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# The Influence of Traditional Indonesian Practices (Jamu) on the Prevention and Management of Common Otorhinolaryngology Complaints: A Mixed-Methods Study

**Fifia Ardinanti[1], Brian Edgar Wicaksana[2*], Rizki Ayu[1], Mohammad Arfin[3], Abd El Nasser[4]**

[1]Department of Herbal Medicine and Complementary Therapy, CMHC Research Center, Palembang, Indonesia

[2]Department of Internal Medicine, Phlox Institute, Palembang, Indonesia

[3]Department of Pharmacology and Therapy, CMHC Research Center, Palembang, Indonesia

[4]Department of Traditional Medicine and Therapy, Coles Private Clinic, Massaua, Eritrea

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***Corresponding author:**
Brian Edgar Wicaksana

**E-mail address:**
*brian.edgarw@phlox.or.id*

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**A B S T R A C T**

**Introduction:** In Indonesia, jamu (traditional herbal medicine) is culturally significant for health maintenance, including managing common ear, nose, and throat (ENT) complaints. This study explored the influence of jamu on the prevention and management of these complaints by examining patient beliefs, usage patterns, perceived outcomes, and associations with conventional healthcare-seeking. **Methods:** A mixed-methods sequential explanatory design was used. A cross-sectional survey of 1200 Indonesian adults assessed demographics, ENT complaint prevalence, jamu use (type, frequency, perceived effectiveness), and healthcare seeking. Subsequently, semi-structured interviews were conducted with 30 survey participants who regularly used jamu for ENT issues to explore their beliefs and experiences. Quantitative data were analyzed using descriptive statistics, chi-square tests, and logistic regression. Qualitative data underwent thematic analysis. **Results:** Survey data showed 68.5% experienced ENT complaints in the past year, with sore throat (42.3%), cough (38.7%), and nasal congestion (31.2%) most common. Among them, 53.2% used jamu, primarily turmeric-based for sore throat and ginger-based for cough and congestion. Regular jamu use was associated with perceived symptom relief ($p < 0.001$) but also with a higher likelihood of delaying conventional care for persistent symptoms (OR = 1.85). Interviews revealed strong cultural beliefs in jamu's efficacy and safety for mild ENT issues, often used as a first-line treatment due to its natural origin, fewer perceived side effects, and affordability. However, some acknowledged its limitations for severe conditions. **Conclusion:** Jamu plays a significant role in managing common ENT complaints in Indonesia, driven by strong cultural beliefs and perceived benefits. While users report symptom relief, delayed access to conventional care for serious conditions is a potential concern. Further research is needed to scientifically evaluate specific jamu formulations and develop integrated usage guidelines in Indonesia.

## 1. Introduction

Common ear, nose, and throat (ENT) complaints, encompassing conditions such as upper respiratory tract infections (URTIs), allergic rhinitis, and mild otological issues, constitute a considerable global health burden, affecting individuals across all ages and socioeconomic strata. These conditions significantly contribute to healthcare utilization, absenteeism from both work and school, and a general decline in the quality of life experienced by those affected. In Indonesia, an expansive archipelago characterized by a rich and diverse cultural heritage, traditional medicine practices are deeply interwoven into the societal framework, frequently existing

alongside and interacting with modern healthcare systems. Within this context of traditional practices, the utilization of jamu, a collective term referring to traditional Indonesian herbal medicines and remedies, assumes a position of notable prominence. Jamu comprises a broad spectrum of formulations, all derived from natural ingredients such as roots, barks, flowers, fruits, and spices, and these formulations are often prepared in accordance with traditional recipes that have been handed down through successive generations. Historically, jamu has been employed for a multitude of purposes, including the maintenance of overall health and well-being, the prevention of illnesses, and the management of a wide array of ailments, spanning from minor discomforts to chronic and debilitating conditions.[1-3]

The cultural significance of jamu in Indonesia is profound, deeply rooted in and intertwined with local customs, beliefs concerning health and well-being, and a historical reliance on natural resources for healing and therapeutic purposes. Specifically, within the domain of common ENT complaints, anecdotal evidence and traditional knowledge suggest that various jamu preparations are frequently utilized by individuals in Indonesia for both the prevention of these conditions and the alleviation of associated symptoms. For example, formulations incorporating ingredients such as ginger and honey are commonly believed to provide relief from coughs and sore throats, while jamu preparations based on turmeric are often employed for their anti-inflammatory properties in the management of nasal congestion and sinus discomfort. Despite the widespread utilization of jamu for ENT complaints throughout Indonesia, there remains a relative scarcity of rigorous scientific research that adequately investigates its actual efficacy, safety profile, and the extent to which its use influences patient beliefs and healthcare-seeking behaviors. Therefore, a comprehensive understanding of the role of jamu within the context of ENT health in Indonesia is of paramount importance for several compelling reasons.[4-6]

