

Knowledge, attitudes and practices in the use of herbal medicine: the case of urban and rural mothers in the philippines

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Abstract

This study was conducted to assess the differences in terms of general knowledge, attitudes and practices in the use of herbal medicine among mothers in urban and rural areas. This aims to determine whether the demographics variables such as age, length of stay, number of children, income, and educational attainment play a significant role in their differences. It also includes determination of factors that encourage the participants to use herbal medicines and to supply data on the most commonly used plants for the treatment of various health conditions. The respondents were identified using the snow ball and convenience sampling method. A total of 30 respondents were interviewed specifically mothers from 3 different *Barangays*(or villages) in Makati City (n = 15) and 4 *Barangays* in Tagudin, Ilocos Sur, Philippines (n = 15). The survey composed of demography and types of herbal medicines used by the respondents, indications for their use, the sources, the influences, benefits, and adverse effects of the herbal medicine. Safety use of herbal remedies, general attitudes and practices of the participating mothers were also included in the questionnaire. Independent sample *t-test* showed that the mothers residing in the rural areas are generally more knowledgeable particularly on 7 (Akapulko, Bawang, Lagundi, Sambong, Tsaang-gubat, Yerba-buena, and Pansit-pansitan) out of the 10 Herbal Medicines approved by the Philippine's Department of Health (DOH) compared to mothers in the urban area. However, based on the average mean difference of 0.457 and *t-value* of 2.94 with the corresponding *p-value* of 0.089 of the 10 herbal medicines, there is no significant difference ($\alpha = 0.05$). There is no enough evidence to show that urban and rural mothers have different level of knowledge on herbal products. However, it was also observed that rural mothers showed more favorable responses towards the scaled items on safety, attitude, and practices as depicted by the higher number of "strongly agree" responses. The respondents chose the specific herbal medicines among the most commonly used herbal medicines because of the availability.

Keyword: Herbal medicine, Knowledge, Attitude, Practice, Health condition.

1. INTRODUCTION

Global use of herbal medicine has expanded dramatically in the latter half of 20th century. The desire to capture the wisdom of traditional healing systems has led to a resurgence of interest in herbal medicines⁷. The use of herbal remedies in the Philippines is usually perceived as a rural practice, but the knowledge and utilization of herbal medicine

in the urban areas can also be observed. Several factors can contribute to the increasing awareness with the use of phytotherapy. One contributing factor is the effective campaign and intensive information dissemination done by the Philippine's Department of Health (DOH) through its "Traditional Health Program" which started in 1992 upon the approval of the ten (10) medicinal plants. The ten (10) herbs approved by the DOH that have been clinically proven

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to have medicinal values to relieve different types of conditions are: 1. Akapulko (*Senna alata*), 2. Ampalaya (*Momordica charantia*), 3. Bawang (*Allium sativum*), 4. Bayabas (*Psidium guajava*), 5. Lagundi (*Vitex negundo*), 6. Niyog-niyogan (*Quisqualis indica L.*), 7. Sambong (*Blumea balsamifera*), 8. Tsaang Gubat (*Carmona retusa*), 9. Pansit-pansitan (*Peperomia pellucida*), and 10. Yerba Buena (*Mentha arvensis*). The Philippines has a diverse flora, with about 1,500 of over 13,000 species with identified medicinal value, and most probably some of these herbs have been utilized by some people in the community both in rural and urban areas⁵. Over three-quarter of the world's population is using herbal medicines with an increasing trend globally. Herbal medicines may be beneficial but are not completely harmless⁴. For this reason, a study that aimed to assess the extent of use and the general knowledge of the benefits and safety of herbal medicines among rural and urban residents has to be conducted.

There are many factors that influence the use of herbal medicine both in developed and developing countries². Holistic approach to health problems and safety have been the particular influence of herbal medicine use to developed countries whereas their accessibility, affordability, historical, cultural, and religious backgrounds in addition to the above factors influence herbal medicine use in developing countries².

A study showed that large percentage of women, about 57.8% of participants are using herbal remedies to alleviate some physiologic changes that occur during pregnancy³. Similar study on the prevalence and pattern of use of herbal medicine during pregnancy revealed that 51.4% of the participants used at least one type of herbal medicine as a remedy during pregnancy period⁶.

A local study conducted in the rural area of Sitio Sili-Sili, Barangay Pagatpat in Cayagan de Oro, Philippines. Their respondents are the ten non-working mothers having 3-5 plants in their environment. In this study, they concluded that the accounted level of awareness is sixty percent and the respondents are aware

of the indication, dosage, and preparation of the six plants namely; akapulko, ampalaya, bawang, bayabas, lagundi, and sambong. Other medicinal plants that were utilized by the respondents are ABC (Avocado-Bayabas-Caimito), kalabo, atay-atay, and tawatawa¹. The respondents also felt the need for further knowledge of the other medicinal plants approved by the DOH.

Significance of the Study

This study will be a significant undertaking in promoting rational use of herbal medicines among mothers. This study will also be beneficial among healthcare workers and instructors on the effective dissemination of information on the proper use of herbal medicines that include its proper indication and use and possible toxicities. By understanding the needs of using the herbal medicines will give the assessment and finding of every village the knowledge of the corresponding populace. Moreover, this case study will provide recommendation to the authority on the commonly used treatment regimen by the mothers by establishing a standard instructions on its rational use of medicines derived from the natural products.

2. MATERIALS AND METHODS

A small number of studies have examined the level of awareness and extent of utilization relating to herbal products but the findings were limited due to the small number of respondents and the limitation in geographical locations.

The goal of this study was to compare the respondent's general knowledge on the 10 herbal plants approved by the DOH and their general knowledge on the safety in the use of these herbs. This research also aimed to determine the differences on the respondent's general attitudes and practices based on the demographic variables controlling for the geographical locations.

Research Design

Descriptive method of research was used in this study, specifically of survey. A

cross-sectional study was conducted utilizing a structured multiple choice tests and questions with the conventional rating based from the four-point Likert scale in the questionnaire to depict the level of knowledge, attitudes and practices on herbal use by mothers in Makati City and Tagudin, Ilocos Sur, Philippines. Several open-ended questions were also included as part of the knowledge and practices questionnaire. It was the part in the survey wherein the respondents identified their reason for using the specific herbal product and the observed side effect after using herbal medicine.

