LEVEL OF AWARENESS OF HERBAL MEDICINE AMONG RESIDENTS IN BAYOMBONG, NUEVA VIZCAYA

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ABSTRACT

Herbal medicines are widely used in the Philippines as accessible, culturally embedded alternatives to conventional medicine. Hence, the Department of Health (DOH) endorses 10 medicinal plants that have been scientifically validated. However, there is limited literature specifically examining awareness of the 10 DOH-approved herbal medicines among Filipino rural communities, and gaps remain in community-level knowledge and appropriate usage, particularly in rural areas. This study investigated the level of awareness of the 10 Department of Health (DOH)-approved herbal medicines among residents aged 40–59 in selected barangays of Bayombong, Nueva Vizcaya. Specifically, it evaluated awareness in terms of usage, knowledge, and preparation. A descriptive-correlational design was used, involving 285 respondents selected through stratified random sampling. Data was gathered via a validated questionnaire and analyzed using descriptive and inferential statistics. Results showed a high prevalence of herbal medicine usage (99.6%), particularly Lagundi, Ampalaya, Bayabas, and Bawang. Awareness was generally high regarding preparation and knowledge; however, certain herbs, such as Tsaang Gubat, Akapulko, and Niyog-niyogan, were less recognized. Moreover, no significant correlations were found between awareness and demographic variables, including sex, educational attainment, and socioeconomic status, suggesting that knowledge of herbal medicine is influenced more by cultural transmission than by formal education. As an output, an Information, Education, and Communication (IEC) brochure was developed to guide proper usage and promote safe, evidence-based practices. The findings highlight the critical need for accessible, community-wide health education to support informed and safe herbal medicine use in rural communities.

Keywords: *b*rochure, community health, ethnomedicine, health promotion, traditional practice

INTRODUCTION

Herbal medicine refers to the use of plant-based substances to maintain health and treat illnesses. According to Republic Act 8423, herbal medicines are defined as "finished, labeled, medicinal products that contain as active ingredient(s) any plant parts or other materials or in combination thereof, whether in the crude state or as plant preparations." In the Philippines, the Department of Health (DOH) has endorsed 10 herbal medicines proven to be safe and effective: Lagundi, Ulasimang Bato, Bawang, Bayabas, Yerba Buena, Sambong, Akapulko, Niyog-Niyogan, Tsaang-Gubat, and Ampalaya.

Globally, the World Health Organization (2019) estimates that 80% of the world's population relies on traditional herbal remedies as a primary source of healthcare. In low- and middle-income countries, herbal medicine is often preferred due to affordability, accessibility, and cultural familiarity. In the Philippines, herbal medicine is deeply rooted in tradition, especially in rural areas where access to formal healthcare services remains limited. However, accessibility does not always translate to correct usage. Many individuals use these remedies without sufficient knowledge of proper preparation, dosage, or potential side effects.

Despite government approval and widespread availability, there remains a significant knowledge gap among users regarding the safe and proper use of herbal medicines. Inappropriate use can lead to harmful health outcomes such as allergic reactions, herb-drug interactions, or organ toxicity. This is particularly concerning for adults aged 40 to 59, who commonly rely on herbal remedies to manage chronic conditions. The issue is further complicated by the lack of standardized education efforts, especially in geographically isolated or underserved communities like Bayombong in Nueva Vizcaya.

International and national studies have emphasized the risks associated with limited awareness of herbal medicine. South Korean adults lack essential knowledge about herbal product use, Vietnamese users are unaware of possible herb-drug interactions, and pregnant women in Uganda used herbal treatments without knowledge of adverse effects (Kim et al., 2021; Hoang et al., 2022; Nyeko et al., 2019). Meanwhile, Filipinos use herbal medicine based on cultural beliefs, with little understanding of proper preparation or dosage, and without accurate health information (Tolentino et al., 2019; Kamantigue et al., 2021; Dizon et al., 2022; Rivera and Cruz, 2023). Demographic factors were also explored in the studies on herbal medicine, highlighting inconsistencies in sex, educational attainment, and socioeconomic status among herbal medicine users. In the Philippines, Marquez et al. (2020) highlighted that cultural traditions, rather than education or income, influence the use of herbal medicine. Torres et al. (2024) and Dans et al. (2020) emphasized that adults aged 40–59 are particularly reliant on herbal remedies, using them as alternatives to pharmaceuticals in managing long-term illnesses.

