlation analysis was performed, to identify factors related to knowledge, attitudes, and practices among socioeconomic data, $p<0.05$ was considered significant.

RESULTS

Social and demographic characteristics

A total of 682 tribal healer participants completed the questionnaire. The mean age of the TH in our study was 54.71±13.66 ranging from 22-80 years. Approximately 52% (n=356) were in 41-60 yrs age group while 30.9% (n=211) were in >61 yrs age group. Most of the TH were married 94% (n=642). The majority of TH 83% (n=566) were uneducated while 16% (n=111) received some education (primary and secondary). Only 0.7% (n=5) had education graduation and above. The mean income of TH was 31466±43153 (ranging from Rs. 0 to 7,20,000/- per annum) (Table 1).

Table 1: Distribution of the study participants (tribal healers) according to sociodemographic factors (N=682).

Variable	N	%
Age group (years)		
20-40	103	15.1
41-60	356	52.2
61-80	211	30.9
>80	12	1.8
Gender		
Male: Female	444 : 238	65.1 : 34.9
Marital status		
Married/Unmarried	641 : 41	94.0 : 6.0
Education status		
Educated: Uneducated	116: 566	19.1 : 83.0
Education level		
Illiterate	566	83
Primary	59	8.7
Secondary	52	7.6
Graduation and above	5	0.7
Income (per month)		
<10K	76	11.1
11-20K	210	30.8
21-30K	87	12.8
31-40K	123	18.0
41-50K	103	15.1
>50K	83	12.2

Assessment of the response of knowledge, attitude and practices items about COVID-19

The responses of tribal healers about knowledge questionnaire for COVID-19 such as in response to question 1 (Is COVID-19 is a contagious disease) 78.9% (n=538) TH gave the correct answer and regarding symptoms of COVID-19: in case of fever 64.8% (N=442); cough (81.7%); sore throat (79.0%); and for chest congestion, 43.3% give a correct answer. 72.9% (n=497) TH correctly stated that "infection of COVID-19 be reduced by washing hands with soap & water"69.4% (n=473) TH Agreed that "uses of mask and social distancing can prevent to person from getting COVID-19 but at the same time 83.7% (n=571) TH believed that COVID-19 prevalence is not increasing among the tribal population (Figure 1).

Table 2: Mean score of KAP assessment (n=682).

Variables	Minimum	Maximum	Mean (±SD)
Knowledge score	0	18	11.25 (±5.17)
Attitude score	2	11	10.08 (±1.24)
Practice score	0	4	3.23 (±1.07)

The attitudinal responses of tribal healers about COVID-19 such as in response to a question regarding the treatment of COVID-19 at home 60% (n=411), TH had a neutral response whereas 68.2% (n=455) agreed that health education can help prevent COVID-19. In response to another question "the authorities should quarantine COVID-19 patients in special hospitals only 2% (n=8) TH disagreed while 36% (n=267) registered a neutral response. We also recorded attitude towards lockdown in the city and found that 68.5% (N=467) TH agreed with the move while 29.9% (n=204) registered a neutral response and only 1.6% (n=11) disagreed with the lockdown move by the Government (Figure 2). The practice responses of tribal healers about COVID-19, 81.7% (n=557) had adequate practice regarding instructing their patients to apply masks and keep hands clean for preventing (contracting and dissemination) of COVID-19 (Figure 3).

Table 3: Knowledge attitude and practice scores of tribal healers.

KAP score	N	%
Knowledge		
Poor (0-6)	119	17.4
Average (7-12)	186	27.3
Good (13-18)	377	55.3
Attitude		
Poor (0-4)	4	6
Average (5-8)	56	8.1
Good (9-11)	622	91.2
Practice		
Poor (0-1)	133	19.5
Average (2-3)	166	24.3
Good (4)	383	56.2

Assessment of knowledge, attitude and practices score

The mean score of knowledge (out of 18 questions) was 11.25±5.17 whereas attitude (out of 11 questions) was 10.08±1.24) and practice (out of 4 questions) 3.23±1.07 (Table 2). In case of KAP score in terms of good/average/poor response, 55.3% of TH had a good knowledge score and 91.2% of TH had a good attitudinal score while 56.2% of TH had good practices score (Table 3).

