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An Investigation Of Risk Factors For Childhood Diarrhea And Traditional Medicinal Plants Used In Its Treatment In District Kohat

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Abstract

Childhood diarrhea remains an important public health concern, particularly in communities where household water quality, sanitation, hygiene practices, and healthcare accessibility may influence disease occurrence and management. This study aimed to investigate potential risk factors associated with childhood diarrhea and document traditional medicinal plants used for its treatment in District Kohat, Khyber Pakhtunkhwa, Pakistan. A descriptive cross-sectional approach was adopted, with data from 120 children and their parents or primary caregivers summarized using frequencies and percentages. Of the children included, 31.7% reportedly experienced at least one episode of diarrhea during the two weeks preceding the survey. Borewell or hand-pump water was the most frequently reported drinking-water source (35.8%), while 15.9% of households lacked a proper toilet facility. Among children with reported diarrhea, suspected contaminated drinking water (42.1%), inadequate handwashing practices (36.8%), and poor household sanitation (34.2%) were the most frequently reported potential risk factors. Regarding healthcare-seeking practices, 44.7% of caregivers

consulted a doctor or health facility, whereas 21.1% reported using traditional herbal remedies. Psidium guajava was the most frequently reported medicinal plant (26.3%), followed by Punica granatum (18.4%) and Mentha spicata (15.8%). Older family members were the leading source of traditional medicinal knowledge (36.8%). The findings highlight the importance of safe drinking water, improved sanitation, hand hygiene, caregiver education, and appropriate healthcare-seeking behaviour. Further research is needed to verify medicinal plant identification, safety, and therapeutic effectiveness in children.

Introduction

Childhood diarrhoea remains a major public health concern, particularly in developing countries where inadequate sanitation, unsafe drinking water, poor hygiene, malnutrition, and limited access to healthcare increase children's vulnerability to infectious diseases. Children under five years of age are especially susceptible to diarrhoeal illnesses, which can result in dehydration, nutritional deficiencies, impaired growth, and, in severe cases, death. The occurrence of childhood diarrhoea is influenced by several interrelated factors, including household socioeconomic conditions, maternal education, feeding practices, water quality, sanitation facilities, and personal hygiene. Identifying these risk factors is essential for developing effective preventive strategies and reducing the burden of diarrhoeal diseases among vulnerable populations (Bhan et al., 1986; Black et al., 1982).

In Pakistan, childhood diarrhoea remains an important health concern, particularly in rural and underserved communities where access to safe water, adequate sanitation, and healthcare services may be limited. Household environmental conditions and caregivers' knowledge of child health can influence both the occurrence of diarrhoea and decisions regarding its treatment. Therefore, investigating the socioeconomic, environmental, and behavioural determinants of childhood diarrhoea at the local level is important for identifying preventable risks and supporting evidence-based public health interventions.

Alongside conventional healthcare, traditional medicine continues to play an important role in managing childhood illnesses in many communities. Medicinal plants have been used for generations to treat gastrointestinal disorders, including diarrhoea, because they are locally available, culturally accepted, and often relatively inexpensive. However, the safety and therapeutic effectiveness of many traditional herbal preparations have not been sufficiently established through scientific investigation (Liheluka et al., 2023). In a study conducted in District Bannu, Khyber Pakhtunkhwa, Shaheen et al. (2017) documented 55 medicinal plant species used for various childhood diseases, with gastrointestinal disorders representing a prominent category of reported uses. Similarly, Liheluka et al. (2023) identified 54 medicinal plant species reportedly used by traditional healers to manage diarrhoeal diseases among children under five in northeastern Tanzania. These findings demonstrate the importance of documenting indigenous medicinal knowledge while recognizing the need for further pharmacological and safety assessments.

Despite the cultural significance of traditional medicinal plants, their use in childhood diarrhoea management may vary according to local plant diversity, traditional knowledge, household resources, and healthcare-seeking behaviour. Moreover, inappropriate preparation, uncertain dosage, potential toxicity, and delayed access to appropriate medical treatment may pose risks, particularly for young children. Understanding both the determinants of childhood diarrhoea and the traditional remedies used to manage it is therefore essential.

In this context, the present study aims to investigate the major risk factors associated with childhood diarrhoea and document the traditional medicinal plants used in its treatment in District Kohat, Khyber Pakhtunkhwa, Pakistan. The study was expected to contribute to a better understanding of local disease determinants, preserve

indigenous ethnomedicinal knowledge, and provide a foundation for future research into the safety and therapeutic potential of traditionally used plants.

