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Determinants of the Utilization of Ornamental Plants as an Alternative Health Therapy in Akure South Local Government Area, Ondo State, Nigeria

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Abstract
The study examined the determinants of the utilization of ornamental plants as alternative health therapy in Akure South Local Government Area in Ondo State, Nigeria. Random sampling technique was used to select one hundred and twenty (120) respondents for the study. Descriptive statistics such as frequency, percentages and means were used to present study findings. Chi-square was used to test the study hypothesis at 0.05 level of significance. Data revealed that the majority (74.0%) of the respondents were married, with a mean age of 36.1 years and only 96.8 % of the respondents had formal education. The study revealed that 98.3% of the respondents were aware of medicinal ornamental plants that could be used as alternative health therapy such as moringa, aloevera, roses, scent leaf, lemon grass, fern and jatropha their medicinal and the health cases that they can be used for which range from malaria, stomach pain, skin diseases, eye defect to mouth diseases. The findings showed that moringa ($\bar{x}$: 3.68) was more often utilized among the common medicinal ornamental plants. The study has established that there was no significant relationship between the sex (P= 0.321≤ 0.05), marital status (P= 0.479≤ 0.05), educational status (P= 0.501≤ 0.05), religion (P= 0.291≤ 0.05) and primary occupation (P= 0.321≤ 0.05) of the respondents and the use of ornamental plants as alternative health therapy. Preservation, information and lack of standard measurement of usage were the factors influencing the utilization of ornamental plants as revealed by this study. It was recommended that research should be encouraged to find the means of preparing and preserving medicinal ornamental plants for people to use more efficiently and effectively.
Keywords: Ornamentals, Medicine, Health

1.0 INTRODUCTION

Ornamental plants are plants that are grown for decorative purposes in gardens and landscape design projects such as house plants for their beautiful flowers. They are grown for the display of aesthetic features like flowers, leaves, scent, overall foliage texture and fruit; the purpose of which is for the enjoyment of gardeners, visitors and the public (Oloyede, 2012). The production and use of ornamental plants or floriculture has significant potentials for improving food production, health and income in Nigeria (Fakoyode *et al.,* 2008). Over the years, the production of both cut flowers and home plants has continue to increase steadily in most developed countries. The importance of ornamental plants in human health cannot be over-emphasized. Ornamental plants are not only sources of medicinal herbs which are primary form of therapy for treatment of diseases; they are also known to have therapeutic values, these plants also play crucial roles in cooling the atmosphere through the evapo-transpiration process on their leaves and other parts thereby preventing health hazards (Omokhua, *et al.,* 2002).Turfs are cultivated for sports field and community garden plots that are strategically located along walking paths. These paths serve as convenient places where people converse and interact. Ornamental plants also serve as environmental stimulants that trigger pleasant memories.

Human health remains a crucial issue among many things around the world as without a proper health of an individual, productivity will suffer and this will tell adversely on the development of both economy and other aspects which include agricultural productivity such that there will be food insecurity (Sofia, 2010). The health care system in Nigeria is ranked 197th out of 201 countries of the world (Akintunde, 2008). Most of the citizens are faced with different health challenges and only few of them have the financial capacity to care for themselves using the available health facilities. This is because of the economy level of this nation and the level of sensitization regarding human health. Meanwhile, medicinal herbs have been in use for thousands of years and are renowned for their effectiveness against many diseases. These medicinal herbs are very effective in boosting the immune system, increase the body resistance to infections, healing the allegies, raising and renewing the body vitality. But in recent years, the use of ornamental plants has fallen into the categories of medicinal plants which are been used for medicinal herbs as alternative health therapy (Rothe *et al.,* 2011). Despite the healing power inherent in these ornamental plants , they are still under-utilised by most people, this may be due to lack of adequate information about the medicinal values possess by the plants , their efficiency and the different health cases they can be used for. Therefore, the response of the general public to ornamental plants as alternative health therapy, what contributes to the use and disuse of the ornamental plants among the

respondents remain a puzzle. It is based on this foregoing that the study was designed to answer the following research questions.