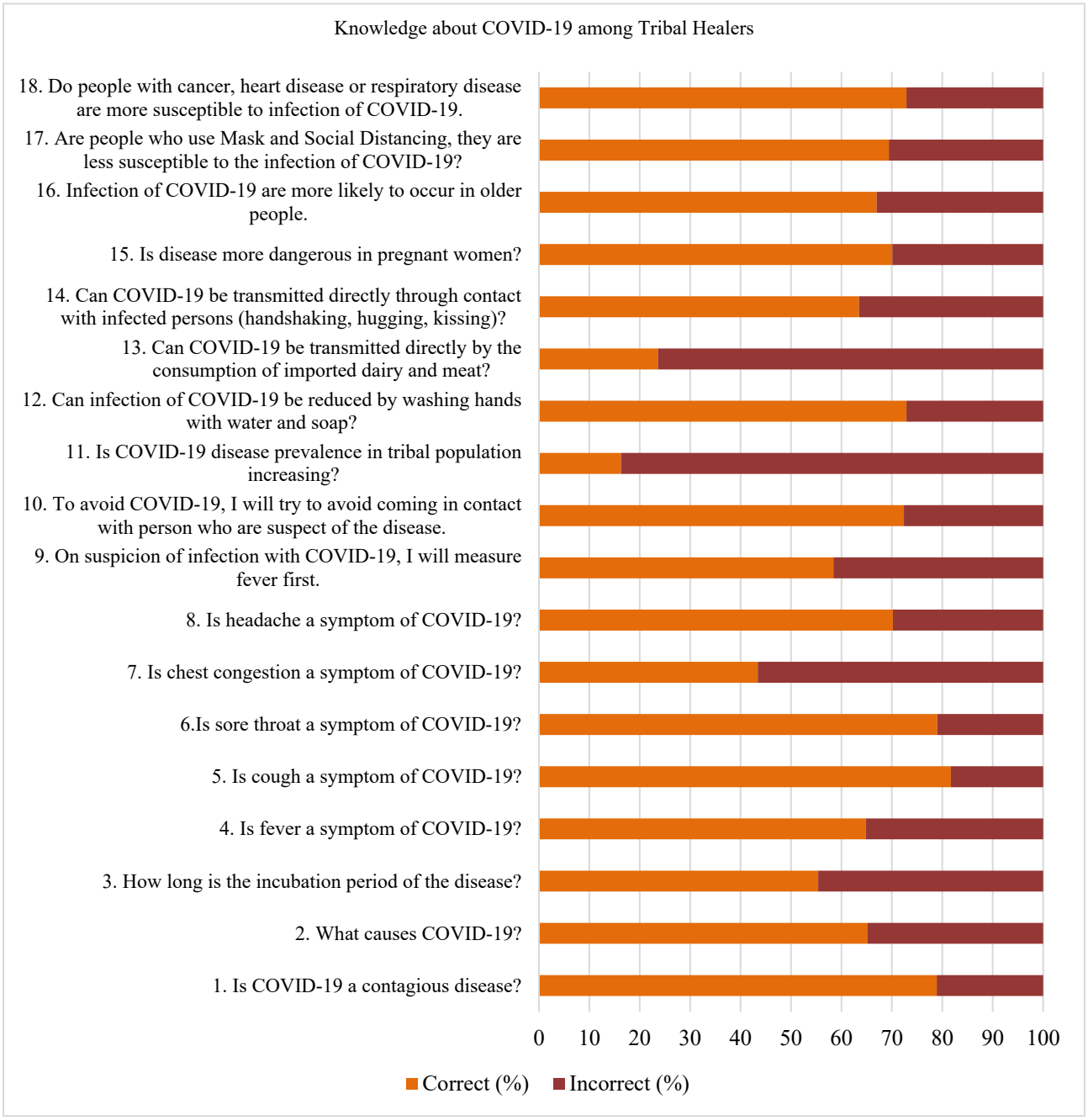

Figure 1: Knowledge of tribal healers about COVID-19: survey respondents-682. Tribal Healers were assessed using a questionnaire for knowledge and were expressed as "correct" or "incorrect" knowledge about COVID-19.