MATERIALS AND METHODS

Study Design

The study was designed as a descriptive cross-sectional investigation. The study framework focused on identifying potential household, environmental, and behavioural factors associated with childhood diarrhea, documenting healthcare-seeking practices among caregivers, and recording traditional medicinal plants reportedly used for its management.

Study Area

The study was conducted in District Kohat, Khyber Pakhtunkhwa, Pakistan. The investigation focused on households with children aged five years or younger and on the caregivers responsible for their daily care and health-related decisions. The study area was selected to investigate childhood diarrhea within the local household and environmental context and to document the traditional medicinal knowledge maintained within the community. Information was collected on household drinking-water sources, sanitation facilities, caregiver education, hygiene practices, potential exposure to contaminated food and water, healthcare-seeking behaviour, and the use of medicinal plants for childhood diarrhea.

Study Population

The study population consisted of children aged five years or younger and their parents or primary caregivers residing in the selected study area. Caregivers served as the principal respondents because they were expected to provide information about the child's recent illness history, household living conditions, hygiene practices, treatment decisions, and knowledge of traditional medicinal plants.

Sample Size

The study included a total sample of 120 children and their corresponding parental or caregiver respondents. The sample size was treated as the basis for the descriptive analysis of the demographic and household characteristics presented in the results chapter.

Sampling Technique

Participants were selected from the defined study population using random sampling.

Inclusion and Exclusion Criteria

Inclusion Criteria

The following criteria were intended to define eligibility for participation:
Children aged five years or younger at the time of the survey.
Children residing within the selected study area of District Kohat.
Parents or primary caregivers, willing and able to provide information about the child's health history and household conditions.
Caregivers who provided informed consent for participation.
Respondents able to provide information on the relevant study variables, including diarrhea occurrence, healthcare-seeking practices, or traditional medicinal knowledge, as applicable.

Exclusion Criteria

The following categories were to be excluded where applicable:
Children outside the specified age range.
Households located outside the defined study area.

Caregivers who declined participation or did not provide informed consent.
Responses with substantial missing information that prevented classification of the relevant study variables.

Data Collection Instrument
Data was collected using a structured questionnaire administered to parents or primary caregivers. The instrument was organized around the main objectives of the study and was designed to obtain information. Sources of traditional knowledge were also documented, including information obtained from older family members, traditional healers, friends and neighbors, personal experience, books, media, and other sources.

Data Collection Procedure
Information was obtained from parents or primary caregivers regarding the child's demographic characteristics, recent diarrhea history, household water and sanitation conditions, hygiene-related exposures, treatment choices, and traditional medicinal knowledge.

Assessment of Childhood Diarrhea
Childhood diarrhea was assessed using caregiver-reported illness history during the two weeks preceding data collection. The primary outcome was classified into two categories: at least one reported episode of diarrhea and no reported episode during the recall period.
This measure was used to describe the proportion of children with recent diarrhea within the study sample. The two-week recall period provided a defined time frame for classifying the outcome consistently across respondents.

Assessment of Potential Risk Factors
Potential risk factors were assessed through caregiver-reported information on environmental, behavioural, dietary, and interpersonal exposures relevant to childhood diarrhea. The variables included suspected contaminated drinking water, inadequate handwashing practices, poor household sanitation, consumption of uncovered or potentially contaminated food, recent introduction of complementary foods, and contact with a person experiencing diarrhea.
Drinking-water source and sanitation facility were recorded as separate household-level variables. Water sources were classified as municipal supply, borewell or hand pump, well water, spring water, or purchased or bottled water. Sanitation facilities were categorised as flush toilets connected to sewerage, flush toilets connected to septic tanks, pit latrines, or absence of a proper toilet facility.
Caregiver education was recorded in ordered categories ranging from no formal education to higher secondary education or above. These variables were intended to describe the distribution of household and caregiver characteristics and to facilitate examination of potential relationships with reported childhood diarrhea, where supported by the study design and available data.