Although studies have assessed public awareness of herbal medicines both globally and in the Philippines, most have focused on general use, risks, or specific populations, such as the elderly or pregnant women. However, there is limited literature specifically examining awareness of the 10 DOH-approved herbal medicines among rural Filipino communities, especially in areas where traditional practices remain dominant. Despite government efforts, such as the distribution of educational brochures and the conduct of community seminars, the reach and effectiveness of these programs are uneven. In Bayombong, local health officials reported that residents still lack access to reliable information regarding DOH-approved herbal medicine. This absence of targeted health education highlights a critical gap that requires immediate attention.

This research study aimed to determine the level of awareness among residents aged 40 to 59 in selected barangays of Bayombong regarding the ten DOH-approved herbal medicines. The study focused on three major areas: usage, knowledge, and preparation. It also examined whether demographic characteristics, such as sex, educational attainment, and socioeconomic status, influence levels of awareness. Moreover, the study aimed to contribute to the creation of a health education method that will inform communities about the proper use of herbal medicine and ensure it is practiced safely and effectively. Through this focused investigation, the study aimed to contribute to a more comprehensive understanding of herbal medicine in rural healthcare, paving the way for improved health outcomes in rural communities.

METHODOLOGY

This study employed a quantitative descriptive-correlational design to determine the level of awareness of herbal medicine among rural communities in Bayombong, Nueva Vizcaya. It described respondents' profiles by sex, educational attainment, and socioeconomic status, and assessed awareness of the 10 DOH-approved herbal medicines regarding use, knowledge, and preparation. Correlation identified the relationship between awareness and respondent profiles.

The study took place in Bayombong, Nueva Vizcaya, selected in consultation with the municipal health officer. The Raosoft formula was used to determine the sample size, with 285 respondents selected to represent the population. Stratified random sampling was used by categorizing the population into strata based on shared characteristics (Hayes, 2023). Individuals aged 40 to 59 who used one or more of the 10 DOH-approved or non-DOH-approved herbal medicines and were willing to participate were included. Those with comorbidities, pregnant individuals, individuals not aged 40-59, individuals unwilling to consent, or individuals not from the identified locale were excluded to avoid risks and ensure effective communication and data collection.

Table 1

Total Number of Residents Aged 40-59 From the Locale

	40-44	45-49	50-54	55-59	TOTAL
Casat	113	94	72	78	357
Paitan	126	89	68	58	341
Cabuaan	71	45	35	36	187
Magapuy	52	78	45	34	209
					1,094

Table 2

Number of selected participants from each barangay

	No. of Participants
Casat	93
Paitan	89
Cabuaan	49
Magapuy	54
TOTAL	285

The researchers used an adapted questionnaire from Tolentino et al. (2019), "Herbal Medicine Utilization among Batangueños." The original tool had five parts: awareness of the ten DOH-approved herbal plants, including preparations; extent of use; reasons and factors affecting usage; and naming non-DOH-approved herbal plants, with 12, 10, 10, 15, and 20 items, respectively. The tool was revised based on the study's problems and purpose. The sections on reasons, factors, and non-DOH-approved herbal plants were excluded. Items 4, 5, 6, 7, 9, 11, and 12 were added under awareness; items 1 and 2 were added for usage. The preparation section was revised to include preparation knowledge, and items were adjusted accordingly. The final tool had 2 parts: level of awareness based on usage, knowledge, and preparation, with 19 and 10 items, respectively. A 4-point Likert-type scale from Vagias (2006) was used: 4 (3.25–4.00) strongly agree, 3 (2.50–3.24) agree, 2 (1.75–2.49) disagree, 1 (1.00–1.74) strongly disagree. A pilot test with 30 respondents from Ipil Cuneg was conducted to check reliability using Cronbach's alpha: $\alpha \geq 0.71$ (acceptable) for the first part, $\alpha \geq 0.81$ (good) for the second part. The instrument was translated into Tagalog with the help of a certified Filipino teacher.