Association of demographic characteristics and mean KAP scores

Knowledge scores in our study were considerably associated with various sociodemographic characteristics. On χ^2 analysis, being educated was significantly associated with a good knowledge score (p value=0.003), and having a higher level of education was significantly associated with a good knowledge score (p value=0.005). Furthermore, being in a higher average monthly group was also significantly associated with a good knowledge score (p<0.001).

However, age group, gender, and marital status were not significantly correlated. Practice scores of tribal healers in our study were considerably associated with various sociodemographic characteristics. On χ^2 analysis, the younger age group was significantly associated with good practices score (p=0.001); being unmarried was significantly associated with good practices score (p<0.001); being educated was significantly associated with good practices score (p<0.001) and having a higher level of education was significantly associated with good practices score (p=0.002). However, gender was not significantly associated with good practices score (p=0.159) (Table 4 and 5).

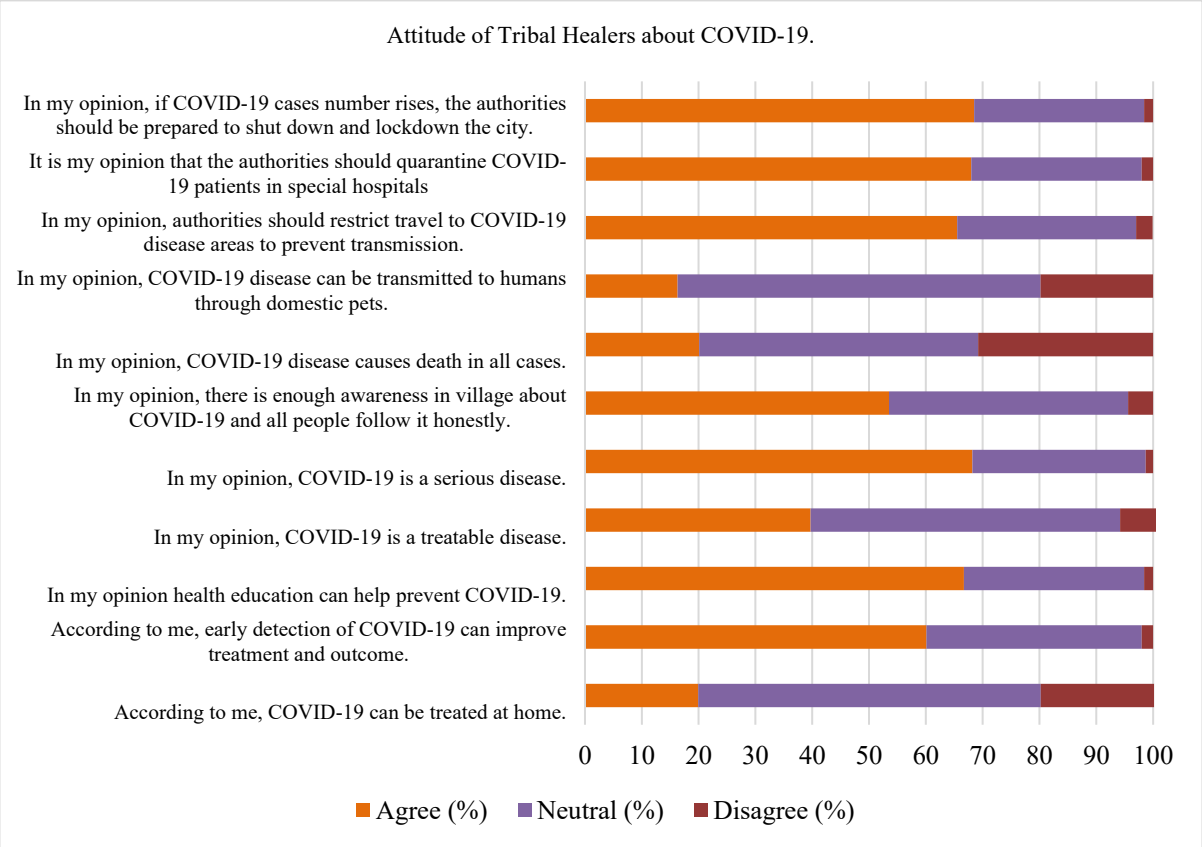

Figure 2: The attitude of Tribal Healers about COVID-19: Survey respondents 682 Tribal Healers were asked to rate their level of agreement or disagreement with each statement as "agree" "neutral" and "disagree".