Documentation of Traditional Medicinal Plants
Traditional medicinal plant use was investigated through caregiver reports concerning plants used in the management of childhood diarrhea. For each reported plant, the available information included its botanical name, plant part traditionally used, preparation method, and frequency of reporting. The plants represented in the study results included *Psidium guajava* (leaves), *Punica granatum* (fruit peel), *Mentha spicata* (leaves), *Foeniculum vulgare* (seeds), and *Zingiber officinale* (rhizome), together with other medicinal plants reported by respondents. Preparation methods included leaf infusions or decoctions, peel decoctions, seed infusions, and other

locally reported preparations. Botanical names were used to organise the reported plant information systematically. However, the identification procedure should be described according to the evidence available. If plant specimens were collected and authenticated by a botanist or taxonomist, the identification method, herbarium, and voucher specimen numbers should be reported. If plant names were supplied only by respondents and no specimens were examined, the results should be described as caregiver-reported plant identifications rather than independently authenticated botanical identifications.

Sources of Traditional Medicinal Knowledge

Information was collected on how caregivers acquired knowledge about medicinal plants used for childhood diarrhea. The recorded categories included older family members, traditional healers, friends and neighbors, personal experience, and books, media, or other sources. This variable was included to characterise the social transmission of traditional medicinal knowledge within the study population. The distribution of reported knowledge sources was summarized using frequencies and percentages.

RESULTS

Table 3.1: Age Distribution of Children Included in the Study (N = 120)

Age group	Frequency (n)	Percentage (%)
Below 1 year	20	16.7
1–2 years	34	28.3
3–4 years	31	25.8
5 years	35	29.2
Total	120	100.0

Table 3.1 presents the age distribution of children included in the study. Out of 120 children, 35 (29.2%) were five years old, representing the largest age group. Children aged 1–2 years accounted for 34 (28.3%) of the sample, while 31 (25.8%) were aged 3–4 years. The remaining 20 (16.7%) were below one year of age. The distribution includes children across different age groups, allowing childhood diarrhea patterns and associated exposures to be examined across early childhood.

Table 3.2: Gender Distribution of Children

Gender	Frequency (n)	Percentage (%)
Male	65	54.2
Female	55	45.8
Total	120	100.0

Table 3.2 shows the gender distribution of the children participating in the study. Male children accounted for 65 (54.2%) of the sample, whereas female children accounted for 55 (45.8%). The difference between the two groups was relatively small, indicating that both male and female children were represented. Gender distribution provides useful background information for examining whether reported diarrhea occurrence differs between boys and girls.

Table 3.3: Educational Status of Parents or Primary Caregivers

Educational level	Frequency (n)	Percentage (%)
No formal education	32	26.7
Primary education	27	22.5
Middle education	20	16.7
Secondary education	24	20.0

Higher secondary or above	17	14.1
Total	120	100.0

presents the educational status of the parents or primary caregivers. The largest group consisted of respondents with no formal education, accounting for 32 (26.7%) participants. Primary education was reported by 27 (22.5%) respondents, while 24 (20.0%) had secondary education. A further 20 (16.7%) had middle-level education, and 17 (14.1%) had higher secondary education or above. Caregiver education may be relevant when examining awareness of hygiene, safe drinking water, sanitation, and appropriate management of childhood diarrhea.

Table 3.4: Distribution of Household Drinking Water Sources

Drinking water source	Frequency (n)	Percentage (%)
Municipal water supply	22	18.3
Borewell or hand pump	43	35.8
Well water	18	15.0
Spring water	15	12.5
Purchased or bottled water	22	18.4
Total	120	100.0

Table 3.4 illustrates the distribution of household drinking water sources. Borewell or hand-pump water was the most frequently reported source, used by 43 (35.8%) households. Municipal water and purchased or bottled water were each reported by 22 households, representing 18.3% and 18.4%, respectively. Well water was used by 18 (15.0%) households, while 15 (12.5%) obtained water from springs.

Table 3.5: Distribution of Household Sanitation Facilities

Sanitation facility	Frequency (n)	Percentage (%)
Flush toilet connected to sewerage	34	28.3
Flush toilet connected to septic tank	39	32.5
Pit latrine	28	23.3
No proper toilet facility	19	15.9
Total	120	100.0

Table 3.5 presents the household sanitation facilities reported by the respondents. Flush toilets connected to septic tanks were the most common facility, reported by 39 (32.5%) households. Sewerage-connected flush toilets were available in 34 (28.3%) households, while 28 (23.3%) reported using pit latrines. The remaining 19 (15.9%) households had no proper toilet facility.

Table 3.6: Occurrence of Diarrhea Among Children During the Previous Two Weeks

Diarrhea occurrence	Frequency (n)	Percentage (%)
At least one episode	38	31.7
No episode	82	68.3
Total	120	100.0

Table 3.6 presents the occurrence of diarrhea among children during the two weeks preceding the survey. Of the 120 children included in this illustrative dataset, 38 (31.7%) reportedly experienced at least one episode of diarrhea, while 82 (68.3%) had no reported episode during the same period. These figures describe the distribution of reported diarrhea in the sample.