Distribution of Questions and Research Instruments

The questionnaire used in the study was patterned in the survey questionnaire utilized by Harnack *et al.*, in their population-based survey that assessed the attitudes and beliefs of adults about herbal product in a large metropolitan area. A permission to use the survey as reference was granted by the production manager for periodicals of the American Pharmacists Association's upon the proponent's request last April 2013. The existing survey questionnaire was modified to match the research objectives of the study and made applicable in the Philippines by including the 10 herbal medicines recognized by the DOH. The survey questionnaire was further validated by qualified individuals in the academe from the College of Pharmacy, Adamson University and University of Santo Tomas Faculty of Pharmacy. The survey questionnaires were made available both in Tagalog and Ilokano dialects. The survey composed of information to obtain the demography and types of herbal medicines used by the respondents, indications for their use, the sources, the influences, benefits, and adverse effects of the herbal medicine they used.

The first section of the questionnaire or survey contained questions regarding demographic information such as age, length of stay, number of children, religion, occupation, monthly income, educational background, health seeking behavior and the current acute illness or chronic disease state.

The second section of the questionnaire composed of 60 questions related to the 10 medicinal plants recognized by the DOH. A multiple choice question on the indications, parts used, method of preparations, and side effects were asked to the respondents. Open-ended questions on the reason of using the specific herbal medicine instead of conventional or synthetic drugs were also added in each herbal medicine.

The third, fourth and fifth section of the questionnaire focused on the knowledge on the safety use of herbal remedies, general attitudes and practices of the participating mothers. The respondents were asked to rate their answers using the conventional four-point Likert scale.

The sixth and the last section comprised a survey wherein the participants were asked to identify among the 22 common herbal remedies did they used, recommended, or did not use. Portion of the last section also asked the respondents to identify other herbal products they utilized that were not mentioned in the questionnaire as well as the indications for which the product was used.

Research Locale

This study involved mothers from both urban and rural areas specifically Makati City and Tagudin, Ilocos Sur. The respondent mothers in Makati City were from 3 different *barangays* (village) namely Barangay West Rembo, Barangay Southside and Barangay South Cembo. The respondents in Tagudin, Ilocos Sur were from 4 different *barangays* namely Barangay Dardarat, Barangay Farola, Barangay Las-ud and Barangay Bitalag.

Qualifying Urban and Rural Area

According to the Philippine Standard Geographic Code (PSGC) of the National Statistical Coordination Board (NSCB) of the Philippines, the "urban" areas include all municipal jurisdictions which, whether designated chartered cities, provincial capital or not, have a population density of at least 1000 persons per square kilometer. *Barangays* or

barrios (village) have at least 1000 inhabitants under the urban areas. "Rural" areas are all *poblaciones* or central districts and all *barrios* that do not meet the requirements for classification of urban.

The latest data of NSCB as of May 2010 showed that Makati City has a total population of 529,039 from 33 different *Barangays*. All of the *Barangays* in Makati were classified as urban area. Tagudin, Ilocos Sur has a total population of 38,122 from 43 *Barangays*. Three (3) of the *Barangays* namely; Libtong, Magsaysay (Poblacion), and Rizal (Poblacion) in Tagudin were already classified as urban while the rest are still rural areas.

Population Sampling

The respondents were identified using snow ball and convenience sampling.

Data Gathering Procedure

The participants were informed about the study and were asked to answer both the open and closed-ended questionnaire through an interview at home or in the work place.

Data Analysis Procedure

The answers for the open-ended questions were categorized for the statistical analysis. The following statistical tools using SPSS 20 were utilized for the analysis of data:

1. Cronbach's alpha for the survey questionnaire to determine reliability and internal consistency.
2. Univariate analyses (percentage, means, and frequency distribution)
3. Chi-square test was used to analyse univariate associations between variables.
4. Independent Sample *t-test* to level of knowledge, attitude and practices of mothers in rural and urban area.

3. Results

A. Demographic Profile of the Respondents

There is equal proportion of respondents from urban (50%) and rural area (50%). 93.33%