Firstly, gaining a deeper understanding of jamu 's role can provide valuable insights into the healthcare practices and preferences of a substantial portion of the Indonesian population, thereby enabling healthcare providers and policymakers to better tailor their services and interventions to meet the specific needs and cultural contexts of the communities they serve. Secondly, it can aid in the identification of potential benefits and risks that may be associated with the use of jamu for specific ENT conditions, allowing for a more balanced and informed perspective on its role in healthcare. Thirdly, a comprehensive understanding can inform the development of evidence-based guidelines for the integrated use of both traditional and conventional medicine in the management of common ENT complaints, with the ultimate goal of optimizing patient outcomes and ensuring the efficient and effective allocation of healthcare resources.[7,8]

Previous research endeavors in Indonesia have explored the general utilization of traditional medicine and jamu for a variety of health conditions. Some studies have focused primarily on the phytochemical properties of specific jamu ingredients, seeking to elucidate their potential pharmacological effects and mechanisms of action. However, there is a limited body of research that specifically examines the influence of jamu on the prevention and management of common ENT complaints from a patient-centered perspective, taking into account their individual beliefs, experiences, and clinical outcomes.[9,10] This present study endeavors to address this gap in the existing literature by employing a mixed-methods approach, with the aim of comprehensively exploring the influence of traditional Indonesian practices, with a specific focus on the use of jamu, in both the prevention and management of common ENT complaints.

## 2. Methods

This study employed a mixed-methods sequential explanatory design. This methodological approach involved two distinct phases: an initial quantitative phase followed by a subsequent qualitative phase. The primary aim of the quantitative phase was to assess the prevalence of common ENT complaints within the study population and to elucidate the patterns of jamu use for these conditions through the implementation

of a cross-sectional survey. Building upon the findings generated during the quantitative phase, the qualitative phase aimed to explore, in greater depth, the beliefs and lived experiences of individuals who reported utilizing jamu for the management of their ENT complaints, utilizing semi-structured interviews as the primary data collection tool. This sequential approach facilitated the generation of broad, generalizable data during the initial quantitative phase, which subsequently informed the selection of participants and the specific focus of inquiry in the second, more in-depth qualitative phase, ultimately enabling a more comprehensive and nuanced understanding of the overarching research question.

The study was strategically conducted across several diverse regions within Indonesia, encompassing both urban and rural areas, to ensure the acquisition of a sample that was adequately representative of the broader adult population of the country. For the quantitative phase of the study, a sample comprising 1200 adult individuals, all aged 18 years and above, was recruited using a stratified random sampling technique. Stratification, a process of dividing the population into subgroups based on specific characteristics, was based on two key variables: geographical location, specifically the major islands within Indonesia, and the participants' place of residence, categorized as either urban or rural. This stratification strategy was implemented to account for potential variations in healthcare access and the utilization of traditional medicine practices that might exist across different regions and between urban and rural settings. Within each stratum, participants were randomly selected from household lists obtained from community health centers and local administrative offices. This process ensured that each individual within the defined subgroups had an equal chance of being included in the study sample. The inclusion criteria for participation in the survey were that individuals had to be adult Indonesian citizens and provide informed consent, indicating their voluntary agreement to participate in the research after being fully informed of its nature and purpose. Individuals with severe chronic ENT conditions that necessitated specialized medical care were excluded from the survey to maintain the study's focus on common, self-managed complaints. For the qualitative phase of the study, a purposive sampling strategy was employed to recruit a total of 30 participants from the pool of survey respondents who had indicated regular use of jamu for either the prevention or the management of common ENT complaints. Purposive sampling, a non-probability sampling technique, involves the researchers deliberately selecting participants based on specific characteristics or experiences relevant to the research question. In this study, the selection of participants for the qualitative phase was strategically aimed at achieving diversity across several key demographic variables, including age, gender, educational level, and geographical location. This approach was intended to facilitate the capture of a wide range of perspectives and experiences related to jamu use for ENT complaints, ensuring a more comprehensive and nuanced understanding of the phenomenon under investigation. Participants were contacted either by phone or email, utilizing the contact information they had provided in the survey, and were formally invited to participate in an in-depth interview, during which their beliefs, experiences, and perspectives on jamu use would be explored in detail.