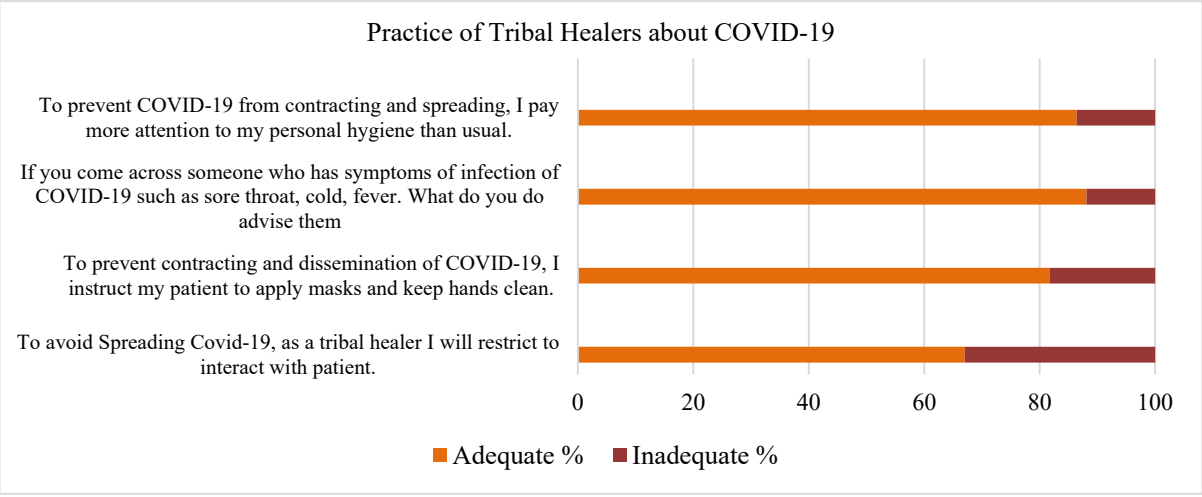

Figure 3: The practice of Tribal Healers about COVID-19: Survey respondents, 682 Tribal Healers were assessed using a questionnaire for practice and were expressed as "adequate" or "inadequate" practice about COVID-19.

Correlation between knowledge, attitude and practice

Correlations were interpreted using the following criteria: 0-0.25=weak correlation, 0.25-0.5=fair correlation, 0.5–0.75=good correlation and greater than 0.75=excellent correlation.[4] There is a significant positive relationship between education status and knowledge score r (680)=0.171, p<0.001; also, between education level and knowledge score r (680)=0.175 p<0.001, however strength of association was weak in both the cases. There is a significant positive but weak relationship between practice score and marital status r (680)=0.153, p<0.001; however, there was a moderate positive association between practice score and knowledge score r (680)=0.459, p<0.001 (Table 5). The correlation revealed significant linear correlations between knowledge-attitude

(r =-0.331, p< 0.05), knowledge-practice (r=0.459, p<0.01) (Table 6).

Table 4: Knowledge score about COVID-19 by demographic variables.

Variable	Poor	Average	Good	P value
Age (years)				
20-40	21	23	59	0.077
41-60	52	107	177	
61-80	41	52	118	
80 Above	5	4	3	
Marital status				
Unmarried	4	10	27	0.287
Married	115	176	350	
Education status				
Uneducated	107	156	289	0.003
Educated	12	30	88	
Education level				
Uneducated	107	166	293	0.005
Primary	7	9	43	
Secondary	5	11	36	
Graduation & above	0	0	5	
Average monthly income (INR in thousands)				
<10	72	53	85	<0.001
11-20	16	22	38	
21-30	19	20	48	
31-40	4	95	74	
41-50	5	29	69	
>50	3	17	63	

Table 5: Practice score about COVID-19 by demographic variables.