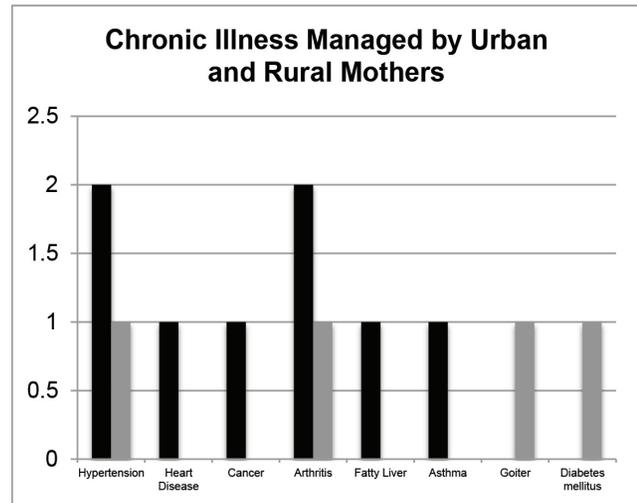
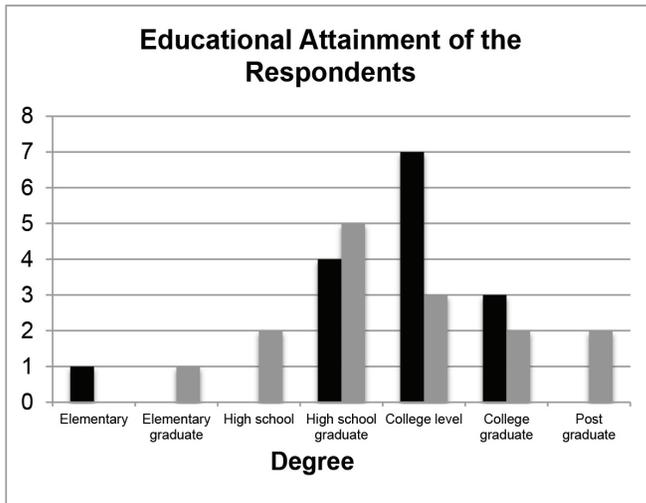
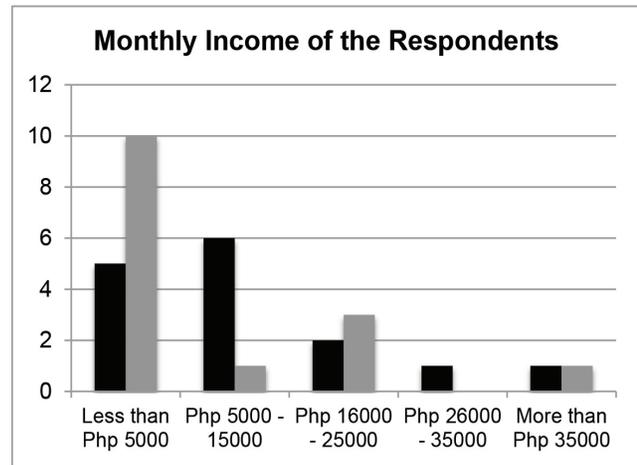
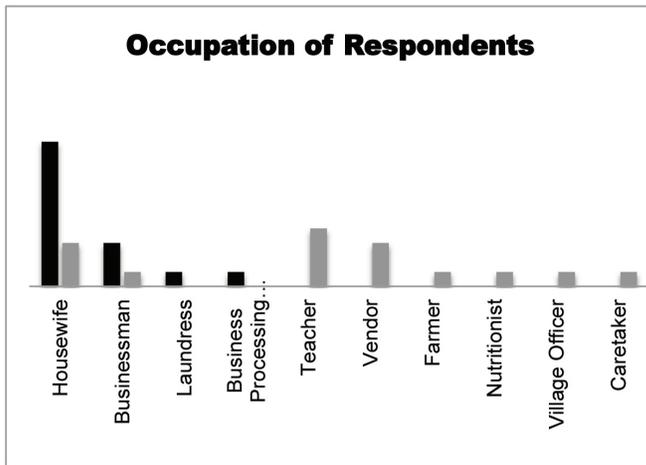
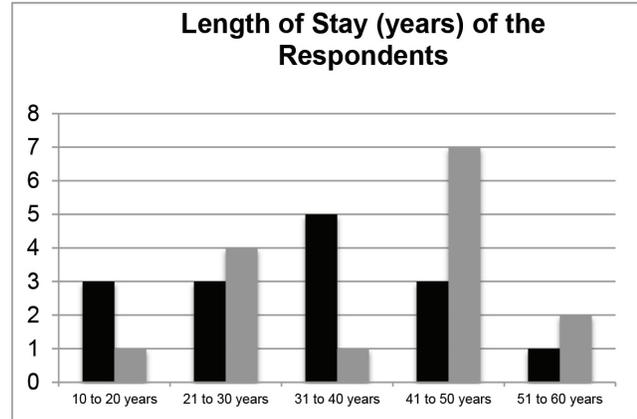
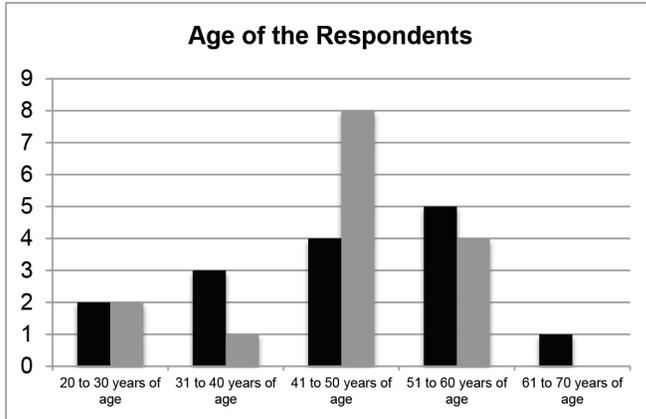
of the respondents are Catholic. As shown in Figure 1, majority of the respondents from urban area (33.33%) were from 51-60 years old bracket while 41 to 50 years old were from rural area (53.33%). Urban mothers' length of stay fall at 31-40 years while the rural mothers were at 41-50 years of stay.

The occupation for a total of 15 (50 %) of the 30 respondents from the urban areas were identified. Housewife, businessman, laundress and business processing officer were the identified jobs based on their areas of concern. The occupation of the other half of the respondents from the rural areas were also determined. Housewife, businessman, teacher, vendor, farmer, nutritionist and village officer were the identified jobs. Majority of the 13 respondents were housewives, 10 were from urban area and 3 from rural area. Highest number of respondents from urban area have Php 5,000-15,000 monthly income while majority of rural respondents have less than Php 5,000 monthly income as also reflected in Figure 1.

Majority of the urban respondents finished their degree until college level ($n = 7$) of education while rural respondents ($n = 5$) were highschool graduate. Most urban respondents ($n = 6$) went to private clinics for their healthcare needs while rural respondents ($n=12$) sought to government hospitals due to its financial capacity as also shown in Figure 1.

Herbolario from the Spanish word, defined as herbalist as commonly seen and present in the rural areas around the Philippine archipelago. The *herbolarios* utilized natural products and alternative medicines with rituals to manage and ease the disease or ailments of a certain individual in its assigned village. It was noted that some of the rural respondents didn't prefer to visit *herbolario* due to the presence of village health center and hospital managed by its local government unit. In relation to this, the utilization of herbal medication was only noticed in rural sample respondents to treat its acute illness like the urinary tract infection. Management of chronic illnesses is one of the rationales behind the use of herbal medicines as observed among urban mothers.

Based on the 15 respondents from urban



■ Urban

■ Rural

Health Seeking Behavior of the Respondents		
Health Seeking Behavior	Counts	%
Urban	15	50
Herbolario	1	3.33
Health center	2	6.67
Private clinic	6	20
Government hospital	3	10
Private hospital	3	10
Rural	15	50
Health center	3	10
Government hospital	12	40

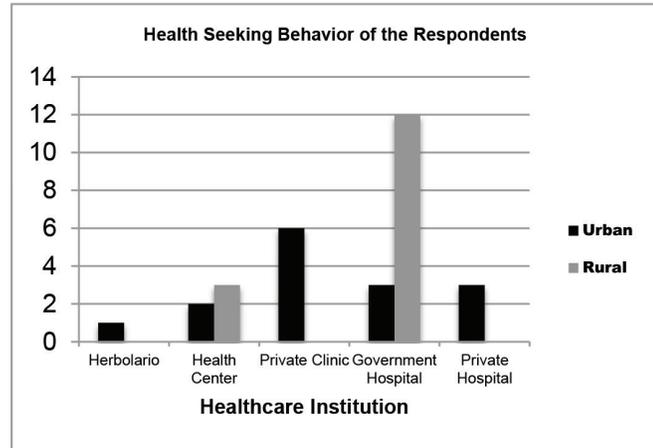


Figure 1. Demographic profiles of the respondents

Table 1. Inquiries on the *Senna alata* (Akapulko) and *Momordica charantia* (Ampalaya/Bitter Orange) by the Urban and Rural Mothers