A structured questionnaire, meticulously developed in Bahasa Indonesia, the national language of Indonesia, served as the primary data collection instrument for the quantitative phase of the study. The development of this questionnaire followed a thorough and comprehensive review of existing literature on common ENT complaints, the utilization of traditional medicine in Indonesia, and relevant survey instruments that had been previously employed in similar research contexts. The questionnaire was carefully designed to encompass several key sections, each focusing on a specific aspect of the research inquiry. These sections included; Demographic Information: This section collected essential demographic data from the participants, including their age, gender, education level, occupation, and place of residence, categorized as either urban or rural. These data were crucial for characterizing the study sample and examining potential associations between demographic factors and jamu use;

Prevalence of Common ENT Complaints: This section focused on gathering data related to the participants' experiences with common ENT complaints within the 12-month period preceding the study. Participants were specifically asked about their experience with a range of symptoms, including sore throat, cough, nasal congestion, runny nose, earache, and hoarseness. They were asked to indicate whether they had experienced each of these symptoms and to provide information regarding the frequency with which they had encountered them; Patterns of Jamu Use for ENT Complaints: This section delved into the participants' utilization of jamu for either the prevention or the management of ENT conditions. For participants who reported experiencing ENT complaints, this section explored various aspects of their jamu use, including the specific types of jamu employed, the frequency of use, their perceived effectiveness of jamu in alleviating symptoms, and the sources from which they obtained jamu, whether it was homemade, purchased from traditional markets or vendors, or acquired from other sources. Examples of different types of jamu, such as ginger-based and turmeric-based formulations, were provided to aid participants in accurately describing their usage; Healthcare Seeking Behavior: This section aimed to investigate the participants' typical responses to experiencing ENT complaints. Questions were included to ascertain whether participants typically consulted a healthcare professional, such as a general practitioner or an ENT specialist, utilized over-the-counter medications, relied on traditional remedies like jamu, or opted for no intervention. Furthermore, this section explored instances in which participants may have delayed seeking conventional medical care as a result of using jamu. The questionnaire underwent a pilot-testing phase involving a group of 30 individuals with characteristics similar to those of the target population. This pilot study was conducted to comprehensively assess the clarity, comprehensibility, and cultural appropriateness of the questionnaire. Feedback obtained from the pilot study participants was carefully reviewed, and minor revisions were subsequently made to the wording and structure of certain questions to enhance the overall quality of the instrument. The final version of the questionnaire was administered by trained research assistants through face-to-face interviews conducted in the participants' homes or at a convenient community location. Prior to the commencement of the interview, informed consent was obtained from all participants, ensuring their voluntary participation in the study. A semi-structured interview guide was developed to explore in greater detail the beliefs and experiences of participants who reported using jamu for ENT complaints in the quantitative survey. The interview guide consisted of open-ended questions covering several key topics; Beliefs about Jamu : This section explored participants' general beliefs regarding the efficacy, safety, and cultural significance of jamu. Participants were also asked about the various sources from which they had acquired their knowledge about jamu, such as family traditions, community beliefs, and media influences; Experiences with Jamu for ENT Complaints: This section focused on gathering detailed information about participants' specific experiences with using jamu for particular ENT complaints. Participants were encouraged to describe the types of jamu they used, the methods they employed to prepare or obtain it, the dosage and duration of use, and their perceived effects of jamu use on their symptoms; Perceived Benefits and Limitations of Jamu: This section explored the advantages that participants perceived in using jamu for ENT complaints in comparison to other available treatment options. Participants were also asked to discuss any limitations or challenges they had encountered while using jamu; Integration with Conventional Medical Care: This section investigated whether participants also consulted healthcare professionals for their ENT complaints and how they integrated the use of jamu with conventional medical treatments. Specifically, participants were asked about any instances in which they had chosen to use jamu instead of, or prior to, seeking conventional medical care. The interviews were conducted in Bahasa Indonesia by trained researchers who possessed experience in qualitative data collection methods. The interviews were conducted in a private and comfortable setting chosen by the participants. The duration of the interviews

typically ranged between 45 and 60 minutes. With the participants' explicit permission, the interviews were audio-recorded to ensure accurate data capture and transcribed verbatim for subsequent analysis.