Variable	Poor	Average	Good	P value
Age (years)				
20-40	15	27	61	0.001
41-60	69	70	65	
61-80	61	216	103	
80 Above	7	2	3	
Marital status				
Unmarried	19	8	14	<0.001
Married	114	156	369	
Education status				
Uneducated	1251	134	291	<0.001
Educated	8	30	92	
Education level				
Uneducated	127	137	300	0.002
Primary	4	15	40	
Secondary	2	11	39	
Graduation & above	0	1	4	
Average monthly income (Inr in thousands)				
Less 10	74	65	70	<0.001
11-20	31	21	241	
21-30	19	24	43	
31-40	5	33	85	
41-50	4	9	90	
Above 50	0	12	71	

Table 6: Correlation between sociodemographic factors with knowledge and practice score.

Variable	R value	P value
Knowledge-education status	0.171	<0.001
Knowledge-education level	0.175	<0.01
Knowledge-practice score	0.459	<0.01
Knowledge-attitude	-0.331	<0.05

DISCUSSION

India has a rich tradition of traditional healing practices, and the Indian herbal healers are globally recognized, however traditional practitioners belonging to the tribal regions are not well recognized due to remote accessibility. During the pandemic of COVID-19 these traditional healers supported their community not only by disseminating awareness about the disease but also used their knowledge about traditional medicines for the prevention and treatment of patients who were suffering from COVID-19 like symptoms. Ours is one of the first population-wide studies to explore the knowledge, attitude, and practices (KAP) about COVID-19 among the tribal healers of district Sirohi, Rajasthan. Tribal population-wise Rajasthan is the fourth largest state in India.[5] District Sirohi has approximately 3 lakhs tribal population which is spread across 477 villages which is primarily concentrated in two major TSP Zone (tehsil Pindwara consisting total 1,04,888 tribal population, spread across 97 villages and tehsil Abu Road consisting total 1,07,664 tribal population, spread across 123 villages).[6] The current study will serve as a baseline measure of knowledge, attitude, and practices of the tribal healers and can be used to inform future health policies for healthcare delivery in tribal areas. More specifically, it provides the status of awareness among tribal healers. This study paves a way forward for the inclusion of tribal healers in the lowest rung of healthcare services providers. The majority of the studies conducted across the globe have focussed on either state of indigenous population health status or traditional/tribal healer's knowledge and practices of herbal medicine for some diseases.[7-11] A recent study investigated phytochemical constituents of anti-leukemic herbal drugs used by the traditional healers of Purulia, Birbhum, and Bankura districts of West Bengal and many such studies explored the traditional value of a single herb or combination used by various healers in different parts of the country.[12] A study by Kumar et al investigated the ethnomedicinal value of medicinal plants of the Chakrata region of Uttarakhand for their use in the medication of diabetes by the Jaunsaritribe. Their study reported a total of 54 plants belonging to 47 genera and 30 families used in the traditional medicine for the management of diabetes in Chakrata region.[13] An ethnobotanical survey of medicinal plants commonly used by Kanitribals in Tirunelveli hills of Western Ghats, India was done by Ayyanar&Ignacimuthu.[14] They have reported that 90 plant species distributed in 83 genera belonging to 52 families which were commonly used by the Kani tribal

healers for the treatment of 65 types of ailments.[14] Herndon et al. 2009, studied the disease concepts and treatment by tribal healers of an Amazonian forest culture. They have studies traditional medicine clinics, operated and directed by elder tribal shamans in two remote Trio villages of the Suriname rainforest for four years and reported that 20,337 patient visits within the period 2000 to 2004 were analyzed. 75 disease conditions and 127 anatomical terms are presented.[15]