Questions on the Herbal Medicines					
Urban (<i>Senna alata</i> - Akapulko)	Right Answer (%)	Wrong Answer (%)	No Answer (%)	<i>t-value</i>	Significance
1. Common use	13.30	-	86.70	9.54	0.00*
2. Part/s used	13.30	-	86.70	9.54	0.00*
3. Method of preparation	13.30	-	86.70	9.54	0.00*
4. Observed side effects	13.30	-	86.70	9.54	0.00*
Rural (<i>Senna alata</i> - Akapulko)					
1. Common use	100	-	0	9.54	0.00*
2. Part/s used	100	-	0	9.54	0.00*
3. Method of preparation	100	-	0	9.54	0.00*
4. Observed side effects	100	-	0	9.54	0.00*
Urban (<i>Momordica charantia</i> – Ampalaya/Bitter Orange)					
1. Common use	80	-	20	1.38	0.18
2. Part/s used	80	-	20	1.06	0.30
3. Method of preparation	80	-	20	1.38	0.18
4. Observed side effects	13.30	66.70	20	1.28	0.21
Rural (<i>Momordica charantia</i> – Ampalaya /Bitter Orange)					
1. Common use	86.67	6.67	6.67	1.38	0.18
2. Part/s used	93.33	-	6.67	1.06	0.30
3. Method of preparation	86.67	6.67	6.67	1.38	0.18
4. Observed side effects	-	93.33	6.67	1.28	0.21

*Significant at $\alpha = 0.05$

area who reported to be practicing herbal medicine, it was found that the most common disease or ailment used in herbal medicine is hypertension [n = 2, 13.33 %], and arthritis [n = 2, 13.33 %] followed by heart disease, cancer, fatty liver and asthma [n = 1, 6.67 %].

B. Difference in the Knowledge on the 10 Herbal Medicines Based on Location

The results showed that there was significant difference in the knowledge of mothers in the use of Akapulko. The *t-values* of the questions 1 to 4 with the corresponding probability values were significant at alpha 0.05. This means that mothers in rural areas are more knowledgeable of Akapulko as medicine as depicted by the large percentage of urban mothers (86.70%) who do not have answers in the four questions.

For Ampalaya or Bitter orange, there was no significant difference in the knowledge of urban and rural mothers. High percentages of

both urban and rural mothers knew the indication, parts used, and method of preparation. However, most of the mothers were not aware of the possible side effects as depicted by the high percentage of respondents with wrong answers (See Table 1).

The results showed that there was significant difference in the knowledge of mothers in the use of Bawang (Garlic) in terms of indication, parts used, and preparation. The *t-values* of the questions 1 to 3 with the corresponding probability values were significant at alpha 0.05. This means that mothers in rural areas were more knowledgeable in the above mentioned areas than urban mothers.

For Bayabas (Guava), there was no significant difference in the knowledge of urban and rural mothers in questions 1 to 3. Both urban and rural respondents knew the indication, parts used, and method of preparation. Urban respondents (93.30%) were more aware of the possible side effects compared to rural respondents (53.33%), refer to Table 2.

Table 2. Inquiries on *Allium sativum* (Bawang/Garlic) and *Psidium guajava* (Bayabas/Guava) by the Urban and Rural Mothers

Questions on the Herbal Medicines					
Urban (<i>Allium sativum</i> - Bawang/Garlic)	Right Answer (%)	Wrong Answer (%)	No Answer (%)	<i>t-value</i>	Significance
1. Common use	60	-	40	2.27	0.03*
2. Part/s used	60	-	40	2.27	0.03*
3. Method of preparation	60	-	40	2.27	0.03*
4. Observed side effects	33.30	-	40	0.81	0.42*
Rural (<i>Allium sativum</i> - Bawang/Garlic)					
1. Common use	93.33	-	6.67	2.27	0.03*
2. Part/s used	93.33	-	6.67	2.27	0.03*
3. Method of preparation	93.33	-	6.67	2.27	0.03*
4. Observed side effects	80	13.33	6.67	0.81	0.42*
Urban (<i>Psidium guajava</i> - Bayabas/Guava)					
1. Common use	93.30	-	6.70	1.41	0.17
2. Part/s used	93.30	-	6.70	1.41	0.17
3. Method of preparation	93.30	-	6.70	1.00	0.33
4. Observed side effects	93.30	-	6.70	2.82	0.01*
Rural (<i>Psidium guajava</i> - Bayabas/Guava)					
1. Common use	93.33	6.67	-	1.41	0.17
2. Part/s used	93.33	6.67	-	1.41	0.17
3. Method of preparation	100	-	-	1.00	0.33
4. Observed side effects	53.33	46.67	-	2.82	0.01*

*Significant at alpha = 0.05

Table 3. Inquiries on *Vitex negundo* (Lagundi) and *Blumea balsamifera* (Sambong) by the Urban and Rural Mothers

Questions on the Herbal Medicines					
Urban (<i>Vitex negundo</i> - Lagundi)	Right Answer (%)	Wrong Answer (%)	No Answer (%)	<i>t</i> -value	Significance
1. Common use	73.30	-	26.67	2.26	0.04*
2. Part/s used	73.30	-	26.67	2.26	0.04*
3. Method of preparation	53.33	20	26.67	0.37	0.72
4. Observed side effects	0	73.33	26.67	1.9	0.08
Rural (<i>Vitex negundo</i> - Lagundi)					
1. Common use	100	-	-	2.26	0.04*
2. Part/s used	100	-	-	2.26	0.04*
3. Method of preparation	100	-	-	0.37	0.72*
4. Observed side effects	6.67	93.33	-	1.90	0.08
Urban (<i>Blumea balsamifera</i> - Sambong)					
1. Common use	53.33	-	46.67	3.50	0.00*
2. Part/s used	53.33	-	46.67	3.50	0.00*
3. Method of preparation	46.67	6.66	46.67	2.45	0.03*
4. Observed side effects	6.66	46.67	46.67	3.50	0.00*
Rural (<i>Blumea balsamifera</i> - Sambong)					
1. Common use	100	-	-	3.50	0.00*
2. Part/s used	100	-	-	3.50	0.00*
3. Method of preparation	100	-	-	2.45	0.03*
4. Observed side effects	6.67	93.33	-	3.50	0.00*

*Significant at $\alpha = 0.05$

For *Vitex negundo* (Lagundi), the results showed that there was significant difference in questions 1 and 2. Rural respondents are more knowledgeable in the indication and parts being used in Lagundi.

There was significant difference in all four questions for *Blumea balsamifera* (Sambong). Data above showed that rural respondents were more knowledgeable in the indication, parts used, and preparation. In terms of side effect, although the result was still significant, data showed that high percentages of both urban and rural respondents were not aware of the possible side effect.