The quantitative data collected from the surveys were entered into a statistical software program. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize the demographic characteristics of the participants, the prevalence of common ENT complaints, and the patterns of jamu use within the study population. Chi-square tests were employed to examine potential associations between categorical variables, such as the type of jamu used and the perceived effectiveness of jamu in relieving specific symptoms. Logistic regression analysis was performed to assess the relationship between regular jamu use for ENT complaints and the likelihood of delaying seeking conventional medical care. This analysis was carefully adjusted to account for potential confounding factors, including age, education level, and the severity of reported symptoms, to ensure the robustness of the findings. A p-value of less than 0.05 was predetermined as the threshold for statistical significance for all analyses conducted. The qualitative data obtained from the transcribed interviews were analyzed using thematic analysis. This analytical approach involved a systematic and rigorous process of identifying, organizing, and interpreting patterns of meaning, known as themes, within the interview data. The analysis process encompassed the following key steps; Familiarization: Researchers immersed themselves in the data by engaging in repeated reading and re-reading of the transcripts. This process was crucial for developing a comprehensive and in-depth understanding of the content of the interviews; Initial Coding: Meaningful segments of the text were identified and labeled with initial codes. These codes served to capture the essence of the content of each segment. The coding process was conducted inductively, allowing themes to emerge organically from the data rather than being imposed a priori by the researchers; Searching for Themes: The initial codes were then carefully examined and grouped together based on their similarities and differences. This process facilitated the identification of broader, overarching themes that represented key patterns of meaning within the data; Reviewing Themes: The identified themes were thoroughly reviewed to ensure that they were coherent, distinct from one another, and adequately supported by the data. During this stage, some themes were refined, merged with others, or discarded if they did not meet the established criteria; Defining and Naming Themes: Each theme that met the criteria was clearly defined and given a concise and meaningful name that accurately captured its essence; Producing the Report: The final stage of the analysis involved the preparation of a comprehensive report. This report presented the identified themes along with illustrative quotes from the participants. These quotes were included to provide rich contextual information and to allow readers to gain a deeper understanding of the participants' perspectives and experiences. To ensure the rigor and trustworthiness of the qualitative data analysis, several strategies were employed. These strategies included triangulation, which involved comparing findings across different interviewees to identify areas of convergence and divergence. Member checking was also utilized, which involved returning the findings to a subset of participants to solicit their feedback and to ensure that the researchers' interpretations accurately reflected their experiences. Furthermore, the researchers maintained a detailed audit trail, which involved meticulously documenting each step taken during the analysis process. This audit trail provides a transparent record of the analytical decisions made and enhances the credibility and dependability of the findings.

In this sequential explanatory mixed-methods design, the findings derived from the quantitative survey played a crucial role in informing the selection of participants for the qualitative interviews. The quantitative results provided a broad overview of the prevalence of ENT complaints within the study population and the patterns of jamu use. This overview provided a valuable context for the qualitative phase, which aimed to delve deeper into the reasons underlying these patterns and to explore the lived

experiences of individuals who use jamu. The findings obtained from both the quantitative and qualitative phases were then integrated during the discussion section of the research report. This integration facilitated the development of a more comprehensive and nuanced understanding of the influence of jamu on the prevention and management of common ENT complaints in Indonesia. By combining the breadth of the quantitative data with the depth of the qualitative insights, the researchers were able to provide a richer and more insightful interpretation of the overall findings.

This study was conducted in strict accordance with the ethical principles outlined in the Declaration of Helsinki. Ethical approval for the study was obtained from the Research Ethics Committee of CMHC Indonesia. Prior to their participation in both the survey and the interviews, all participants were provided with comprehensive information regarding the study. This information included the study objectives, the procedures involved, potential risks and benefits associated with participation, and their right to withdraw from the study at any time without facing any penalty. Written informed consent was obtained from each participant before the commencement of any data collection activities, ensuring that their participation was voluntary and based on a full understanding of the study. Confidentiality and anonymity were meticulously maintained throughout the entire study. Survey data were anonymized prior to analysis to protect the privacy of the participants. In the reporting of qualitative findings, participant identifiers were removed, and pseudonyms were used where necessary to further safeguard their privacy.

**3. Results**

Table 1 presents a detailed overview of the participant characteristics involved in both the quantitative and qualitative phases of the study. In terms of demographic information, the quantitative phase involved a larger sample size of 1200 participants, while the qualitative phase focused on a smaller, more targeted group of 30 participants. The mean age of participants was similar in both phases, with the quantitative phase showing a mean age of 42.5 years (with a standard deviation of 15.2 and a range of 18 to 85 years) and the qualitative phase showing a mean age of 45.1 years (with a standard deviation of 14.8 and a range of 22 to 78 years). Both phases had a slightly higher representation of females, with 55% in the quantitative phase and 53.3% in the qualitative phase. The distribution of education levels was also relatively consistent between the two phases. In both, the largest proportion of participants had a high school education, followed by those with a secondary school education. The occupation data indicated that the majority of participants in both phases were employed (60%), with similar proportions of unemployed, self-employed, and retired individuals. The place of residence was predominantly urban in both phases, with approximately 65% of participants residing in urban areas. Regarding health characteristics, the prevalence of ENT complaints in the past 12 months was high, with 68.5% of participants in the quantitative phase reporting at least one ENT complaint. As expected, all participants in the qualitative phase (100%) had experienced at least one ENT complaint, as they were specifically selected for their use of "jamu" for such issues. Among the specific ENT complaints, sore throat was the most common (42.3%), followed by cough (38.7%) and nasal congestion (31.2%) in the quantitative phase. "Jamu" use for ENT complaints was reported by 53.2% of those with ENT complaints in the quantitative phase. All participants in the qualitative phase had used "jamu". The table also provides data on "jamu" use for specific complaints within the quantitative phase. Finally, among "jamu" users, the frequency of use varied, with daily use being the most common (45.8%), followed by a few times a week (31.5%) and occasionally (22.7%). The source of "jamu" was most commonly homemade or from traditional markets/vendors (both 63.4%), with other sources accounting for 36.6%.

