

KNOWLEDGE, Motivation, and Consumption of Dietary Supplement Use in Jolo, Sulu, PHILIPPINES

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ABSTRACT

Dietary supplement (DS) use has increased globally, yet evidence regarding knowledge, motivations, and consumption patterns in underserved Philippine communities remains limited. This study assessed dietary supplement knowledge, motivational factors, consumption patterns, and their associations with selected socio-demographic characteristics among adults in Jolo, Sulu, Philippines. A quantitative cross-sectional study was conducted using proportionate stratified random sampling. Data were collected through a structured survey questionnaire assessing dietary supplement knowledge, motivations for use, and consumption practices. Descriptive and inferential statistical analyses were performed to examine relationships among study variables. Respondents demonstrated a moderate level of dietary supplement knowledge (mean = 5.56 ± 2.22), although important misconceptions regarding supplement functions, labeling, and potential risks were identified. Motivation to use dietary supplements was high (mean = 3.76 ± 0.45) and was primarily influenced by perceived health benefits, beliefs regarding the safety of natural products, and recommendations from healthcare professionals and social networks. More than half of respondents reported current dietary supplement use, with herbal products being the most commonly consumed. Motivation was positively associated with supplement consumption ($r = 0.155$, $p < .05$), whereas knowledge was not significantly associated with consumption ($p > .05$). Knowledge demonstrated a weak negative correlation with motivation ($r = -0.248$, $p < .001$). Significant differences in supplement consumption were observed according to age, marital status, educational attainment, smoking history, and alcohol intake. Dietary supplement use among adults in Jolo, Sulu, appears to be driven primarily by motivational and behavioral factors rather than knowledge. The coexistence of widespread use, moderate knowledge, and persistent misconceptions underscores the need for targeted health education, strengthened pharmacist-led counseling, and enhanced public awareness initiatives to support safe, informed dietary supplement use.

KEYWORDS: *Dietary supplements, health knowledge, health behavior, supplement consumption, Philippines*

INTRODUCTION

In recent years, individuals have become more proactive in managing their health, driving a significant rise in the global popularity of dietary supplements. Dietary supplements are products intended to supplement the diet rather than replace food or pharmacological therapy (Hamulka et al., 2020). Their use has increased globally in recent years, driven by growing interest in preventive health and self-care, particularly following the COVID-19 pandemic. Despite their widespread availability and use, dietary supplements are often self-directed rather than guided by professionals. This raises concerns regarding appropriate use, safety, and potential interactions with conventional medications.

A consistent finding in the literature is the mismatch between high utilization and limited user knowledge. For instance, it has been found in Japan that a significant proportion of dietary supplement users engage in unsupervised consumption alongside prescribed medications, often without consulting healthcare providers, risking adverse interactions (Chiba & Tanemura, 2022). Similarly, evidence from the Philippines shows widespread use despite a generally poor understanding of appropriate use, safety, and efficacy (Calawod, 2022). Collectively, these findings suggest that misuse is not isolated but reflects a broader behavioral pattern of self-medication and insufficient risk awareness.

Many people mistakenly think that if something is labeled "natural," it must be safe. They often learn about these products through family, friends, or the media rather than consulting healthcare professionals. At the same time, buying such products has become easier due to online shopping and aggressive social media marketing, which reach even remote communities. However, guidelines to ensure responsible online selling practices are still being developed, especially in countries like the Philippines. Because of this situation, there's a growing concern about the inappropriate use of these products. This includes potential risks from interactions with conventional medicines, a practice particularly common among older adults.

Cultural beliefs and local traditions further complicate understanding and proper use of dietary supplements. In East Asia, including the Philippines, dietary supplement use is often deeply embedded in cultural practices and traditional medicine, where natural or organic products are commonly perceived as inherently safe and beneficial (Micozzi, 2018). Such beliefs can lead to misconceptions, fueling the unsupervised and inappropriate use of supplements,

particularly herbal products, which have grown popular due to their perceived safety and efficacy. Clemente et al. (2018) further noted that external influences, including healthcare providers and accessibility through commercial outlets and social media platforms, significantly shape motivations and behaviors toward dietary supplement use, which warrants deeper exploration in local contexts (Clemente et al., 2018).