The results showed that there was a significant difference in all questions under the *Mentha arvensis* (Yerba buena) and *Carmona retusa* (Tsaang gubat) as shown in Table 4. Data above showed that rural respondents were more knowledgeable in the indication, parts used preparation and side effects of this

herbal medicine compared to urban respondents from which most of the participants (93.33%) didn't answer due to unfamiliarity with Tsaang-gubat and Yerba-buena.

The results showed that there was no significant difference in questions 1 to 4 under the questions for *Quisqualis indica* (Niyog-niyogan). High percentage of both urban (86.67%) and rural (60%) respondents do not have answers to these questions because most of the respondents were not familiar with Niyog-niyogan.

There was significant difference in all four questions under *Peperomia pellucida* (Pansit-pansitan). Data above shows that rural respondents were more knowledgeable in the indication, parts used, and preparation. Although the result was still significant in terms of its side effect, data showed that high percentages of respondents were not aware of the possible side effect of the Pansit-pansitan.

Table 4. Inquiries on *Carmona retusa* (Tsaang-gubat) and *Mentha arvensis* (Yerba-buena) by the Urban and Rural Mothers

Questions on the Herbal Medicines					
Urban (<i>Carmona retusa</i> - Tsaang-gubat)	Right Answer (%)	Wrong Answer (%)	No Answer (%)	<i>t-value</i>	Significance
1. Common use	6.67	-	93.33	2.17	0.04*
2. Part/s used	6.67	-	93.33	2.05	0.05*
3. Method of preparation	6.67	-	93.33	2.17	0.04*
4. Observed side effects	6.67	-	93.33	2.17	0.04*
Rural (<i>Carmona retusa</i> - Tsaang-gubat)					
1. Common use	53.33	6.67	40	2.17	0.04*
2. Part/s used	60	-	40	2.05	0.05*
3. Method of preparation	53.33	6.67	40	2.17	0.04*
4. Observed side effects	53.33	6.67	40	2.17	0.04*
Urban (<i>Mentha arvensis</i> - Yerba buena)					
1. Common use	6.67	-	93.33	3.33	0.00*
2. Part/s used	6.67	-	93.33	3.39	0.00*
3. Method of preparation	-	6.67	93.33	2.66	0.01*
4. Observed side effects	-	6.67	93.33	2.66	0.01*
Rural (<i>Mentha arvensis</i> - Yerba buena)					
1. Common use	80	-	20	3.33	0.00*
2. Part/s used	73.33	6.67	20	3.39	0.00*
3. Method of preparation	73.33	6.67	20	2.66	0.01*
4. Observed side effects	73.33	6.67	20	2.66	0.01*

*Significant at $\alpha = 0.05$

C. Overall Analysis

Based on the result of independent sample *t-test* on the knowledge on the 10 Herbal Medicines approved by the DOH, rural mothers have generally more knowledge on the 7 out of the 10 herbs compared to urban mothers. These herbal medicines are Akapulko, Bawang, Lagundi, Sambong, Tsaang-gubat, Yerba-buena, and Pansit-pansitan. For Ampalaya, both urban and rural respondents have high knowledge on the indication, parts used, and preparation but low awareness on the possible side effect. For Bayabas, both urban and rural respondents also have high knowledge on the indication, parts used, and preparation but urban mothers are more aware of the possible side effect of using it. For Niyog-niyogan, high percentage of respondents is not aware of the use of this plant.

The higher level of knowledge of rural mothers in herbal medicines could be attributed to the availability or accessibility of these plants in their locality. Moreover, it was also stated by one of the respondent in Barangay Dardarat, Tagudin Ilocos Sur during an interview that there have been lectures within the community encouraging the residents to use herbal medicines in alleviating minor conditions. This was an effort made by the local government as part their health programs. However, based on the average mean difference of 0.457 and *t-value* of 2.94 with the corresponding probability value of 0.089, the difference is not significant at $\alpha 0.05$. This means that there was no sufficient sample evidence to prove that urban and rural mothers have different level of knowledge on herbal products.

Table 5. Inquiries on *Quisqualis indica* (Niyog-niyogan) and *Peperomia pellucida* (Pansit-pansitan) by the Urban and Rural Mothers

Questions on the Herbal Medicines					
Urban (<i>Quisqualis indica</i> - Niyog-niyogan)	Right Answer (%)	Wrong Answer (%)	No Answer (%)	<i>t-value</i>	Significance
1. Common use	13.33	-	86.67	1.67	0.11
2. Part/s used	13.33	-	86.67	0.27	0.11
3. Method of preparation	13.33	-	86.67	1.77	0.09
4. Observed side effects	-	13.33	86.67	1.67	0.11
Rural (<i>Quisqualis indica</i> - Niyog-niyogan)					
1. Common use	40	-	60	1.67	0.11
2. Part/s used	40	-	60	0.27	0.11
3. Method of preparation	33.33	6.67	60	1.77	0.09
4. Observed side effects	-	40	60	1.67	0.11
Urban (<i>Peperomia pellucida</i> - Pansit-pansitan)					
1. Common use	13.33	6.67	80	3.37	0.00*
2. Part/s used	20	-	80	4.75	0.00*
3. Method of preparation	6.67	13.33	80	2.71	0.01*
4. Observed side effects	-	20	80	3.71	0.00*
Rural (<i>Peperomia pellucida</i> - Pansit-pansitan)					
1. Common use	86.66	-	13.33	3.37	0.00*
2. Part/s used	86.66	-	13.33	4.75	0.00*
3. Method of preparation	80	6.67	13.33	2.71	0.01*
4. Observed side effects	26.67	60	13.33	3.71	0.00*

*Significant at $\alpha = 0.05$

D. Difference in the Knowledge on the Safety of Herbal Medicines Based on Location

There were 9 items in the survey on the knowledge on the safety of herbal medicine use. Based on the result, 8 out of the 9 items in the survey showed that the differences in the response of urban and rural participants were not significant see Table 6.

In items 1 and 2, although the mean of urban respondents categorized under the range of “disagree” (1.75 – 2.29) and rural respondents fell at an “agree” range (2.50-3.24), the mean difference was relatively low. For this reason, the probability values of 0.10 and 0.34 respectively were still not significant at alpha 0.05. Moreover, for the items 3, 4, 6, 7, 8, and 9 the result was also not significant. The responses in these

statements generally classified at the “agree” and “strongly agree” ranges. This means that there was no sufficient evidence to prove that the knowledge of mothers in the safety of herbal medicine use was different.