1. what are the socio-economic characteristics of the respondents?
2. are the respondents aware of the healing ability of ornamental plants?
3. what are the medicinal values of the common ornamental plants in the study area? and
4. what is the respondents' perception about ornamental plants as an alternative health therapy?

1.1 Objectives of the Study

The general objective of this study was to investigate the determinants of ornamental plants as alternative health therapy in Akure South Local Government Area, Ondo State.

The specific objectives were to:

1. ascertain the socio-economic characteristics of the respondents;
2. determine respondents' awareness about the alternative health therapy ability of ornamental plants;
3. determine the medicinal values of the common ornamental plants in the study area and
4. examine respondents' perception about ornamental plants as an alternative health therapy

1.2 Study Hypothesis

H_{01}: there is no relationship between selected socio-economic characteristics of the respondents and the use of ornamental plants as alternative health therapy;

2.0 Methodology

The study was carried out in Akure South Local Government Area of Ondo State Nigeria. Ondo State has an approximate land area of 14,793,723 square kilometres with co-ordinates $5^0\ 45^1$ $N4^015^1E$ and a population of 3.4441,024 million (NPC, 2006). The state is made up of 18 Local Government Areas (LGAs). It lies in the tropics and the climatic condition is of two distinct seasons; the rainy season (April- October) and dry season (November- March). It is bounded by Kwara and Kogi States to the North, Edo State to the East, Delta State to the South-East, Osun and Ogun States to the West and the Atlantic Ocean to the South. The people of the state are predominantly Yorubas with different dialectical groups namely, Akoko, Owo, Ifon, Ondo, Ikale, Ilaje and Akure.

A multistage sampling technique was used to select respondents for this study. Firstly, five (5) communities were selected randomly among the twenty three (23) communities in the Akure South LGA. Secondly, each community was divided into 4 wards making a total of twenty (20) wards out of six (6) wards were randomly selected. And finally, 20 respondents were selected from each of the wards making the total number of 120 respondents. The study made use of primary data collected through a well-structured interview schedule containing both close and open ended questions. Key informant interview and focus group discussion were also employed to collect data for the study. The validity of the data collection instrument was done by giving the instrument to experts in the field for both face and content validity. Descriptive statistics such as frequency, percentages and means were used to present study findings. Chi-square was used to test the study hypothesis at 0.05 level of significance.

3.0 RESULTS AND DISCUSSION

3.1 Socio-Economic Characteristics of Respondents

The mean age of the respondents was 36.1 years. Majority (79.8 %) of them were above 21 years of age while only 13.4 % were above 51 years of age. Age plays a very important role in the utilization of any innovation. The result implies that the respondents were mature enough to know if ornamental plants have medicinal values or not. Age will determine the attitude and efficient utilization of resources after adoption (Wilson, 2003). The study revealed that 65% of the respondents were male while 35% were female. This implies that most of the respondents were male. About 74 percent of the respondents were married, 20 percent were single, widowed were. This shows that we have more married person in the study area, this might be due to the fact that almost all of the respondents are in their active age which are expected to have gotten married at such age. The result in Table 2 indicates that 79.2% were Christians while 20.9% were Muslims. This result may be due to the fact that the South-West in Nigeria is predominated by Christians. The religion of a person may be a hindrance to the use of ornamental plants as alternative health therapy because there could be some religion norms against the use of leaf for health as it is been associated to taboos among the people. However, some of the people still utilize it despite this.

The mean household size was 4 persons with majority (59.1 5) having between 4-6 persons in their households. About 33.3 % had a household size of 1-3 persons. The implication of this is that the respondents would have more family member's health challenges to attend to using either ornamental plants or not. This small household size might be that the respondents had the knowledge of family planning and the campaign for

keeping moderate family sizes still continues in each of the health centre's that are within the various communities. The results showed that most of the respondents were literates. It was observed that those that had completed tertiary were 42.5%, also 16.7% attempted tertiary education. The secondary education amounted to 19.2% and those who attempted secondary education were 10.8%. About 9.2 % completed primary education while only 1.7% had attempted primary education. This result shows that, the respondents would have access to basic information regarding to ornamental plants and their benefits as most of them were educated. In support of Fakayode *et.al.*, (2008), those that had completed tertiary (42.5%) and attempted tertiary (16.7%) would have better knowledge of ornamental plants health benefit which serve as a factor in utilizing it or not.