The regulatory landscape for dietary supplements varies significantly globally, influencing consumer safety and product efficacy. In regions like the European Union, supplements are subject to stringent safety and quality standards, whereas in the United States and the Philippines, regulatory frameworks remain comparatively lax, especially for herbal supplements classified as dietary products rather than medicinal drugs (Thakkar et al., 2020). The Philippines has notably experienced substantial growth in dietary supplement use, ranking 21st globally in retail sales as of 2023 (Agriculture and Agri-Food Canada, 2024). Despite this growth, regulatory guidelines concerning labeling accuracy, marketing practices, and consumer education remain limited, underscoring a significant regulatory gap that could contribute to misconceptions and misuse.

In the Philippines, dietary supplement consumption has increased alongside growing market expansion, yet consumer education, labeling regulation, and pharmacovigilance systems remain limited. However, there is a lack of context-specific evidence examining knowledge, consumption patterns, and influencing factors at the community level, particularly in underserved and culturally distinct areas. Jolo, Sulu, represents an important but underexplored setting where socio-demographic and cultural characteristics may significantly shape dietary supplement behaviors. Understanding these local patterns is essential for identifying risks and designing targeted interventions.

Therefore, this study aimed to assess knowledge levels, consumption patterns, and factors influencing dietary supplement use among adults in Jolo, Sulu. It further examined associations between these variables and selected socio-demographic characteristics, including age, sex, marital status, education, income, and lifestyle factors. Findings may support the development of targeted public health education strategies and inform policy efforts to promote safe and rational use of dietary supplements.

Statement of the Problem

1. What is the socio-demographic profile of the respondents in terms of Age, Sex, Civil status, Educational attainment, Average income, and Lifestyle?
2. What is the level of knowledge of respondents on dietary supplements use?
3. What is the level of motivation of respondents on dietary supplements use in terms of Perception-related factors, External factors, and Prescriber-related factors?
4. What is the overall Level of dietary supplement consumption considering influencing factors such as Current ailment/condition, Medical check-ups (last 3 months), Dietary supplement use status, Types of dietary supplements used, and Access points to dietary supplements?
5. Is there a significant relationship between knowledge and motivation on the level of consumption of dietary supplements?
6. Is there a significant difference in the level of consumption of the respondents when grouped according to profile?
7. Based on the findings of the study, what action plan can be proposed?

METHODOLOGY

Research Design. A quantitative, cross-sectional research design was employed. In this research, the key variables like the knowledge, motivation, and consumption of dietary supplements were collected, described, and analyzed through numerical data to understand the frequency and use-case scenario of the residents of Jolo regarding dietary supplements and how knowledge and motivation affect this.

Research Locale. The study was conducted in Jolo, Sulu, Philippines. This municipality in Sulu is considered the second most populous in the Philippines (Philippine Statistics Authority, 2021). It is a densely populated trading hub with increasing availability of dietary supplements and a local population that is inclined towards natural healing. Jolo comprises eight barangays.

Research Participants. The participants in this study were at least 18 years old and currently living within Jolo, Sulu. A proportionate stratified random sampling was utilized to determine the sample size. Based on the 2020 Census of Population and Housing, Jolo had a total population of 137,266 (Philippine Statistics Authority, 2021). The population was then divided into

eight strata, each representing one of the eight barangays with a sample size calculated using Cochran's formula and a total sample size of 387 was drawn with a confidence interval of 95% and a 5% margin of error.

Research Instrument. The survey questionnaire was adapted from different studies and was modified to fit the context of this study. The knowledge questionnaire was adapted from a previous study conducted in Batangas, Philippines (Paradero et al., 2021). Motivation was adapted from a previous study done by the researcher (Clemente et al., 2018). Lastly, the dietary supplement consumption was loosely based on a previous study (Chiba & Tanemura, 2022). Pilot testing was done to obtain Cronbach's alpha and test-retest reliability. Results showed appropriate reliability of the final survey form ($\alpha=0.84$, test-retest coefficient=0.95).