However, for statement number 5, the *t-value* of -2.50 with the corresponding probability value of 0.02 is significant at alpha 0.05. The mean difference of -0.47 was in favor of rural respondents. Urban mothers response classified under “agree” range while rural mothers are at “strongly agree” range. Assumption in this difference can be drawn from the fact that rural mothers know more herbal medicines than urban mothers and therefore they are more concerned about overdosing or taking too much.

Table 6. Summary of the Inquiries Related to the Knowledge on the Safety, General Attitudes and Practices of Herbal Medicine Use among Urban and Rural Mothers

Variables on Safety Issues	Location	Mean	Standard Deviation	Mean difference	t-value	Significance																																																																																																																											
1. I am aware that there is harm in trying herbal products.	URBAN	2.20	.561	-0.33	-1.69	.10																																																																																																																											
	RURAL	2.53	.516				2. I am aware that some herbal products may have side effects.	URBAN	2.47	.640	-0.2	-0.96	.34	RURAL	2.67	.488	3. I am aware that some herbal products may interact with other medications.	URBAN	2.87	.516	-0.4	-1.97	.06	RURAL	3.27	.594	4. I know that some herbal products can be dangerous especially if taken in high doses.	URBAN	3.07	.458	-0.33	-1.65	0.11	RURAL	3.40	.632	5. I know that when using herbal products, you need to be concerned about overdosing or taking too much.	URBAN	3.13	.516	-0.47	-2.50	0.02*	RURAL	3.60	.507	6. I know that it is better to consult a healthcare provider before taking herbal products.	URBAN	3.07	.594	-0.33	-1.49	0.15	RURAL	3.40	.632	7. I know that I should inform my physician of any herbal product that I am taking.	URBAN	2.87	.640	-0.27	-1.26	0.22	RURAL	3.13	.516	8. As far as I know, the government regulates herbal remedies to make sure that they are safe.	URBAN	3.00	.845	-0.20	-0.76	0.45	RURAL	3.20	.561	9. I understand what is meant by “NO APPROVED THERAPEUTIC CLAIM” on the labels of herbal products.	URBAN	3.07	.704	-0.13	-0.63	0.53	RURAL	3.20	.414	Variables on General Attitudes	Location	Mean	Standard Deviation	Mean difference	t-value	Significance	1. Generally speaking, herbal medicines are good for people’s health and well-being.	URBAN	2.93	.594	-0.53	-2.63	0.01*	RURAL	3.47	.516	2. Herbal products tend to be less expensive than conventional medications.	URBAN	3.07	.458	-0.60	-3.47	0.00*	RURAL	3.67	.488	3. Herbal medicines are safer than conventional medicine.	URBAN	2.93	.458	-0.20	-0.89	0.38	RURAL	3.13	.743	4. Herbal medicines are more effective than conventional medicine.	URBAN	2.60	.507	-0.07	-0.29
2. I am aware that some herbal products may have side effects.	URBAN	2.47	.640	-0.2	-0.96	.34																																																																																																																											
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Table 6. Cont.

Variables on General Attitudes	Location	Mean	Standard Deviation	Mean difference	<i>t-value</i>	Significance																																														
5. It is not dangerous to take herbal medicine with other prescription drugs.	URBAN	2.53	.743	-0.07	-0.26	0.79																																														
	RURAL	2.60	.632				6. Herbal products are only appropriate for treating minor conditions such as a cold or stomachache.	URBAN	2.73	.594	-0.13	-0.50	0.62	RURAL	2.87	.834	7. Herbal products should not be used to treat serious health conditions such as heart diseases and cancer.	URBAN	2.73	.704	-0.13	-0.43	0.67	RURAL	2.87	.990	8. There is a lot of misinformation about herbal products circulating.	URBAN	2.80	.414	0.07	0.42	0.68	RURAL	2.73	.458	9. Health claims on the labels of many herbal products are exaggerated or unproven.	URBAN	2.93	.458	-0.07	0.93	1.93	RURAL	3.00	.378	10. There is not enough information regarding the efficacy and safety of herbal medicines.	URBAN	2.87	.516	-0.13	0.87
6. Herbal products are only appropriate for treating minor conditions such as a cold or stomachache.	URBAN	2.73	.594	-0.13	-0.50	0.62																																														
	RURAL	2.87	.834				7. Herbal products should not be used to treat serious health conditions such as heart diseases and cancer.	URBAN	2.73	.704	-0.13	-0.43	0.67	RURAL	2.87	.990	8. There is a lot of misinformation about herbal products circulating.	URBAN	2.80	.414	0.07	0.42	0.68	RURAL	2.73	.458	9. Health claims on the labels of many herbal products are exaggerated or unproven.	URBAN	2.93	.458	-0.07	0.93	1.93	RURAL	3.00	.378	10. There is not enough information regarding the efficacy and safety of herbal medicines.	URBAN	2.87	.516	-0.13	0.87	1.87	RURAL	3.00	.378						
7. Herbal products should not be used to treat serious health conditions such as heart diseases and cancer.	URBAN	2.73	.704	-0.13	-0.43	0.67																																														
	RURAL	2.87	.990				8. There is a lot of misinformation about herbal products circulating.	URBAN	2.80	.414	0.07	0.42	0.68	RURAL	2.73	.458	9. Health claims on the labels of many herbal products are exaggerated or unproven.	URBAN	2.93	.458	-0.07	0.93	1.93	RURAL	3.00	.378	10. There is not enough information regarding the efficacy and safety of herbal medicines.	URBAN	2.87	.516	-0.13	0.87	1.87	RURAL	3.00	.378																
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Variables on General Attitudes	Location	Mean	Standard Deviation	Mean difference	<i>t-value</i>	Significance																																																																		
1. I personally used herbal products as medicine.	URBAN	3.00	.378	-0.47	-2.82	0.01*																																																																		
	RURAL	3.47	.516				2. I have given any herbal product to my child/children.	URBAN	2.93	.458	-0.47	-2.32	0.03*	RURAL	3.40	.632	3. I have recommended the use of herbal medicine to anyone.	URBAN	3.07	.594	-0.53	-2.65	0.01*	RURAL	3.60	.507	4. I believed that the herbal medicines are effective.	URBAN	3.07	.458	-0.47	-2.62	0.01*	RURAL	3.53	.516	5. I observed any types of side effect after I used the herbal medicines.	URBAN	2.27	.594	0.27	1.29	0.21	RURAL	2.00	.535	6. I preferred herbal medicines than conventional Western medicine.	URBAN	2.73	.458	-0.33	-1.72	0.10	RURAL	3.07	.594	7. I discussed my herbal medicines to my doctor.	URBAN	2.60	.632	-0.07	-0.32	0.75	RURAL	2.67	.488	8. I wish to know more about these herbal products.	URBAN	3.47	.516	0.07	0.36
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	RURAL	3.60	.507				4. I believed that the herbal medicines are effective.	URBAN	3.07	.458	-0.47	-2.62	0.01*	RURAL	3.53	.516	5. I observed any types of side effect after I used the herbal medicines.	URBAN	2.27	.594	0.27	1.29	0.21	RURAL	2.00	.535	6. I preferred herbal medicines than conventional Western medicine.	URBAN	2.73	.458	-0.33	-1.72	0.10	RURAL	3.07	.594	7. I discussed my herbal medicines to my doctor.	URBAN	2.60	.632	-0.07	-0.32	0.75	RURAL	2.67	.488	8. I wish to know more about these herbal products.	URBAN	3.47	.516	0.07	0.36	0.72	RURAL	3.40	.507																
4. I believed that the herbal medicines are effective.	URBAN	3.07	.458	-0.47	-2.62	0.01*																																																																		
	RURAL	3.53	.516				5. I observed any types of side effect after I used the herbal medicines.	URBAN	2.27	.594	0.27	1.29	0.21	RURAL	2.00	.535	6. I preferred herbal medicines than conventional Western medicine.	URBAN	2.73	.458	-0.33	-1.72	0.10	RURAL	3.07	.594	7. I discussed my herbal medicines to my doctor.	URBAN	2.60	.632	-0.07	-0.32	0.75	RURAL	2.67	.488	8. I wish to know more about these herbal products.	URBAN	3.47	.516	0.07	0.36	0.72	RURAL	3.40	.507																										
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	RURAL	3.40	.507																																																																					