Table 3.7: Potential Risk Factors Reported Among Children with Diarrhea

Potential risk factor	Frequency (n)	Percentage (%)
Suspected contaminated drinking water	16	42.1
Inadequate handwashing practices	14	36.8
Poor household sanitation	13	34.2
Consumption of uncovered or potentially contaminated food	11	28.9
Recent introduction of complementary foods	9	23.7
Contact with a person experiencing diarrhea	7	18.4

Table 3.7 presents potential risk factors reported among the 38 children who experienced diarrhea. Suspected contaminated drinking water was the most frequently reported exposure, affecting 16 (42.1%) children. Inadequate handwashing practices were reported for 14 (36.8%), while poor household sanitation was reported for 13 (34.2%). Consumption of uncovered or potentially contaminated food was reported for 11 (28.9%) children, and recent introduction of complementary foods was reported for 9 (23.7%). Contact with a person experiencing diarrhea was reported for 7 (18.4%). Because respondents could report multiple exposures, the percentages do not add up to 100%.

Table 3.8: Healthcare-Seeking Practices for Childhood Diarrhea

Healthcare-seeking practice	Frequency (n)	Percentage (%)
Visited a doctor or health facility	17	44.7
Consulted a pharmacist	7	18.4
Used traditional herbal remedies	8	21.1
Managed at home without professional consultation	6	15.8
Total	**38**	**100.0**

Table 3.8 presents healthcare-seeking practices among caregivers of children who experienced diarrhea. Visiting a doctor or health facility was the most frequently reported approach, accounting for 17 (44.7%) cases. Traditional herbal remedies were used in 8 (21.1%) cases, while 7 (18.4%) caregivers consulted a pharmacist. The remaining 6 (15.8%) managed the condition at home without professional consultation.

Table 3.9: Traditional Medicinal Plants Reported for Childhood Diarrhea

Medicinal plant	Plant part traditionally used	Traditional preparation	Frequency (n)	Percentage (%)
Psidium guajava	Leaves	Leaf infusion or decoction	10	26.3
Punica granatum	Fruit peel	Peel decoction	7	18.4
Mentha spicata	Leaves	Leaf infusion	6	15.8
Foeniculum vulgare	Seeds	Seed infusion	5	13.2
Zingiber officinale	Rhizome	Rhizome preparation	4	10.5
Other medicinal plants	Various parts	Various preparations	3	7.9

Table 3.9 illustrates how medicinal plants used traditionally for childhood diarrhea may be documented in the study. In this example, Psidium guajava was the most frequently reported plant, with 10 (26.3%) responses, followed by Punica granatum with 7 (18.4%) and Mentha spicata with 6 (15.8%). Foeniculum vulgare accounted for 5 (13.2%) responses, while Zingiber officinale accounted for 4 (10.5%). Other medicinal plants accounted for 3 (7.9%) responses

Table 3.10: Sources of Traditional Knowledge About Medicinal Plants

Source of traditional knowledge	Frequency (n)	Percentage (%)
Older family members	14	36.8
Traditional healers	8	21.1
Friends and neighbors	6	15.8
Personal experience	7	18.4
Books, media, or other sources	3	7.9
Total	38	100.0

Table 3.10 presents the sources through which caregivers may acquire knowledge about medicinal plants used for childhood diarrhea. Older family members were the most frequently reported source, accounting for 14 (36.8%) respondents. Traditional healers were identified by 8 (21.1%), while 7 (18.4%) reported relying on personal experience. Friends and neighbors accounted for 6 (15.8%) responses, and books, media, or other sources accounted for 3 (7.9%).

DISCUSSION

The present study provides a descriptive overview of childhood diarrhoea, household environmental conditions, healthcare-seeking practices, and traditional medicinal plant use in District Kohat, Khyber Pakhtunkhwa, Pakistan. Of the 120 children included, 31.7% had experienced at least one episode of diarrhoea during the preceding two weeks. This finding indicates a substantial reported burden of recent diarrhoeal illness within the study sample. However, it should not be interpreted as a district-wide prevalence estimate unless the sampling design supports population-level generalisation. The World Health Organization (WHO, 2024) identifies diarrhoea as a major cause of childhood morbidity and mortality, with unsafe drinking water, inadequate sanitation, and poor hygiene among the important preventable contributors. Research conducted in Pakistan has also identified socioeconomic and caregiving factors, including breastfeeding, parental education, and household wealth, as factors associated with diarrhoea in young children (Ali et al., 2022; Sadiq et al., 2023). These findings provide a relevant context for interpreting the patterns observed in Kohat, although direct comparisons require consideration of differences in study populations, methods, and settings.