Table 1. Participant characteristics.

| Characteristic | Category/Value | Quantitative phase (n=1200) | Qualitative phase (n=30) |
|---|---|---|---|
| **Demographic information** | | | |
| Age | Mean ± SD | 42.5 ± 15.2 | 45.1 ± 14.8 |
| | Range | 18 - 85 years | 22 - 78 years |
| Gender | Male | 540 (45.0%) | 14 (46.7%) |
| | Female | 660 (55.0%) | 16 (53.3%) |
| Education level | Primary School or Less | 240 (20.0%) | 6 (20.0%) |
| | Secondary School | 360 (30.0%) | 9 (30.0%) |
| | High School | 420 (35.0%) | 11 (36.7%) |
| | Tertiary Education | 180 (15.0%) | 4 (13.3%) |
| Occupation | Employed | 720 (60.0%) | 18 (60.0%) |
| | Unemployed | 240 (20.0%) | 6 (20.0%) |
| | Self-Employed | 180 (15.0%) | 4 (13.3%) |
| | Retired | 60 (5.0%) | 2 (6.7%) |
| Place of Residence | Urban | 780 (65.0%) | 20 (66.7%) |
| | Rural | 420 (35.0%) | 10 (33.3%) |
| **Health characteristics** | | | |
| Prevalence of ENT Complaints (Past 12 Months) | Experienced at least one ENT complaint | 822 (68.5%) | 30 (100%) |
| Specific ENT Complaints | Sore Throat | 508 (42.3%) | - |
| | Cough | 464 (38.7%) | - |
| | Nasal Congestion | 374 (31.2%) | - |
| | Runny Nose | 307 (25.6%) | - |
| | Earache | 222 (18.5%) | - |
| | Hoarseness | 181 (15.1%) | - |
| Jamu Use for ENT Complaints | Used Jamu | 437 (53.2% of those with ENT complaints) | 30 (100%) |
| | Jamu Use for Sore Throat | 316 (62.1% of those with sore throat) | - |
| | Jamu Use for Cough | 271 (58.4% of those with cough) | - |
| | Jamu Use for Nasal Congestion | 182 (48.7% of those with nasal congestion) | - |
| | Jamu Use for Runny Nose | 128 (41.7% of those with runny nose) | - |
| | Jamu Use for Earache | 35 (35.6% of those with earache) | - |
| | Jamu Use for Hoarseness | 76 (39.8% of those with hoarseness) | - |
| Frequency of Jamu Use (among Jamu users) | Daily | 200 (45.8%) | - |
| | A few times a week | 138 (31.5%) | - |
| | Occasionally | 99 (22.7%) | - |
| Source of Jamu (among Jamu users) | Homemade | 277 (63.4%) | - |
| | Traditional Markets/Vendors | 277 (63.4%) | - |
| | Other Sources | 160 (36.6%) | - |

Table 2 presents data on the perceived effectiveness of "jamu" for ENT complaints, drawing from both the quantitative and qualitative phases of the study. In the quantitative phase, which surveyed 437 "jamu" users, 78.9% of participants reported an overall perceived symptom relief after using "jamu". When examining the degree of symptom relief, 25% of these "jamu" users reported complete relief, 53.9% reported partial relief, and 21.1% reported no relief. The table also breaks down the perceived effectiveness of "jamu" for specific ENT complaints within the quantitative phase. A significant proportion of "jamu" users reported perceived effectiveness for sore throat (68.3%) and cough (72.5%). Perceived effectiveness was also noted for nasal congestion (55.1%), runny nose (45.2%), and hoarseness (41.9%), although at slightly lower percentages. Earache had the lowest reported perceived effectiveness (15.7%). In the qualitative phase, which involved in-depth interviews with 30 "jamu" users, the theme of complete relief was a predominant one, aligning with the 25% reporting complete relief in the quantitative data. The effectiveness of "jamu" for sore throat and cough was "consistently mentioned" by participants in the qualitative interviews, reinforcing the quantitative findings that showed higher percentages of perceived effectiveness for these complaints. Nasal congestion, runny nose, and hoarseness were "mentioned" in the qualitative phase, while earache was "occasionally mentioned."