(*Significant at $\alpha=0.05$)

Legend:

1.0 -1.74 (Strongly Disagree); 1.75 -2.49 (Disagree); 2.50 - 3.24 (Agree); 3.25 - 4.00 (Strongly Agree)

Based on the average mean difference of -0.296 and *t-value* of -1.434 with the corresponding probability value of 0.220, the difference was not significant at alpha 0.05. This means that there was no sufficient sample evidence to prove that urban and rural mothers have different level of knowledge on the safety of herbal medicines.

E. Difference in the Attitude towards Herbal Medicine Use Based on Location

There were 10 items in the survey on the attitudes towards herbal medicine use. Based on the result, 8 out of the 10 items in the survey showed that the differences in the response of urban and rural participants were not significant see Table 6.

The *t-values* of -2.63 and -3.47 on the statements 1 and 2 respectively with the corresponding probability value of 0.01 and 0.00 are significant at alpha 0.05. The mean difference of -0.53 and -0.60 were favored on the rural respondents. Urban mothers response classified under “agree” range while rural mothers were at “strongly agree” range. The rural mothers agree more on the statements that herbal medicines were “good for people’s health” and that herbal products tend to be “less expensive than conventional medications”.

For the statements 3 to 10, the *t-values* with its corresponding probability values were not significant at alpha 0.05. This means that there was no sufficient sample evidence to prove that the general attitudes of urban and rural mothers are different. The mean values, both urban and rural mothers “agree” on statements 3 to 10.

Based on the average mean difference of -0.186 and *t-value* of -0.625 with the corresponding probability value of 0.772, the difference was not significant at alpha 0.05. This means that there was no sufficient sample evidence to prove that urban and rural mothers have different attitudes towards herbal medicine use.

F. Difference in General Practice in Herbal Medicine Use Based on Location

There were 8-scaled items in the survey on the general practice on herbal medicine use.

Based on the result, 4 out of the 8 items in the survey show significant differences in their responses see Table 6.

The items from which significant differences were noted are 1, 2, 3, and 5. In these items, urban responses classified in the “agree” ranges while rural respondents were at the “strongly agree” ranges. For the items 6, 8, 10, and 11, the *t-values* with the corresponding probability values were not significant at alpha 0.05. This means that there was no sufficient sample evidence to prove that the attitude of the respondents towards these statements was different. Both urban and rural respondents disagreed in the statement in item 6 that “they observed any type of side effect after using herbal medication”. Moreover, both urban and rural respondents agreed in statements 8 and 10 and strongly agreed in statement 11 stating that “they wish to know more about herbal products”.

Based on the average mean difference of -0.25 and *t-value* of -1.35 with the corresponding probability value of 0.23, the difference was not significant at alpha 0.05. This means that there was no sufficient sample evidence to prove that urban and rural mothers were different in terms of their practice in herbal medicine use.

The result of the test on the mothers general practice clearly showed that they preferred herbal products for their own use, for their children, and freely recommended herbal products to others because it is effective and with less or no side effects. They also discussed the herbal products they used to their physicians and showed interest in knowing more about herbal medicines.

G. Reasons for using the specific herbal medicines instead of conventional medicines

The result showed that the asymptotic significance for Akapulko is 0.00, thus the strength of association is significant at alpha 0.05. However, the association can be attributed to the high “no answer” response from urban mothers. The result showed that the asymptotic significance for Ampalaya is 0.025, thus the strength of association was significant at alpha 0.05. The rural mothers preferred to use Ampalaya instead of conventional or synthetic medicine

because it is natural. Asymptotic significance for Bawang or Garlic was 0.043, thus the strength of association is significant at alpha 0.05. The rural mothers preferred to use it instead of conventional or synthetic medicine because it is cheaper. The result shows that the asymptotic significance for Bayabas is 0.037, thus the strength of association is significant at alpha 0.05. The most prevalent reason for using Bayabas instead of conventional or synthetic medicine was it is free or readily available in the community. The result noted that the asymptotic significance for Lagundi (*Vitex negundo*) is 0.012, thus the strength of association was significant at alpha 0.05. The most prevalent reason for using it instead of conventional or synthetic medicine was it is free or because they do not need to buy it. The asymptotic significance noted for Sambong or Naat was 0.01, thus the strength of association was significant at alpha 0.05. The most prevalent reason for using it instead of conventional or synthetic medicine was it is natural. Asymptotic significance for Tsaang-gubat or Fukien Tea Tree was 0.01, thus the strength of association is significant at alpha 0.05. The most prevalent reason for using it instead of conventional or synthetic medicine was it is natural. Strength of association can also be attributed to the high number of urban respondents with “no answer”. Asymptotic significance for Yerba-buena was 0.033, thus the strength of association was significant at alpha 0.05. The most prevalent reason for using it instead of conventional or synthetic medicine

was it is natural. Asymptotic significance for Niyog-niyogan is 0.00, thus the strength of association was significant at alpha 0.05. The most prevalent reason for using it instead of conventional or synthetic medicine was it is free or they do not need to buy it. The result shows that the asymptotic significance is 0.00, thus the strength of association is significant at alpha 0.05. The rural mothers preferred to use Pansit-pansitan instead of conventional or synthetic medicine because they do not need to buy it. However, the strength of association could also be attributed to the high number of urban respondents with “no answer”.