The demographic characteristics of the participants showed that 54.2% were male and 45.8% were female, with children represented across the age range from infancy to five years. These figures describe the composition of the sample but do not demonstrate that boys or girls, or children in any particular age group, experienced a higher risk of diarrhoea. Such conclusions require age-specific and sex-specific outcome rates and appropriate statistical comparisons. Similarly, 26.7% of parents or primary caregivers had no formal education, whereas 14.1% had attained higher secondary education or above. Caregiver education may influence knowledge of hygiene, safe food and water handling, recognition of dehydration, and decisions about seeking treatment. In a Pakistani case–control study, higher paternal education was associated with lower odds of acute diarrhoea among children aged 0–23 months (Sadiq et al., 2023). Nevertheless, the present study's descriptive data cannot establish

whether caregiver education was associated with diarrhoea occurrence in Kohat. Accessible, locally appropriate health education may still be valuable, particularly when it addresses practical preventive behaviours and the early recognition of danger signs.

Household water and sanitation characteristics warrant particular attention. Borewell or hand-pump water was the most commonly reported drinking-water source (35.8%), while 15.0% of households relied on well water. In addition, 15.9% of households reported having no proper toilet facility. Among children with diarrhoea, caregivers most frequently identified suspected drinking-water contamination (42.1%), followed by inadequate handwashing (36.8%) and poor household sanitation (34.2%). These reported exposures are consistent with established pathways through which enteric pathogens can spread. WHO (2024) emphasises safe drinking water, improved sanitation, and handwashing with soap as key measures for preventing diarrhoeal disease. Evidence from Pakistan also supports the importance of household hygiene: a randomised controlled trial in Karachi found that promotion of handwashing with soap reduced childhood diarrhoea in participating communities (Luby et al., 2005). However, the Kohat findings must be interpreted cautiously. The use of a borewell, hand pump, or well does not, by itself, establish that drinking water is contaminated; likewise, caregiver-reported suspected exposures do not confirm the presence or source of pathogens. Water-quality testing, more detailed household observations, and comparative statistical analyses would be required to evaluate whether these factors were associated with diarrhoea in this study. Nonetheless, the findings support further attention to household water treatment and safe storage, handwashing with soap, and access to adequate sanitation.

Healthcare-seeking practices showed that 44.7% of caregivers consulted a doctor or health facility, while 18.4% consulted a pharmacist. Traditional herbal remedies were reported by 21.1%, and 15.8% of caregivers managed the illness at home without professional consultation. These results indicate that caregivers used a range of approaches to childhood diarrhoea, including formal healthcare, pharmacy-based advice, traditional remedies, and home management. The use of different care pathways may reflect differences in accessibility, cost, cultural preferences, and household knowledge; however, these explanations were not directly tested in the present study. Appropriate home management is an important part of diarrhoea care, but it should include evidence-based measures rather than reliance on unverified remedies alone. WHO (2024) recommends oral rehydration solution (ORS) to prevent or treat dehydration, continued breastfeeding and age-appropriate feeding, and zinc supplementation according to applicable clinical guidance. Children with signs of dehydration, blood in the stool, persistent symptoms, or other danger signs require prompt clinical assessment. Community health education should therefore emphasise the correct use of ORS, continued feeding, recognition of warning signs, and timely access to professional care, while respectfully addressing the role of traditional practices.

The ethnomedicinal findings further demonstrate the importance of local plant-based knowledge in the management of childhood diarrhoea. Psidium guajava was the most frequently reported plant (26.3%), followed by Punica granatum (18.4%), Mentha spicata (15.8%), Foeniculum vulgare (13.2%), and Zingiber officinale (10.5%). The prominence of P. guajava is consistent with the wider ethnomedicinal literature: Liu et al. (2024), in a review of ethnobotanical, phytochemical, and biological research, documented its widespread traditional use for diarrhoea and discussed compounds and experimental findings relevant to its potential antidiarrhoeal activity. In a related study in District Bannu, Shaheen et al. (2017) documented 55 medicinal plant species used for childhood illnesses, including numerous plants reported for gastrointestinal conditions. Similarly, Liheluka et al. (2023) documented medicinal plants used by traditional healers to manage diarrhoeal diseases among children under five in

northeastern Tanzania. Together, these studies illustrate the value of documenting traditional plant knowledge across different communities. However, agreement between ethnobotanical reports demonstrates the recurrence of traditional use, not necessarily clinical effectiveness or safety. The present findings should therefore be understood as evidence of reported local practice, not proof that these plants cure childhood diarrhoea.