A communication letter was addressed to the municipal mayor requesting permission to conduct the study and to retrieve information on the population of the selected barangays. Respondents were randomly drawn and given informed consent. The researchers facilitated consent and explained the study. Printed forms were distributed house-to-house. Questionnaires were also floated house-to-house, with respondents informed of the study's purpose, confidentiality, and their right to decline or withdraw. Participation was voluntary, with no coercion or influence.

Descriptive statistics, particularly frequency and percentage, were used to analyze the respondents' demographic profile. Mean scores and standard deviations were used to assess awareness of the 10 DOH-approved herbal medicines regarding usage, knowledge, and

preparation. Inferential statistics tested the hypothesis and correlation between variables: Spearman's rho for educational attainment and socioeconomic status, and point-biserial correlation for sex.

Table 3

Scale in Interpreting the Result of the Data

QD	Range	Interpretation
Strongly Agree	3.25-4:00	Reflects a high level of agreement, indicating strong support of the statement or very high level of awareness
Agree	2.50-3.24	Expresses a general acceptance of the statement, indicating high level of awareness
Disagree	1.75-2.49	Suggests a partial level of disagreement, or low level of awareness
Strongly Disagree	1-1.74	Indicates a strong opposition or disagreement with the statement, or very low awareness

RESULTS AND DISCUSSION

Section 1. Profile of the Respondents

Table 4

Profile of the Respondents in Terms of Sex, Religion, Educational Attainment, and Socioeconomic Status

Profile	Groups	Frequency	Percent
Sex	Male	124	43.5
	Female	161	56.5
	Total	**285**	**100.0**
Educational attainment	No formal education	10	3.5
	Elementary level	30	10.5
	Elementary graduate	34	11.9
	High school level	72	25.3
	High school graduate	71	24.9
	College level	57	20.0
	College graduate	11	3.9
	Total	**285**	**100.0**
Socioeconomic status	Thriving	16	5.6
	Stable	98	34.4
	Safe	165	57.9
	At-risk	2	0.7
	In-crisis	4	1.4
	Total	**285**	**100.0**

Note. n=285

Table 4 shows the demographic characteristics of the 285 respondents by sex, educational attainment, and socioeconomic status. The majority were female (56.5%) compared to males (43.5%). Educational attainment varied, with most having completed at least high school: 25.3% reached high school level without graduating, 24.9% were high school graduates, 20.0% attended college without completing, and 3.9% were college graduates, while smaller portions had only elementary education (11.9%) or no formal education (3.5%). Socioeconomic status was categorized into five levels, with most respondents classified as "safe" (57.9%), indicating financial stability without excess resources, followed by "stable" (34.4%), "thriving" (5.6%), "at-risk" (0.7%), and "in-crisis" (1.4%). Overall, the demographic profile shows that most respondents are women, have at least a high school education, and are financially stable, factors that may likely influence their level of awareness of the 10 DOH-approved herbal medicines.

Section 2. Level of Awareness of Herbal Medicine Among Respondents

Table 5
Level of Awareness in Terms of Usage

Herbal Medicine	No (Freq, %)	Yes (Freq, %)	Total
Used one or more herbal medicine	1 (0.4%)	284 (99.6%)	285
Lagundi	49 (17.2%)	236 (82.8%)	285
Ulasimang Bato	238 (83.5%)	47 (16.5%)	285
Bawang	96 (33.7%)	189 (66.3%)	285
Bayabas	95 (33.3%)	190 (66.7%)	285
Yerba Buena	241 (84.6%)	44 (15.4%)	285
Sambong	168 (58.9%)	117 (41.1%)	285
Akapulko	256 (89.8%)	29 (10.2%)	285
Niyog-niyogan	266 (93.3%)	19 (6.7%)	285
Tsaang Gubat	256 (89.8%)	29 (10.2%)	285
Ampalaya	87 (30.5%)	198 (69.5%)	285

Table 5 presents the frequency of use of the ten DOH-approved herbal medicines. A vast majority (99.6%) of respondents reported using at least one herbal medicine, indicating high awareness and utilization. Lagundi was most frequently used (82.8%), aligning with its known efficacy for respiratory conditions (Tolentino et al., 2019). Ampalaya ranked second (69.5%) due to its role in lowering blood sugar, supported by Fernandez et al. (2021). Bawang (66.3%) and Bayabas (66.7%) were also commonly used for their antimicrobial properties.