Very limited studies were available to understand the role of traditional healers in healthcare services during the pandemic of COVID-19 however literature lacking any KAP studies of tribal healers about COVID-19 during this time. Previously KAP studies about COVID-19 have been done among the general population, health care workers, and medical professionals. However, no studies are found on traditional tribal healers regarding KAP assessment in India. A study by Asmelash et al 2020 in the Ethiopian tribal population found good knowledge among 34.1%, positive attitude, and good practices 15.6% among tribal healers towards prevention and early detection of COVID-19. In our study, we have found good knowledge among 55.3% TH, a positive attitude among 91.2% TH, and good practices among 56.2% tribal healers towards prevention and early detection of COVID-19.[16] The government of India took various initiatives to inform its people about the rapidly spreading pandemic across the country (including fixed caller tune to inform about does & don'ts about COVID-19). Social media and television playing a significant role in changing the knowledge and behaviour of the mass. Most of the studies have focused only on traditional practices but there is no data regarding tribal healers' socioeconomic status, and its effect on tribal healer's knowledge, attitude, and practices about any disease such as COVID-19. In this study, we found that the attitude of tribal healers was very positive towards knowing and learning about COVID-19. Mean average monthly income of TH was Rupees 31466±43153 (ranging from Rs. 0 to 7,20,000/- per annum). We did not find a study highlighting the financial status of traditional tribal healers and their effect on healing practices. There was a significant positive relationship between practice score and marital status ($r=0.153$, $p<0.001$); in our study, married tribal healers were practicing more appropriately toward COVID-19 compared to unmarried. However Erfani et al reports KAP score of single was better compared to married in a population-based survey in Iran.[17] Also, the knowledge score was significantly correlated (moderately positive relationship) with practice score $r=0.459$, $p<0.001$.[17] The available studies reported lack of proper knowledge or false information's regarding COVID-19 among the tribal population which is alarming sign for their healthy existence. While if we compare it with international KAP studies among general population it was observed a good awareness level about COVID 19 probably due to social media and easy accessibility of health services in urban areas. A KAP survey by Lee et al 2021 among Korean population regarding relationship between knowledge and all three preventive behaviours (wearing facial masks, practicing hand hygiene, and avoiding crowded places) reported that females ($\beta=0.06$, $p<0.05$) and individuals with higher levels of education ($\beta=0.06$, $p<0.05$) demonstrated higher levels of knowledge.[18] Similarly in another cross-sectional KAP study among 3,388 participants from Saudi Arabia reported mean COVID-19 knowledge score 17.96 (SD =2.24, range: 3-22), attitude 28.23 (SD=2.76, range: 6-30), and practices was 4.34 (SD=0.87, range: 0-5) indicating a high level of knowledge, optimistic attitudes and indicating good practices.[19] Therefore, a huge difference existed in awareness level between urban, rural and tribal population regarding pandemic of COVID-19. Thus, in country like India where quite shortage of health care workers as compared to large population, these traditional healers may play an important role in creating awareness regarding disease and prevention. These days tribal healers are also involved in various other jobs like agriculture, daily wages labour apart from practicing traditional healing art. Some of the tribal healers are educated and having good knowledge regarding COVID-19 symptoms, precautions and treatments. This knowledge will be helpful to plan and prepare a healthcare activity in tribal-dominated areas with the help of tribal healers or Bhopa in the state of Rajasthan. In this direction All India Institute of medical science, Jodhpur established a satellite centre in this TSP zone with the help of Ministry of Tribal Affairs, Government of India to empower tribal population, create awareness regarding health-related issues and provide health care services in tribal areas. The study results will help us in identifying gap areas, setting goals and targets for clinical as well as research requirements.

Limitations

There are a number of limitations in the study. There are no secondary data on the number of tribal healers/ traditional knowledge holders in the tribal subpopulation (TSP) zone of Sirohi district of Rajasthan. These tribal healers/traditional knowledge holders mostly live in isolation in inaccessible/remote area don't mingle with population in their area, also are mostly illiterate and sometimes rigid and some have criminal background, made interaction with them difficult for collection of data. The results of the study may help health authorities to plan preventive strategies with the help of tribal healers for future events. However, in interpreting the results of this study, some limitations should be considered. During the COVID-19 pandemic, it was a daunting task to identify the tribal healers in tehsil Aburoad and Pindwara, as no previous data about them was available with the local health authorities. Due to remoteness and difficult terrain (hilly areas), and non-cooperative nature of these tribal healers made the work a little more difficult. A nationwide lockdown and restricted movement in red zones (high dense COVID-19 cases zone), making data collection challenging. As most of the tribal healers were illiterate, the data capturing/recording was facilitated with

the help of field staff. This might lead to some inflated results as while administering questionnaire if field staff tries to explain a question to an individual, then that individual might get some clues to answer what we may be looking for. With proper training, tribal healers can play the role of peer educators among the tribal population. This study paves a way forward for inclusion of tribal healers in the lowest rung of healthcare service providers. We recommend that the Central and State Tribal Ministries should develop lines of action that directly/indirectly support tribal healers having demonstrated leadership and/or innovators of traditional healing in tribal community.

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