The study showed that 66.6 % of the respondents were artisans by primary occupation. These range from engagement in hairdressing, mechanic, barbing to electrician. About 24.7% were engaged in civil service jobs while only 14% were traders. Table 2 shows that most (60.8%) of the respondents in the respondents in the study area had below 250,000 as average annual income, 22.6% were between 251,000-500,000 while the lowest (16.6%) had above 501,000 as average annual income. This result implies that most of the respondents in the study area would have less income to attend to their health challenges using standard health therapy, hence they would have to use alternative health therapy for their health challenges. Income is a function of many factors and varies from household to household and depends on the type of occupation. The better the income the more higher the level of adoption and utilization of an innovation all other factors put into consideration (Ogunfiditimi, 1993).

Table 1: Percentage distribution of respondents according to socio-economic characteristics n=120

Characteristics	Category	Frequency	Percentage (%)	Mean (x)	Standard Deviation
Age (years)	Below 20	8	6.7		
	21-30	36	30.0		
	31-40	35	29.0	36.1	12.6
	41-50	25	20.8		
	51-60	14	11.7		
	Above 61	2	1.7		
Sex	Male	78	65		
	Female	42	35		
Marital Status	Married	89	74.2		
	Single	25	20.8		
	Divorced	1	0.8		
	Separated	2	1.7		
	Widowed	3	2.5		
Religion	Christianity	95	79.2		
	Muslim	25	20.8		
	Traditional	-	-		
Size of household	1-3	40	33.3		
	4-6	71	59.1	4	1.8
	7-9	9	7.5		
Level of education	Attempted primary school	2	1.7		
	Completed primary school	11	9.2		
	Attempted secondary school	13	10.8		
	Completed secondary school	23	19.2		
	Attempted tertiary school	20	16.7		
	Completed tertiary	51	42.5		
Primary occupation	Civil servant	26	24.7		
	Trading	14	11.7		
	Artisan	80	66.6		
Average annual income	Below 250,000	73	60.8		
	251,000- 500,000	27	22.6		
	Above 501,000	20	16.6		

Awareness of Ornamental Plants as Alternative Health Therapy

Figure 1 shows that almost all (98.3%) of the respondents were aware of the alternative health therapy values of ornamental plants in the study area while few (1.7%) of the respondent were not aware. This implies that the respondents had the knowledge of the medicinal values that are inherent in the ornamental plants that are found around them. Awareness is the first stage in the adoption of any innovation or technology, with this awareness status among the respondents, it would be possible for them to employ ornamental plants in attending to some

health issues among them.