Less frequently used were Yerba Buena (15.4%), Akapulko (10.2%), Niyog-niyogan (6.7%), and Tsaang Gubat (10.2%), suggesting limited awareness or preference for pharmaceutical alternatives. These findings support prior studies that traditional herbal remedies remain widely used in rural settings due to their perceived effectiveness, affordability, and accessibility (Marquez et al., 2020; Tolentino et al., 2019). The variation in usage reflects differences in awareness, cultural beliefs, and exposure to traditional practices. Overall, herbal medicine is highly integrated into respondents' health practices, emphasizing the need for public health efforts to promote safe and informed use.

Table 6
Level of Awareness in Terms of Knowledge

	Mean	SD	QD
Q1. I use herbal plants daily	**1.91**	0.95	Disagree
Q2. I use herbal plants weekly	**1.87**	0.91	Disagree
Q3. I use herbal plants only when needed	**3.56**	0.73	Strongly agree
Q4. I use herbal plants to treat diseases	**3.26**	0.87	Strongly agree
Q5. I use herbal plants to enhance health	**2.88**	1.00	Agree
Q6. I use herbal plants to enhance physical functions	**2.91**	1.00	Agree
Q7. Herbal Plants can be used as an alternative medicine in relieving common ailments such as cough, cold, fever, and stomachache	**3.31**	0.81	Strongly agree
Q8. There are risks and side effects for the improper usage and ingestion of Herbal Plants.	**2.62**	0.99	Agree
Q9. Herbal Plants cannot be used in certain diseases, pregnancy, and in children aged 4 years and below	**2.41**	1.01	Disagree
Q10. Specific parts of a plant can be used in preparation of Herbal Medications such as its stems, leaves, bulbs, and seeds	**3.13**	0.85	Agree
Q11. There are certain instances when to stop using herbal plants and consult a doctor.	**3.03**	0.82	Agree
Q12. There are herbal plants that should not be taken along with certain manufactured drugs.	**2.29**	0.96	Disagree
Q13. Herbal plants can be used as a first aid.	**3.35**	0.75	Strongly agree
Q14. Lagundi is used through drinking of the boiled solution and washing the affected site	**3.33**	0.72	Strongly agree
Q15. Yerba Buena is used for massaging affected area and through drinking boiled solution	**2.40**	1.02	Agree
Q16. Sambong leaves are used through drinking the boiled solution	**2.92**	0.97	Agree
Q17. Tsaang gubat are used through drinking the boiled solution	**2.44**	1.05	Disagree
Q18. Niyog-niyogan seeds are used through drinking of the boiled solution.	**2.48**	1.06	Disagree
Q19. Bayabas leaves are prepared through decoction and used through drinking and bathing of the boiled solution	**3.31**	0.79	Strongly agree
Q20. Akapulko leaves are used through direct application of the recommended plant material on the affected part.	**2.59**	1.10	Agree
Q21. Ulasimang-bato/Pansit-pansitan stems and leaves are used through drinking of the boiled solution or eating the recommended raw plant material	**2.65**	1.09	Agree
Q22. Bawang bulbs are used through eating the recommended raw or fried plant material direct application on the affected part	**3.32**	0.84	Strongly agree
Q23. Ampalaya leaves are used through drinking of the boiled solution.	**3.32**	0.83	Strongly agree
Overall Mean	2.84	0.36	Agree

Note. Legend: 1-1.74 (Strongly disagree); 1.75-2.49 (Disagree); 2.50-3.24 (Agree); 3.25-4:00 (Strongly agree)

The table shows that the overall level of awareness of DOH-approved herbal medicine is "agree" (Mean = 2.84, SD = 0.36), indicating high awareness. Statements like "I use herbal plants to enhance health" (Mean = 2.88) and "I use herbal plants to enhance physical functions" (Mean = 2.91) support this. However, high standard deviations suggest differences in individual awareness, implying a need for targeted health education. This aligns with Pearson et al. (2018), showing that herbal use is more treatment-oriented. Rahayu et al. (2020) and Logiel et al. (2021) also emphasize that usage is driven by accessibility, affordability, and cultural beliefs.