Data Gathering Procedures. Before actual data gathering, approval from relevant stakeholders was obtained. First, the researcher requested approval from the Dean of the Graduate School of the University of the Immaculate Conception to conduct the survey. Then, the researcher sought permission and approval to conduct the study from the local government unit of the municipality of Jolo. Only when their approval and a signed letter of intent was obtained could the researcher proceed to data collection.

Statistical Methods. Statistical analyses were carried out using JASP version 0.19.3. Data were numerically coded to facilitate data handling and statistical analysis. Frequency and percentage were used to summarize data on demographics, knowledge, and dietary supplement consumption. The mean and standard deviation were used for the motivation data. Furthermore, data from the consumption questionnaire were transformed to obtain a composite score that was used for inferential statistics. T-tests and a Two-Way ANOVA were used to assess differences in consumption by demographics. Pearson correlation was used to determine relationships between knowledge, motivation, and prevalence.

Ethics considerations. This study was submitted to the Research Ethics Committee of the University of the Immaculate Conception with a protocol code GS-ER-06-24-0084. Ethical clearance was given on August 27, 2024. Furthermore, an informed consent form was presented and signed by the respondents prior to actual survey administration. Key considerations included social value, community involvement, informed consent, privacy/confidentiality (adhering to R.A. 10173), and balancing risks/benefits, protecting vulnerable

populations, justice in sampling, transparency, researcher qualifications, and adequacy of facilities.

RESULTS AND DISCUSSION

Socio-Demographic Profile of the Respondents

Of the 387 respondents, only 371 participated, yielding a participation rate of 95.87%. A summary of data is reported in Table 1. Of the sample, 41.51% were aged 18-30 years. A huge majority were female (73.31%). Around half of the respondents were married, and more than half were college graduates. In terms of income, most reported earning less than Php 10,000 per month.

Table 1
Demographic Profile of the Respondents

Demographic Profile	Groups	Frequency	Percentage
Age	18-30 years old	154	41.51
	31-40 years old	64	17.25
	41-50 years old	73	19.68
	51-60 years old	61	16.44
	>60 years old	19	5.12
Sex	Male	99	26.69
	Female	272	73.31
Civil Status	Single	154	41.51
	Married	191	51.48
	Widowed	18	4.85
	Separated	8	2.16
Education	Elementary undergraduate	12	3.24
	Elementary graduate	4	1.08
	High School undergraduate	18	4.85
	High school graduate	31	8.36
	College undergraduate	90	24.30
Income	College graduate	216	58.22
	< Php10,000	220	59.30
	Php 10,000 – Php 29,999	82	22.10
	Php 30,000 – Php 39,999	38	12.94
	Php 40,000 – Php 49,999	6	1.62
Exercise per week	≥ Php 50,000	15	4.04
	Once	233	62.80
	Twice	76	20.49
	Thrice	28	7.55
	More	34	9.16

Alcohol Intake per week	Once	345	92.99
	Twice	13	3.50
	Thrice	7	1.89
	More	6	1.62
Smoking	Current or Active	17	4.58
	Former	26	7.01
	Non-smoker	328	88.41

This distribution has substantial contrast with the results from surveys conducted in the U.S through NHANES and a survey from the Council for Responsible Nutrition CRN in 2018 and 2019, where both surveys suggest that there’s an increase in dietary supplement use with advancing age among adults (Mishra et al., 2023).

Presented in the table as well is the fact that the majority of the population is composed of female respondents, with a frequency of 272 and a percentage of 73.31%. On the other hand, male respondents represent a few segments of the whole population, garnering a frequency of 99 and a percentage of 26.69%. This data is linear with the study conducted by Sicinska et al. (2022) on dietary supplement use among university students in Poland, where they noted that females pay more attention to their health than males and tend to use products more for improved health, such as dietary supplements.