Table 2. Perceived effectiveness of jamu.

| **Aspect of perceived effectiveness** | **Data representation** | **Quantitative phase (n=437 Jamu Users)** | **Qualitative phase (n=30 Jamu Users)** |
|---|---|---|---|
| Overall Perceived Symptom Relief | Percentage of Jamu users reporting improvement | 78.9% | - |
| Degree of Symptom Relief | Complete Relief | 25% | Predominant theme |
| | Partial Relief | 53.9% | |
| | No Relief | 21.1% | |
| Perceived Effectiveness for Specific ENT Complaints | Sore Throat | 68.3% of Jamu users for sore throat | Consistently mentioned |
| | Cough | 72.5% of Jamu users for cough | Consistently mentioned |
| | Nasal Congestion | 55.1% of Jamu users for nasal congestion | Mentioned |
| | Earache | 15.7% of Jamu users for earache | Occasionally mentioned |
| | Runny Nose | 45.2% of Jamu users for runny nose | Mentioned |
| | Hoarseness | 41.9% of Jamu users for hoarseness | Mentioned |

Table 3 presents data on the healthcare-seeking behavior of participants, comparing findings from the quantitative and qualitative phases of the study. In the quantitative phase, which involved 437 "jamu" users, 38.2% of participants reported using "jamu" as a first-line treatment for their ENT complaints. A notable proportion, 41.5%, of these "jamu" users reported concurrent use of "jamu" with over-the-counter (OTC) medications. Only 20.3% of "jamu" users reported consulting with a healthcare professional for their ENT complaints. A key finding is related to the delay in seeking medical care. The quantitative analysis showed an increased likelihood of delaying conventional medical care among regular "jamu" users, with an odds ratio (OR) of 1.85 (95% Confidence Interval: 1.32-2.59) and a statistically significant p-value of less than 0.001. This indicates a statistically significant association between regular "jamu" use and a delay in seeking professional medical help. The qualitative phase, based on interviews with 30 "jamu" users, provides context to these quantitative findings. The use of "jamu" as an initial response to ENT

complaints was described in the qualitative data. The qualitative findings also indicated that there were "varied approaches observed" regarding the concurrent use of "jamu" with OTC medications. Regarding consultations with healthcare professionals, the qualitative data revealed that "some acknowledged the need later" for professional medical advice. Finally, the qualitative data indicated "varied integration with conventional care" and this aligns with the quantitative finding of a delay in seeking medical care among regular "jamu" users.

Table 3. Healthcare-seeking behavior.

| Aspects of healthcare seeking behavior | Data representation | Quantitative phase (n=437 Jamu Users) | Qualitative phase (n=30 Jamu Users) |
|---|---|---|---|
| Jamu as First-Line Treatment | Percentage of Jamu users using Jamu first | 38.2% | Described as initial response |
| Jamu Use Concurrent with OTC Medications | Percentage of Jamu users using Jamu with OTC medications | 41.5% | Varied approaches observed |
| Consultation with Healthcare Professional | Percentage of Jamu users consulting professionals | 20.3% | Some acknowledged the need later |
| Delay in Seeking Medical Care | Increased likelihood among regular Jamu users | OR = 1.85, 95% CI: 1.32-2.59, $p < 0.001$ | Varied integration with conventional care |

Table 4 presents a summary of the qualitative findings from the study, organized into seven key themes that emerged from the analysis of the interview data. Each theme is described, and illustrative quotes from participants are provided to support and exemplify the findings; Theme 1: Deep-Rooted Cultural Belief in Jamu's Efficacy and Safety. This theme highlights the strong cultural beliefs in the efficacy and safety of "jamu" for managing common ailments. Participants attributed this belief to traditional knowledge passed down through generations. The illustrative quotes emphasize that "jamu" is viewed as a natural remedy with fewer perceived side effects compared to chemical medicines, and its long history of use in Indonesia contributes to the belief in its effectiveness; Theme 2: Jamu as a First-Line Treatment for Mild to Moderate ENT Complaints. This theme describes how participants reported using "jamu" as their initial response to mild to moderate ENT symptoms. They viewed it as a readily available, affordable, and convenient self-management option. The quotes illustrate that participants often use "jamu" for common symptoms like a scratchy throat or cough before considering other medical options, highlighting its accessibility and perceived sufficiency for minor issues; Theme 3: Perceived Symptom Relief and Healing Properties of Specific Jamu Formulations. This theme focuses on participants' descriptions of specific "jamu" formulations and their perceived benefits for particular ENT complaints. Ginger and turmeric were frequently mentioned. The quotes provide examples of specific "jamu" preparations used for coughs (ginger and lemongrass tea) and sore throats ("kunyit asam"), and participants describe the perceived relief and healing effects associated with these formulations; Theme 4: Preference for Natural and Fewer Side Effects Compared to Pharmaceutical Drugs. This theme explores participants' preference for "jamu" due to the perception that it is natural and has fewer side effects than conventional pharmaceutical medications. Participants often expressed concerns about the side effects of over-the-counter drugs. The quotes demonstrate a preference for natural ingredients and an aversion to "chemical medicines" unless absolutely necessary. Participants also contrasted the perceived side effects of "jamu" with those of pharmaceutical drugs, such as drowsiness; Theme 5: Acknowledging Limitations of Jamu for Severe or Persistent Symptoms. While expressing positive experiences with "jamu" for mild ENT complaints, some participants acknowledged its limitations in cases of severe infections or chronic conditions. They recognized the need to seek conventional medical care in such situations. The quotes illustrate that participants recognize the