The item "Herbal plants can be used as an alternative medicine in relieving common ailments..." (Mean = 3.31) shows high therapeutic awareness. However, low awareness of risks—e.g., "Herbal plants cannot be used in certain diseases, pregnancy, and in children..." (Mean = 2.41) and "There are herbal plants that should not be taken with certain manufactured drugs" (Mean = 2.29)—raises concern. Studies by Peltzer and Pengpid (2019) and El-Dahiyat et al. (2020) confirm cultural trust often overshadows awareness of side effects, indicating potential health risks.

Lagundi (Mean = 3.33), Ampalaya and Bawang (Mean = 3.32), and Bayabas (Mean = 3.31) received the highest scores, reflecting familiarity due to their medicinal benefits and household use. In contrast, Tsaang Gubat (Mean = 2.44) and Niyog-Niyogan (Mean = 2.48) had the lowest scores, suggesting low awareness and limited accessibility. As noted by Maramba-Lazarte (2020), herbal medicine education remains inconsistent in rural areas,

contributing to underutilization.

These findings imply strong cultural integration of herbal medicine. Still, gaps remain in safe usage and knowledge of less familiar herbs. This highlights the need for nurses and community health workers to improve education on risks, contraindications, and evidence-based practices through culturally aligned approaches.

Table 7
Level of Awareness in Terms of Preparation

	Mean	SD	QD
QR1. Lagundi leaves are prepared through decoction and pounding	3.38	0.79	Strongly Agree
QR2. Yerba Buena leaves are prepared through decoction and massage sap, or by crushing and steeping.	2.50	1.10	Agree
QR3. Sambong leaves are prepared through decoction, infusion, and crushing	2.88	0.98	Agree
QR4. Tsaang Gubat leaves are prepared through decoction	2.45	1.07	Disagree
QR5. Niyog-niyogan seeds are prepared through decoction	2.47	1.08	Disagree
QR6. Bayabas leaves are prepared through decoction	3.23	0.89	Agree
QR7. Akapulko leaves are prepared through poultice	2.55	1.09	Agree
QR8. Ulasimang-bato/Pansit-pansitan stems and leaves are prepared through decoction, infusion oe can be eaten as raw	2.59	1.05	Agree
QR9. Bawang bulbs are prepared through cooking, infusion, and pounding	3.35	0.82	Strongly Agree
QR10. Ampalaya leaves are prepared through decoction or steaming	3.35	0.85	Strongly Agree
Overall Mean	2.88	0.66	Agree

Note. Legend: 1-1.74 (Strongly disagree); 1.75-2.49 (Disagree); 2.50-3.24 (Agree); 3.25-4:00 (Strongly agree)

The table shows that respondents have a high level of awareness of the preparation of herbal medicines (Mean = 2.88, SD = 0.66), falling under the "agree" category. Lagundi (Mean = 3.38), Bawang (Mean = 3.35), and Ampalaya (Mean = 3.35) had the highest scores, indicating strong awareness of their preparation methods, such as decoction, pounding, cooking, and steaming, and demonstrating traditional and cultural adaptation. Tsaang Gubat (Mean = 2.45) and Niyog-Niyogan (Mean = 2.47) were the lowest, under "disagree," suggesting unfamiliarity due to rarity or limited knowledge on preparation. Meanwhile, Yerba Buena, Sambong, Bayabas, Akapulko, and Pansit-pansitan also fell under "agree," indicating high awareness of their preparation. The variation suggests that familiarity depends on the specific herbal plant.

This supports Cordero et al. (2022), noting a high reliance on DOH-endorsed herbs such as Lagundi, Bawang, and Ampalaya, possibly due to government promotion. Lesser awareness of Tsaang Gubat and Niyog-Niyogan aligns with Gloria et al. (2021), who reported that low knowledge can lead to health risks like liver toxicity and drug interactions. Contributing factors include limited exposure and promotion. Marquez et al. (2020) stated that herbal medicines are preferred due to affordability and accessibility. However, Tolentino et al. (2019) emphasized misuse as a critical issue, highlighting the need for education on correct preparation. The wide variation in knowledge reveals a gap that can affect both efficacy and safety.