Level of Knowledge of Respondents about Dietary Supplements

For knowledge, data are reported in Table 2. The overall knowledge score was 5.56 ± 2.22 , indicating a moderate level. More than half of the respondents answered items 1 and 2 incorrectly, which ask whether dietary supplements can provide all the nutritional benefits of real food and whether they can be used as a replacement for a balanced diet. Despite that, a huge proportion of the sample (81.40%) correctly answered item 10, indicating that all dietary supplements must be appropriately labeled.

Now these findings have a sharp contrast with those of the findings of other relevant studies, including one conducted by Calawod (2022). In their study, it was substantially noted that ‘poor knowledge’ (98%) was observed among respondents regarding dietary supplements. On the other hand, an SD of ± 2.22 implies a large heterogeneity in knowledge levels among respondents. This may suggest that within the study population, there are subgroups with considerably lower “poor” knowledge as well as other subgroups with a higher “good” level of knowledge. This result is relevant to findings from other

studies, such as those by Elsayhori et al. (2023), where they noted that there is a significant link between knowledge levels and variables such as age, sex, education level, and income.

Table 2
Level of Knowledge of Respondents about Dietary Supplements

Item	Incorrectly Answered F (%)	Correctly Answered F (%)	Description
1. Do dietary supplements provide all the nutritional benefits of real food?	211 (56.87)	160 (43.13)	Poor
2. Can dietary supplements replace a balanced diet?	200 (53.91)	171 (46.09)	Poor
3. Do dietary supplements always have clear and accurate labeling?	222 (59.84)	149 (40.16)	Poor
4. Is it safe to take dietary supplements without consulting a healthcare professional?	152 (40.97)	219 (59.03)	Moderate
5. Can dietary supplements be taken together with other medications simultaneously?	200 (53.91)	171 (46.09)	Poor
6. Do dietary supplements interact with prescription medications?	152 (40.97)	219 (59.03)	Moderate
7. Is it true that dietary supplements are regulated by the same standards as prescription medications?	149 (40.16)	222 (59.84)	Moderate
8. Do dietary supplements carry any risk?	157 (42.32)	214 (57.68)	Moderate
9. Are there any risks associated with long-term use of dietary supplements?	136 (36.66)	235 (63.34)	Moderate
10. Should all dietary supplements include the label “This product is not intended to diagnose, treat, cure, or prevent disease”?	69 (18.60)	302 (81.40)	High
Total Mean Knowledge Score ± SD		5.56±2.22	Moderate

Respondents exhibit generally high motivation driven by their personal beliefs about supplements. The strongest perception driving motivation is the belief that supplements made from natural ingredients or herbs are generally safe (Mean=4.18). This finding is supported by a study conducted by Welz et al. (2018), where they explicitly stated that users perceive “natural” supplements as inherently safer than synthetic drugs, which supports the high rating of this proposition in this study.

Level of Motivation of Respondents towards Dietary Supplements

Table 3 summarizes respondents' motivations for taking dietary

supplements. Overall motivation was high with an average score of 3.76 ± 0.45 . Patient-related (mean = 3.64 ± 0.45), environment-related (mean = 4.01 ± 0.54), and prescriber-related (mean = 3.71 ± 0.72) motivation were also high. Upon closer inspection, respondents were strongly driven by belief in the safety of natural products (Item 1, Mean = 4.18 ± 0.82) and perceived health benefits. Additionally, respondents believe they would consider using dietary supplements when recommended by a healthcare provider (mean = 4.44 ± 0.68).

Table 3
Level of Motivation of Respondents towards Dietary Supplements

Items	Mean	SD	Description
Patient Related motivation	3.64	0.54	High
Environmental-Related Motivation	4.01	0.54	High
Prescriber-related Motivation	3.71	0.72	High
Overall Motivation	3.76	0.45	High

Respondents exhibit generally high motivation driven by their personal beliefs about supplements. The strongest perception driving motivation is the belief that supplements made from natural ingredients or herbs are generally safe (Mean=4.18). This finding is supported by a study conducted by Welz et al. (2018), where they explicitly stated that users perceive “natural” supplements as inherently safer than synthetic drugs, which supports the high rating of this proposition in this study.