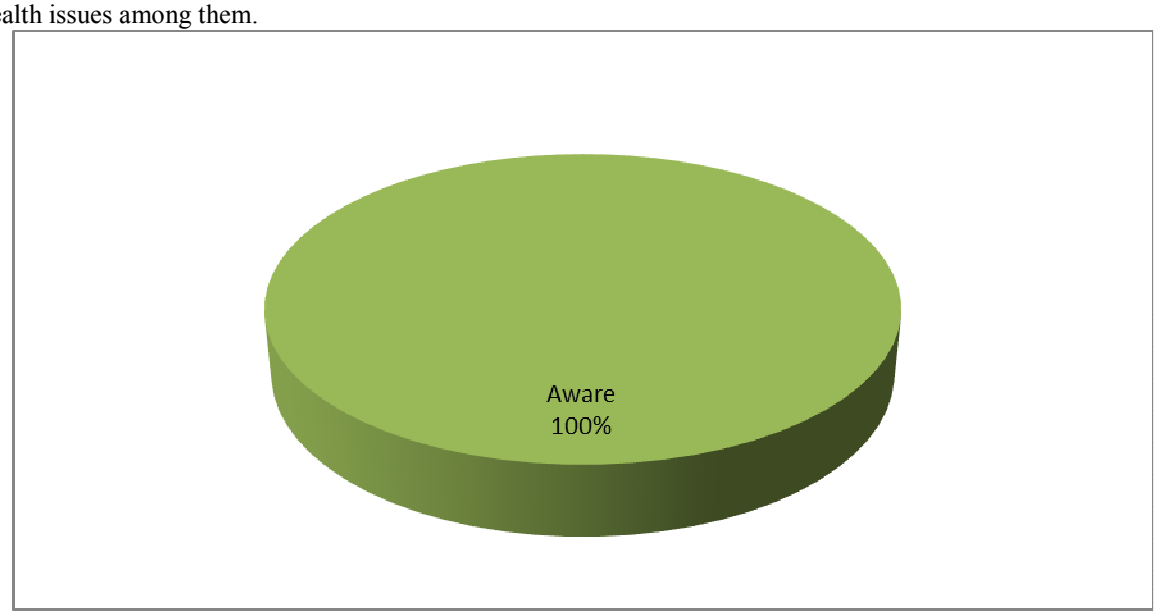

Figure 1: Awareness of Ornamental Plant as Alternative Health Therapy

3.2 Common Ornamental Plants

The result in Figure 2 showed that the common ornamental plants that could be used as alternative health therapy among the respondents range from moringa (80.8%), hibiscus (51.6%), green bush (40.8%), aloe vera (40%), and yellow ficus (38%) to yellow duranta (29.2 %). Other ornamental plants in the study area include roses (18.3%), scent leaf (14.2 %), lemmon grass (13.3%), fern (11.6%), asoka (10.8%) and jatroval (8.3%). This shows that ornamental plants are available for use as alternative health therapy in the study area. It buttresses the findings in Figure 1 that the respondents were aware of ornamental plants that could be employed as alternative health therapy.

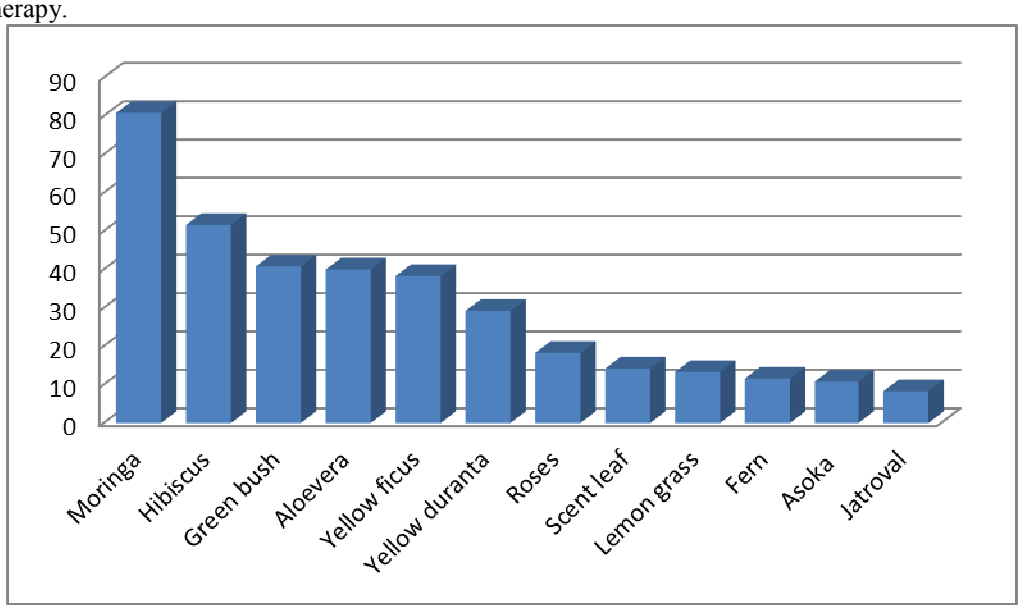

Figure 2: Common Ornamental Plants
***Multiple choice**

3.3 Possession of Medicinal Values by Ornamental Plants

The pre- requisite for the utilization of ornamental plants as alternative health therapy by the respondents is based on the knowledge that if a particular ornamental plant possesses medicinal values or not. The result in Figure 3 implies that within the study area, 91.6% of the respondents indicated that moringa has medicinal value, 59.2 % indicated aloe Vera, 36.6% and 29.2% of the respondents indicated scent leaf and hibiscus respectively as possessing medicinal values. Lemon grass and jatropha were indicated by 20.8% and 9.2% respondents respectively while 7.5% and 2.5% of respondents indicated fern and Moses respectively. This implies that the

respondents in the study area were aware that the various ornamental plants in their environment possess one or more medicinal values that can be employed by them in the treatment of various diseases. This results supports the assertion of Omokhua, *et al.,* 2002 that various ornamental plant possess medicinal values and as such can be used to treat some health related problems.