Overall, the preparation of common herbal medicines is well known, whereas lesser-known ones are less well known. These findings imply the need for educational interventions to ensure accurate, safe herbal use, maximizing benefits and minimizing risks.

Section 3. Significant Relationship Between Respondents' Level of Awareness and Profile

Table 8

Relationship Between the Level of Awareness of Herbal Medicine and Respondents' Sex, Educational Attainment, and Socioeconomic status

		Sex	Educational Attainment	Socioeconomic Status
Level of awareness of herbal medicine in terms of knowledge	Correlation Coefficient	.017 ns	.080ns	.014ns
	p-value	.769	.180	.811
	N	285	285	285
Level of awareness of herbal medicine in terms of preparation	Correlation Coefficient	.091 ns	-.003ns	.079ns
	p-value	.125	.956	.184
	N	285	285	285

Note. ns-not significant; Spearman's rho was used for Ed Attainment and SES while point-biserial correlation was used to correlate sex.

Table 8 shows no significant correlation between awareness of herbal medicine and respondent profiles such as sex, educational attainment, and socioeconomic status, as all p-values exceeded 0.05. For knowledge on use: sex (r = 0.017, p = 0.769), educational attainment (rho = 0.080, p = 0.180), and socioeconomic status (rho = 0.014, p = 0.811) were not significant. Similarly, for preparation: sex (r = 0.091, p = 0.125), educational attainment (rho = -0.003, p = 0.956), and socioeconomic status (rho = 0.079, p = 0.184) showed no significant relationship. Thus, the null hypothesis is accepted.

This implies that awareness does not vary by sex, education, or income. Herbal knowledge likely comes from cultural traditions, family teachings, and community exposure rather than formal education or financial status. These findings support El-Dahiyat et al. (2020) and Aina et al. (2020), who found that education and economic status did not predict herbal medicine use. Peltzer and Pengpid (2019) also noted inconsistent effects of gender and education, suggesting informal sources are more influential.

Herbal knowledge is passed down through generations and embedded in community life, especially in rural areas. Its affordability and accessibility make it common across all income and education levels.

The findings highlight the need for community-wide, culturally sensitive health promotion strategies. Public health programs should partner with local leaders and traditional healers to promote safe, evidence-based use of herbal remedies across all demographics.

Section 4. Information, Education, and Communication (IEC) Material on Herbal Medicine

This section provides information about the content of the IEC material. Although the result of the study revealed that most of the respondents had a high and positive result in terms of awareness of herbal medicine usage, knowledge, and preparation, these guidelines from the IEC containing the 10 DOH-approved herbal medicine, specific indications, proper preparation and dosages, and safety precautions are still necessary to raise the communities' awareness and ensure maximization of health benefits, minimizing safety concerns.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study examined the level of awareness of the 10 DOH-approved herbal medicines among Bayombong residents, focusing on their demographic profile, awareness of use, knowledge, preparation, the relationship between profile and awareness, and the development

of a health education method.

Most respondents were women, at least high school educated, and financially secure. Herbal medicine use was high (98.6%), with Lagundi, Ampalaya, Bayabas, and Bawang being the most used. In contrast, Niyog-niyogan and Akapulko were least used.

Respondents showed a high level of awareness, especially in the preparation of commonly known herbs such as Lagundi and Bawang. There was no significant relationship between sex, educational attainment, or socioeconomic status and awareness level ($p > 0.05$).

A trifold IEC brochure was created to guide the safe and effective use of the 10 herbal medicines, detailing their benefits, uses, preparation, and safety. The study emphasizes balancing tradition and science, advocating further research and collaboration among public health authorities, educators, and practitioners to develop educational programs and guidelines for safe use of herbal medicine.

Recommendations

Based on the study's findings and conclusions, it is recommended to explore other factors beyond demographic characteristics that affect awareness of herbal medicine, such as cultural traditions, accessibility, and personal health beliefs. Additionally, the level of awareness of the 10 DOH-approved herbal medicines should be assessed among residents of other communities in Bayombong, including barangay officials, healthcare workers, and students. Future research can also evaluate the effectiveness of the IEC material by assessing responses before and after its distribution.

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