Consumption of Dietary Supplement among Respondents and Composite

As reported in Table 4, dietary supplement consumption was low as seen in the average composite score of 6.85 ± 2.50 . Despite that, more than half (58.49%) were current users. Herbal supplements were predominantly used (81.40%). Common conditions cited were flu/colds/cough (35.58%), hypertension (22.37%), and high cholesterol (15.90%). Most accessed supplements via pharmacies (62.5%), but online access was also notable (17.5%). A concerning 42.05% reported no medical check-ups in the last 3 months.

Table 4
Consumption of Dietary Supplement among Respondents and Composite Score

Prevalence	Groups	Frequency (%)
Conditions	Flu, Colds, or Cough	132 (35.58)
	Hypertension	83 (22.37)
	High cholesterol	59 (15.90)

	Diabetes Mellitus	34 (9.16)
	Heart problems	29 (7.82)
	Rheumatoid Arthritis	28 (7.55)
	Depression	7 (1.89)
	Skin Diseases	21 (5.66)
	Others	23 (6.20)
Frequency of medical check ups	None	156 (42.05)
	Once	140 (37.74)
	Twice	54 (14.56)
	Thrice	15 (4.04)
	More	6 (1.62)
Dietary Use Frequency	Currently using	217 (58.49)
	Have history	135 (36.39)
	Never used	19 (5.12)
Types consumed	Herbal supplement	302 (81.40)
	Vitamins/minerals	44 (11.86)
	Amino acids	4 (1.08)
	From animal source	1 (0.27)
	None	19 (5.12)
Access points	Pharmacy	232 (62.53)
	Supermarket	35 (9.43)
	Online	65 (17.52)
	Others	29 (7.82)
Average prevalence score ± SD		6.85±2.50

Research like the one conducted by Peltzer & Pengpid (2018) often indicates that motivations for supplement use include preventing illness, managing existing conditions (e.g., hypertension, diabetes), and improving general well being. Pharmacies are frequently cited as primary access points due to their perceived reliability and accessibility of health-related products. This aligns with the researcher’s findings that specific health conditions motivate use and that pharmacies are the preferred source. The study explores complementary medicine use, which often includes herbal supplements, in a Filipino context.

Significant Relationship Between Knowledge, Motivation, and Consumption

Table 5 reports about significant correlation between knowledge, motivation, and consumption of dietary supplements. A significant, weak negative correlation existed between knowledge and motivation ($r=-0.248$, $p<.001$). A significant, weak positive correlation existed between motivation and consumption ($r=0.139$, $p=.007$). No significant relationship was found between knowledge and consumption ($r=-0.052$, $p=.320$).

Table 5
Significant Relationship Between Knowledge, Motivation, and Consumption

Variables	R	p-value	Remarks
Knowledge – Motivation	-0.248	<.001	Significant
Knowledge – Prevalence	-0.082	.113	Not Significant
Motivation – Consumption	0.155	.003	Significant

Conversely, strong motivation (e.g., for athletic performance) might exist despite gaps in knowledge. In contrast, a study by Rosenberg et al., (2008) suggests that it's often assumed or found that increased knowledge about the *benefits* of supplements (even if incomplete) could positively correlate with the motivation to use them, particularly if the knowledge source is persuasive (e.g., marketing, trusted advisors).

On the other hand, there is *no* statistically significant relationship ($R = -0.052$, $p = .320$) between the level of knowledge about dietary supplements and the consumption level (frequency or likelihood) of their use. This indicates that, in the Jolo, Sulu context, how much someone knows about supplements does not appear to be a determining factor in whether or not they actually use them. Decisions to use supplements seem to be driven by factors other than knowledge level. In corroboration with this finding, some research suggests that general nutrition knowledge doesn't always translate into supplement use patterns, or that supplement users may even have *poorer* specific knowledge about the supplements they take compared to non-users, relying more on recommendations or marketing (Bailey et al., 2013).