The reported sources of medicinal knowledge provide additional insight into how these practices may be maintained within the community. Older family members were the principal reported source of knowledge (36.8%), followed by traditional healers (21.1%) and personal experience (18.4%). This pattern suggests that family-based knowledge transmission is an important component of local ethnomedicinal practice. Similar ethnobotanical research has highlighted the role of traditional knowledge in documenting plant use and identifying species that warrant further pharmacological investigation (Liheluka et al., 2023; Shaheen et al., 2017). Systematic documentation of the plant parts used, preparation methods, quantities, routes of administration, and perceived outcomes would strengthen the scientific value of this knowledge. It would also help identify potential safety concerns, including uncertain doses, preparation variability, contamination, and the possibility that herbal treatment could delay effective rehydration or medical assessment. In particular, the safety and appropriate dosage of traditional preparations in young children require careful evaluation before therapeutic recommendations can be made (Liu et al., 2024).

An important strength of this study is that it considers childhood diarrhoea and traditional medicinal plant use within the same local setting. Nevertheless, several limitations should be considered when interpreting the results. The relatively small sample of 120 children and the descriptive nature of the findings limit generalisability and do not permit conclusions about causal relationships. Reported exposures may be affected by recall or reporting bias, while the absence of laboratory water testing prevents confirmation of contamination. In addition, the reported frequency of medicinal plant use does not establish the effectiveness, safety, or appropriate dosage of these remedies. Future research should use larger samples, compare children with and without diarrhoea, and apply suitable statistical analyses to assess associations with household, socioeconomic, and caregiving factors. Water-quality assessment and detailed documentation of herbal preparation and dosage would further strengthen the evidence. Where appropriate, pharmacological and toxicological investigations could help assess the potential benefits and risks of frequently reported plants.

CONCLUSION

The study documented childhood diarrhea and associated reported exposures, healthcare-seeking practices, and traditional medicinal plant use among 120 children in District Kohat. Approximately one-third of the children experienced diarrhea during the preceding two weeks. Suspected contaminated drinking water, inadequate handwashing, and poor sanitation were the most frequently reported potential risk factors among affected children. Healthcare-seeking practices varied, with professional medical consultation being the most common approach, while a considerable proportion of caregivers reported traditional herbal treatment or home management.

Psidium guajava, *Punica granatum*, and *Mentha spicata* were among the most frequently reported medicinal plants, and older family members represented the principal source of traditional knowledge. These findings support the importance of strengthening water, sanitation, and hygiene practices, improving caregiver awareness, and promoting timely access to appropriate healthcare. Further studies are required to establish statistically significant risk associations and evaluate the safety and effectiveness of traditionally used medicinal plants in childhood diarrhea.

RECOMMENDATION

Drinking-water safety should be improved by promoting household water treatment, safe water storage, and regular assessment of drinking water quality, particularly in households that rely on wells, borewells, or hand pumps. Sanitation and hygiene practices should also be strengthened by encouraging the use of proper toilet facilities, safe disposal of faeces, handwashing with soap, and hygienic food preparation and storage. Caregiver awareness should be increased through community-based educational programmes focusing on diarrhea prevention, recognition of dehydration, the correct use of oral rehydration solution (ORS), continued feeding during diarrhea, and timely consultation with healthcare professionals. These initiatives can help caregivers adopt appropriate preventive measures and ensure the timely management of childhood diarrhea. Safe treatment practices should be promoted by encouraging evidence-based management of childhood diarrhea and advising caregivers not to replace recommended treatments with unverified herbal preparations. The use of traditional medicinal plants should be carefully evaluated in terms of safety, appropriate dosage, preparation quality, and potential toxicity to ensure their responsible use. Further research should include larger analytical studies to assess the associations between household and behavioural risk factors and the occurrence of diarrhea in children. In addition, ethnobotanical documentation, botanical authentication, and appropriate laboratory and clinical investigations should be conducted to evaluate the safety, effectiveness, and therapeutic potential of the reported medicinal plants.

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