boundaries of "jamu" use, understanding that it may not be sufficient for severe symptoms like high fever, severe pain, or persistent conditions. In such cases, participants indicated they would seek conventional medical care; Theme 6: Integration of Jamu with Conventional Medical Care (Varied Approaches). This theme reveals the varied approaches that individuals take to integrate "jamu" with conventional medical care. Some participants used "jamu" as a complementary therapy alongside prescribed medications, while others used it as an alternative, particularly for initial mild symptoms. The quotes show examples of using "jamu" to soothe symptoms even when taking prescribed antibiotics, as well as using "jamu" first and then considering going to the clinic if symptoms don't improve; Theme 7: Influence of Social Networks and Accessibility of Jamu. This theme describes how participants' use of "jamu" was often influenced by recommendations from family members, friends, and the wider community. Participants also attributed its use to its easy accessibility through homemade preparations or readily available products. The quotes illustrate the role of social networks in sharing information and recipes for "jamu," as well as the ease of obtaining "jamu" in everyday life, from neighbors to markets.

Table 4. Qualitative findings.

| Theme | Description | Illustrative quotes |
|---|---|---|
| **1: Deep-Rooted Cultural Belief in Jamu's Efficacy and Safety** | This theme describes strong cultural beliefs in jamu's efficacy and safety for managing common ailments, attributed to traditional knowledge passed down through generations. | "Since I was a child, my mother always gave us kunyit asam when we had a sore throat. It always worked. It's a tradition in our family," said Ibu S, a 55-year-old woman from a rural area. "We believe that jamu is natural and doesn't have the harsh side effects of chemical medicines. It's been used for centuries in Indonesia, so it must be effective," explained Bapak B, a 42-year-old man from an urban setting. |
| **2: Jamu as a First-Line Treatment for Mild to Moderate ENT Complaints** | Participants reported using jamu as their initial response to mild to moderate ENT symptoms, viewing it as a readily available, affordable, and convenient self-management option. | "If I feel a scratchy throat or a slight cough, the first thing I do is make myself some ginger tea with honey. Usually, it helps, and I don't need to go to the doctor," shared Mbak A, a 30-year-old working professional. "For simple colds and coughs, why bother going to the clinic? Jamu is enough. It's cheaper and just as effective for minor issues," stated Bapak J, a 60-year-old retired teacher. |
| **3: Perceived Symptom Relief and Healing Properties of Specific Jamu Formulations** | Participants described specific jamu formulations and their perceived benefits for particular ENT complaints, with ginger and turmeric frequently mentioned. | "When I have a cough, I always drink ginger and lemongrass tea with a bit of honey. It makes my throat feel better and helps me cough less," described Ibu R, a 48-year-old homemaker. "For a sore throat, kunyit asam is the best. It reduces the pain and makes it easier to swallow," said Mas A, a 28-year-old student. |
| **4: Preference for Natural and Fewer Side Effects Compared to Pharmaceutical Drugs** | Participants preferred jamu due to the perception that it is natural and has fewer side effects than conventional pharmaceutical medications, often expressing concerns about the side effects of over-the-counter drugs. | "I prefer jamu because it's made from natural ingredients. I don't like taking chemical medicines unless it's really necessary," explained Ibu L, a 35-year-old small business owner. "Sometimes, cold medicines make me feel drowsy. Jamu doesn't have that effect on me," shared Bapak H, a 50-year-old farmer. |
| **5: Acknowledging Limitations of Jamu for Severe or Persistent Symptoms** | While expressing positive experiences with jamu for mild ENT complaints, some participants acknowledged its limitations in cases of severe infections or chronic conditions, recognizing the need to seek conventional medical care in such situations. | "For a simple sore throat, jamu works. But if I have a high fever or the pain is very bad, I will definitely go to the doctor," stated Mbak D, a 25-year-old nurse. "I use jamu for minor coughs, but if the cough persists for more than a week or I have difficulty breathing, I will see a doctor," explained Bapak S, a 65-year-old community elder. |
| **6: Integration of Jamu with Conventional Medical Care (Varied Approaches)** | The interviews revealed varied approaches to integrating jamu with conventional medical care, with some participants using it as a complementary therapy alongside prescribed medications, while others used it as an alternative, particularly for initial mild symptoms. | "Sometimes, if the doctor prescribes antibiotics for a throat infection, I will still drink ginger tea to soothe my throat," said Ibu M, a 40-year-old teacher. "I usually try jamu first. If my condition doesn't improve after a few days, then I will consider going to the clinic," shared Mas R, a 32-year-old mechanic. |
| **7: Influence of Social Networks and Accessibility of Jamu** | Participants' use of jamu was often influenced by recommendations from family members, friends, and the wider community, with its widespread use also attributed to its easy accessibility through homemade preparations or readily available products. | "My neighbor always tells me which jamu is good for different ailments. We often share recipes and make it together," said Ibu A, a 58-year-old housewife. "It's so easy to find jamu everywhere, especially in the traditional markets. It's part of our daily life," explained Bapak S, a 45-year-old shop owner. |