Lastly, a statistically significant, weak, *positive* correlation ($R = 0.139$, $p = .007$) exists between motivation and the level of consumption of dietary supplements. This finding suggests that individuals with higher motivation are slightly more likely to use dietary supplements. This aligns with intuitive expectations – motivation is a direct precursor to action, and in this case, it translates into the behaviour of using supplements.

This result corroborates the findings of the study by Dickinson et al. (2009). They found that motivations like improving health, preventing deficiencies, boosting energy, or enhancing athletic performance are strong predictors of supplement use.

Consumption Score of Respondents When Grouped by Demographics

When considering whether consumption differed by demographics, the results are shown in Table 6. Here, it can be seen that the consumption score of respondents significantly differed by age, civil status, alcohol intake, and smoking, as indicated by p-values below the margin of error. When inspected, those who were aged 18-30 years old had a significantly different consumption score than those aged 41-50 years old ($p<.05$) and those aged more than 60 years old ($p<.05$). Furthermore, those who were married had a significantly different consumption score than those who were single ($p<.05$).

Table 6
Consumption Score of Respondents When Grouped by Demographics

Demographic Profile	Groups	Mean	F/t	p-value	Remarks
Age	18-30 years old	6.25	4.58	.001	Significant 18-30 vs 41-50 (.033) 18-30 vs > 61 (.017)
	31-40 years old	7.23			
	41-50 years old	7.26			
	51-60 years old	7.08			
	> 61 years old	8.11			
Sex	Male	6.86	0.03	.975	Not significant
	Female	6.85			
Civil Status	Single	6.34	4.48	.004	Significant Single vs Married (.016)
	Married	7.13			
	Widowed	7.89			
	Separated	7.75			
Educational Attainment	Elementary UG	8.67	2.44	.035	Significant Elementary Undergraduate vs College Undergraduate (.034)
	Elementary graduate	6.50			
	High School UG	6.72			
	High school graduate	7.55			
	College undergraduate	6.39			
	College graduate	6.86			
Average Income	< Php10,000	6.74	0.455	.769	Not significant
	Php 10,000 – Php 29,999	6.92			
		7.15			
	Php 30,000 – Php 39,999	6.50			
		7.33			
	Php 40,000 – Php 49,999				
	≥ Php 50,000				
Exercise per week	Once	6.63	1.718	.163	Not significant
	Twice	7.15			
	Thrice	7.39			
	More	7.27			

Alcohol per week	Once	6.84	2.897	.035	Significant Thrice vs More (.020)
	Twice	7.00			
	Thrice	9.00			
	More	5.00			
Smoking	Former	8.58	6.938	.001	Significant Former vs Non (<.001)
	Current	6.88			
	Non-smoker	6.71			

This finding has substantial linearity with the results from surveys conducted in the U.S through NHANES and a survey from the Council for Responsible Nutrition, CRN 2018 and 2019, where both surveys suggest that there’s an increase in dietary supplement use with advancing age among adults.

There was a significant difference in supplement use based on civil status (F=4.193, p=.006). Specifically, single individuals (Mean=5.81) reported significantly lower supplement use compared to married individuals (Mean=6.51, p=.026). While mean scores were higher for widowed (7.17) and separated (7.25) individuals, the post-hoc test only confirmed the significant difference between single and married groups within this dataset's power. Research suggests that individuals are more likely to use dietary supplements more likely if their spouse does so as well (Lentjes et al., 2014).

A significant difference was found based on educational attainment (F=2.240, p=.050). Intriguingly, individuals with elementary undergraduate education reported the highest mean supplement use (Mean=7.92), which was significantly higher than that of college undergraduates (Mean=5.86, p=.042). This suggests a potentially complex relationship between education level and supplement use in this specific community, diverging from typical trends seen elsewhere, where higher education often correlates with higher use. The predominance of college-educated individuals in this study sample suggests that the participants might possess a greater understanding of health and nutrition, potentially influencing their knowledge and motivations regarding dietary supplements (Mishra et al., 2021).