H. General reasons for using the herbal medicines

The most prevalent reason for using herbal medicines among mothers in urban and rural areas was for treating diseases. The result noted that the asymptotic significance was 0.258, thus the strength of association was not significant at alpha 0.05.

I. Types of Side Effects

The result shows that the asymptotic significance was 0.411, thus the strength of association was not significant at alpha 0.05. Most urban and rural respondents answered “none” in the type of side effects noted after using herbal medicines as shown in Table 7.

Table 7. General Practice - Reasons for using Herbal Medicines

Location	Prevention of Illness	Treatment of diseases	Promote or maintain good health	Other reasons	Total
URBAN	0	12	3	0	15
RURAL	3	7	5	0	15

Asymp. Sig. = 0.258

(*Significant at alpha=0.05)

General Practice - Type of side effect after using herbal medicine

Location	None	Low blood glucose	Itchiness	Infection	Not effective	Diarrhea	Total
URBAN	12	1	1	1	0	0	15
RURAL	13	0	0	0	1	1	15

Asymp. Sig. = 0.411

4. Discussion

Guided by the underlying objectives of this research, the following outputs were achieved at the end of the study.

1. A total of 30 respondents specifically mothers were involved in the study. They were from 3 different Barangays in Makati City (n = 15) and from 4 Barangays in Tagudin, Ilocos Sur (n = 15). Majority of the respondents from urban area (n = 5) were from 51-60 years old bracket while 41-50 years for rural respondents. Highest proportion of urban respondents has stayed in the area for 31-40 years, while 41-50 years for rural respondents. A total of 13 respondents were housewives and the rest were either employees or self-employed. Highest number of respondents from urban area (n = 6) have monthly income of 5,000-15,000 while the rural respondents (n = 10) have less than 5,000 monthly income. Majority of the urban respondents have college level (n = 7) of education while rural respondents (n = 5) were highschool graduate. Most urban respondents go to private clinics for their healthcare needs while rural respondents n=12 go to government hospitals. A total of 9 respondents, 6 from urban and 3 from rural reported to have chronic illnesses.

2. The reliability of the survey questionnaire was tested using Cronbach's alpha and the result was 0.855.

3. Independent sample *t-test* showed that the rural mothers were generally more knowledgeable particularly on 7 out of the 10 Herbal Medicines approved by the DOH compared to urban mothers. However, based on the average mean difference of 0.457 and *t-value* of 2.94 with the corresponding probability value of 0.089 of the 10 herbal medicines, the difference was not significant at alpha 0.05. This means that there was not enough sample evidence to prove that urban and rural mothers have different level of knowledge on herbal products.

4. 8 out of the 9 items in the survey of knowledge on the safety showed that the differences in the response of urban and rural participants were not significant. Based on the average mean difference of -0.296 and *t-value*

of -1.434 with the corresponding probability value of 0.220, the difference was not significant at alpha 0.05.

5. The result of the survey on the attitudes towards herbal medicine use show that there was no significant difference in the response of urban and rural mothers in 8 out of the 10 items. Based on the average mean difference of -0.186 and *t-value* of -0.625 with the corresponding probability value of 0.772, the difference was not significant at alpha 0.05.

6. There were 8-scaled items in the survey on the general practice on herbal medicine use. Based on the result, 4 out of the 8 items in the survey show significant differences in their responses. The items from which significant differences were noted are 1, 2, 3, and 5. In these items, urban responses fall at an "agree" ranges while rural respondents were at "strongly agree" ranges. Based on the average mean difference of -0.25 and *t-value* of -1.35 with the corresponding probability value of 0.23, the difference is not significant at alpha 0.05.

7. There was weak association based on the result of Chi-square test for the univariate association of the sources of information in the use of 10 herbal medicines and location. However, the most prevalent source of information noted was from "Family or Friends Advice".

8. The strength of association of 9 out of 10 herbal medicine and the reasons they prefer to use them was significant. Reasons such as natural, cheaper, and free or readily available were the most common.

9. The most prevalent reason for using herbal medicines among mothers in urban and rural areas were for treatment of disease.

10. In terms of side effect, most urban and rural respondents answered "none" in the type of side effects noted after using herbal medicines.

Conclusions and Recommendations

This research poses the following conclusions derived from the results and insights obtained in the conduct of the study.

1. The knowledge of rural mothers in 7 of 10 herbal medicines approved by the

DOH is higher compared to urban mothers. This can be attributed to the availability or accessibility of these plants in their locality and the effort done by their local government in disseminating information about herbal medicines. However, in terms of possible side effects; there was no significant difference in their awareness.

2. There was no significant difference in the knowledge on the safety, general attitude towards herbal medicine, and general practices among mothers in different geographical locations. However, rural mothers showed more favorable response towards the items on safety, attitude, and practices as depicted by the higher number of “strongly agree” responses.

3. The most common reason for using herbal medicines by both urban and rural respondents were for the treatment of diseases.

4. Herbals are natural and safe; these are the most prevalent reasons why they preferred to use herbal medicine instead of conventional medicines.

5. The most prevalent source of information in the use of herbal products was from family and friend’s advice.

6. Both urban and rural mothers also discussed the herbal products that they use to their doctors and showed interest in knowing more about herbal medicines.

7. There were no significant differences in the knowledge, attitude, and practices of mothers in two geographical locations when they were grouped according to their age, length of stay, educational attainment, health seeking behavior and chronic disease state when the covariate location was controlled. However, grouping the respondents with the number of children, the difference was significant for Niyog-niyogan.

Finally, for continuity of this study, the following are recommended for further research: To conduct survey with defined inclusion criteria for the participants and to further widen the scope in terms of the number of respondents and

geographical location. To initially identify the medicinal plants with potential pharmacologic uses by conducting the ethnopharmacy survey on the chosen field of study prior to the study on the rural samples. To identify the commonly used pharmaceutical preparations (oral and topical) by the urban and rural respondents.

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