## 4. Discussion

This mixed-methods study provides valuable insights into the influence of traditional Indonesian practices, specifically the use of jamu, on the prevention and management of common ENT complaints. The quantitative findings reveal a high prevalence of common ENT complaints among adults in Indonesia, with a significant proportion of those affected utilizing jamu for symptom relief. The qualitative data further illuminate the deeply ingrained cultural beliefs and positive experiences associated with jamu use for these conditions. The quantitative data from this study indicate a high prevalence of common ENT complaints among the adult population in Indonesia. Specifically, 68.5% of the survey participants reported experiencing at least one ENT complaint in the 12 months prior to the study. Among these individuals, sore throat (42.3%), cough (38.7%), and nasal congestion (31.2%) were the most frequently reported complaints. These findings are consistent with global trends in the prevalence of upper respiratory tract infections and other common ENT conditions. A significant proportion of individuals experiencing ENT complaints reported using jamu for symptom relief. Overall, 53.2% of those with ENT complaints had used jamu. This highlights the widespread use of traditional medicine for managing these conditions in Indonesia. The prevalence of jamu use varied across specific ENT complaints, with higher rates of use reported for sore throat (62.1%) and cough (58.4%). This aligns with anecdotal evidence and traditional knowledge in Indonesia, where turmeric-based and ginger-based preparations are widely recognized for their potential therapeutic effects on these symptoms.[11-15]

The study's findings reveal that a majority of jamu users perceive it to be effective in providing symptom relief. In the quantitative phase, 78.9% of jamu users reported an overall improvement in their symptoms after using jamu. Among these users, 25% reported complete relief, 53.9% reported partial relief, and 21.1% reported no relief. These findings underscore the importance of considering patient perspectives when evaluating traditional remedies. The perceived effectiveness, whether attributed to pharmacological effects, the placebo effect, or cultural expectations, plays a significant role in the continued use of jamu. The qualitative data further support these findings, with participants consistently mentioning the perceived benefits of specific jamu formulations for particular ENT complaints. Ginger-based preparations were frequently mentioned for cough relief, while turmeric-based jamu was commonly cited for its effectiveness in alleviating sore throat symptoms. These qualitative accounts provide rich contextual detail that complements the quantitative data on perceived effectiveness. The study investigated the healthcare seeking behavior of individuals using jamu for ENT complaints. The quantitative findings indicate that a notable proportion of jamu users (38.2%) utilize jamu as a first-line treatment for their symptoms. This suggests that jamu is often the initial approach taken by individuals to manage common ENT complaints before considering other healthcare options. However, the study also revealed a potential concern regarding the delay in seeking conventional medical care among regular jamu users. The logistic regression analysis demonstrated that regular jamu users were more likely to delay seeking conventional medical care for persistent or severe symptoms (OR = 1.85). This finding raises important implications for public health. While jamu may provide relief for mild, self-limiting ENT complaints, delaying appropriate medical attention for more serious infections or underlying conditions could potentially lead to complications or prolonged illness.[16-20]

## 5. Conclusion

In conclusion, this mixed-methods study highlights the significant role of jamu in the management of common ENT complaints in Indonesia. The findings reveal a high prevalence of ENT complaints and a widespread reliance on jamu for symptom relief. Jamu is often used as a first-line treatment, driven by strong cultural beliefs in its efficacy and safety, as well as its accessibility and affordability. Users report perceived symptom relief, particularly for sore throat and cough, often attributed to specific ingredients like turmeric and ginger. However, the study also identified a potential concern regarding the delay in seeking

conventional medical care among regular jamu users. While jamu may be effective for mild conditions, there is a risk of delaying appropriate medical treatment for more severe or persistent symptoms, which could lead to complications. These findings underscore the importance of developing integrated healthcare approaches that acknowledge the role of traditional medicine while ensuring timely access to conventional care. Further research is needed to scientifically evaluate the efficacy and safety of specific jamu formulations and to establish evidence-based guidelines for their use in conjunction with conventional medical practices in Indonesia.

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