Smoking status showed a highly significant difference in supplement use (F=7.098, p<.001). Former smokers reported significantly higher supplement use (Mean=7.88) compared to both current smokers (Mean=6.18, p=.043) and non-smokers (Mean=6.14, p<.001). There was no significant difference between current smokers and non-smokers. The findings in this study sample could indicate a general tendency towards health-promoting behaviors,

which might include the use of dietary supplements (Albassam et al., 2024).

Significant differences were noted in supplement use based on the frequency of alcohol consumption per week ($F=2.987$, $p=.031$). The post-hoc analysis indicated that individuals consuming alcohol thrice a week (Mean=8.43) reported significantly higher supplement use compared to those consuming it more frequently (Mean=4.83, $p=.026$). Use among those drinking once (Mean=6.24) or twice (Mean=6.62) a week fell in between. The very low frequency of alcohol use indicated in this data may suggest that the population has a generally health-conscious lifestyle, similar to the results of the study conducted by C. Balita (2023).

This finding may corroborate the study conducted, where it was revealed that individuals consuming alcohol thrice a week could indicate a health-conscious behaviour where moderate alcohol consumption is coupled with supplementation, arguably to mitigate any potential nutrient depletion associated with alcohol intake (Sandoval et al., 2022).

Lastly, there was no statistically significant difference in dietary supplement use between males (Mean=6.33) and females (Mean=6.24) ($t=0.334$, $p=.738$). This finding of the study contrasts with several other studies conducted in the Philippines and on a global scale. Other studies often report higher rates of dietary supplement use among women (Cruz et al., 2011; Lwakatare & Mlimbila, 2023; Mishra et al., 2023).

Dietary supplement use did not differ significantly across various average income brackets ($F=0.690$, $p=.599$). This absence of significant association contradicts findings from other studies where higher income levels are often linked to greater dietary supplement use. The income distribution exhibits a noticeable contrast to some existing literature, which suggests that there is a positive association between higher income and dietary supplement use. Accordingly, higher income would allow for greater affordability of these supplements (Cowan et al., 2018).

The frequency of exercise per week did not show a statistically significant association with dietary supplement use ($F=2.436$, $p=.064$), although the p-value is close to the significant threshold. The observed trend shows a slight increase in mean supplement use with more frequent exercise up to three times a week, which aligns with the general understanding that physically active

individuals might use supplements to support their energy levels and recovery. However, the slight decrease in mean usage among those exercising more than thrice a week could be due to various factors, including the specific types of supplements used or the overall health behaviours of this subgroup (Kovács et al., 2023).

Proposed Action Plan

Rationale. Based on findings from the study "Knowledge, Motivation and Consumption Level of Dietary Supplement in Jolo, Sulu," this action plan is essential due to several critical observations: despite only moderate overall knowledge about dietary supplements (Mean Score: 5.56 ± 2.22), residents exhibit very high consumption levels, especially herbal supplements (81.4% recognition, 58.5% current use), driven by high motivation (Mean=3.76 ± 0.45).

Table 7
Action Plan Matrix

Objective		1. Enhance Evidence-Based Knowledge		
Activities: 1.1 Develop simple, culturally adapted brochures/infographics (local dialect included) on common supplements (Vitamins, Herbals), focusing on: What they are, Why people use them, Potential Risks, Need for Doctor Consult. 1.2 Conduct targeted community information sessions (e.g., barangay health stations, community centers) focusing on identified high-use demographics (older adults, married individuals, former smokers). 1.3 Utilize pharmacy waiting areas for displaying educational posters and short video loops (if feasible)				
Target Audience	Time frame	Resources Needed	Responsible Person/Unit	Success Indicators
*General population of Jolo, Sulu *Dietary supplement users (current & potential), *Specific demographic groups (Age >30, Married, Elementary UG, Former Smokers).	Months 1-24	*Printing costs, Graphic design, *Translation services, *Venue for sessions, *Pharmacist /Nutritionist time for sessions, *Projector/Screen, USBs for videos.	*Researcher *Local Pharmacists Association (LPA), *Municipal Health Office (MHO), *Barangay Health Workers (BHWs), *Pharmacy Schools (if any nearby), *Community Leaders.	*Number of brochures distributed (>1000). *Number of posters displayed (>50 pharmacies/health centers). *Number of info sessions conducted (>10 sessions). *Pre/post session knowledge quiz scores showing >30% improvement. *Survey: % users identifying ≥1 risk increases by 30%.

Objective	2. Promote Healthcare Consultation
Activities: 2.1 Develop a simple screening checklist for pharmacists to identify supplement users with comorbidities 2.2 Train pharmacists on using the checklist and advising patients with comorbidities to consult a physician <i>before/while</i> using supplements. 2.3 Campaign ("Talk to your Doctor/Pharmacist Before Taking Supplements") targeting individuals with chronic conditions via pharmacies and health centers.	

Target Audience	Time frame	Resources Needed	Responsible Person/Unit	Success Indicators
*Individuals with comorbidities (esp. Flu/Colds, HTN, High Cholesterol, DM, Heart Problems *Pharmacists *Physicians *BHWs.	Months 3-24	*Checklist development *Training materials *Pharmacist time for training *Campaign materials (posters, leaflets).	*LPA *MHO *Local Medical Association *PhilHealth representative *Individual Pharmacies	*% of Jolo pharmacies using the screening checklist (>70%). * # of pharmacists trained (>80% of practicing pharmacists). *Survey: % of users with comorbidities reporting prior consultation increases by 40%.
Objective		3. Strengthen Pharmacist Role in Counseling		
Activities: 3.1 Develop Standard Operating Procedures (SOPs) for dietary supplement counseling in community pharmacies. 3.2 Provide pharmacists with access to updated, reliable supplement information resources (e.g., links to FDA advisories, reputable databases, summary sheets). 3.3 Implement a "Ask Your Pharmacist About Supplements" corner/indicator in participating pharmacies.				
Target Audience	Time frame	Resources Needed	Responsible Person/Unit	Success Indicators
*Community Pharmacists in Jolo *Pharmacy Owners/Managers *Pharmacy Customers.	Months 3-18	*SOP development team Subscription/access fees for info resources (if applicable) *Training venue/material *Printing of "Ask your Pharmacist" materials.	*LPA *FDA Field Office * Pharmacy Owners *Academe (Pharmacy Dept.).	*% of registered pharmacies in Jolo adopting the counseling SOPs (>70%). *Pharmacy spot checks confirm the availability of info resources. *Customer exit surveys indicate satisfaction with pharmacist counseling.
Objective		4. Address Herbal Supplement Use		

Activities: 4.1 Identify the top 5 most frequently used herbal supplements in Jolo (based on the study and quick surveys). 4.2 Research and compile evidence-based (where available) or cautionary information (where evidence is lacking) on these five herbals, focusing on uses, known side effects, potential interactions, contraindications, and when to seek medical help. 4.3 Develop culturally appropriate fact sheets/leaflets for these five herbs. 4.4 Distribute these materials through pharmacies, MHO, and potentially trusted community figures.				
Target Audience	Time frame	Resources Needed	Responsible Person/Unit	Success Indicators
*Users of herbal supplements *General Population *Pharmacists *BHWs *Traditional Healers	Months 6-18	*Research time *Consultation with ethnobotanists/experts (if needed) *Design/translation/printing costs *Distribution network coordination.	*Academe (Pharmacy/Bo tany Depts.) *DOH PITAHC (Philippine Institute of Traditional and Alternative Health Care) *LPA *MHO *Community/ Religious Leaders.	*Top 5 herbal supplements identified (Month 7). *Fact sheets for five herbals developed and approved (Month 12). *Number of fact sheets distributed (>1000). *Survey: % of pharmacy patrons receiving/seeing herbal info materials (>60%).

The findings of this study have important implications for pharmacy practice and public health policy. The combination of moderate knowledge, high motivation, and widespread consumption suggests that educational interventions should go beyond increasing awareness and address specific misconceptions about supplement safety, efficacy, and regulatory oversight.

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