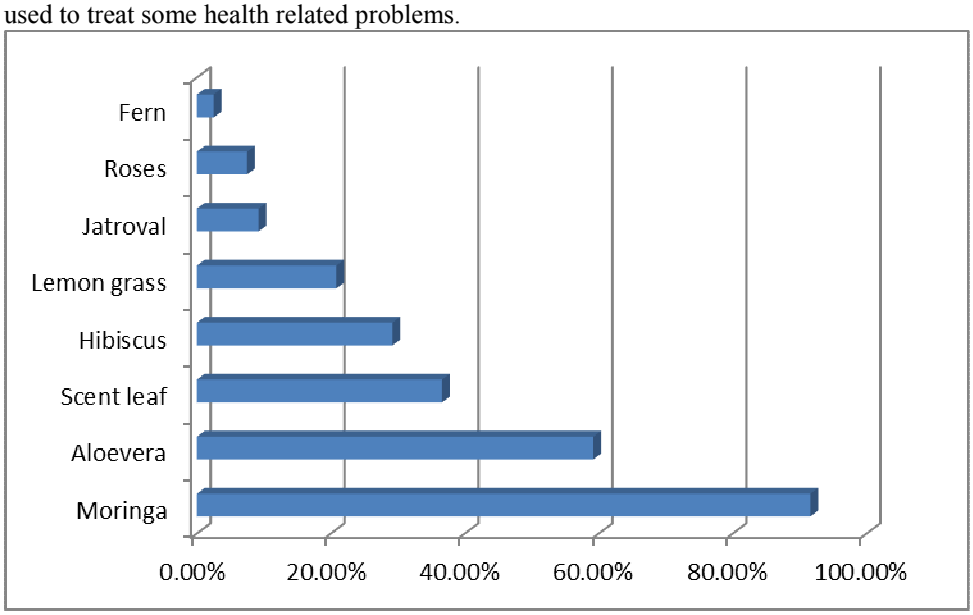

Figure 3: Possession of Medicinal Value of Ornamental Plants
*** Multiple choice**

3.4 Ornamental Plants and their Utilization

The result in Figure 4 reveals that Aloevera was used to treat skin burns (60.8%), constipation (57.8 %), skin irritations (45.6%), and wounds (40.0%). Such skin irritations includes pimples and eczema. The liquid from the leaves is gently squeezed and rubbed on the affected points. The study showed that the respondents used hibiscus to solve several health related problems ranging from heart diseases (43.4%), nerve diseases (34.5%) to cancers (23.7%). Furthermore, findings showed that Moringa was used to treat stroke (67.9 %), bone problems (60.4%), kidney disorders (45.5%) and eye problems (32.0%). The study also showed that roses was used to treat diseases such as skin diseases (56.0%), sore throat (34.9%), dog bites (12.0%) and eye problems (11.8 %). Fern was used to treat worm infections (45.8 %), wounds (34.0 %) and rickets (13.0 %). The results showed further that 67.9 % of the respondents treated stomach pain/ diarrhoea using scent leaf. About 35.0 % and 34.8 % used scent leaf to treat high fever and epilepsy respectively. Lemmon grass was used majorly to treat indigestion (41.0 %) and cough (12.5%). The study also showed that jatropha was used in the treatment of skin diseases (55.5%), and wounds (21.8%). This trend supports the assertion that ornamental plants can be employed in the treatment of several diseases (World Health Organization, 2014, Lee, 2004, Rothel *et al.,* 2011).

3.5 Respondents' Perception about the use of Ornamental Plants as Alternative Therapy

The results from the study showed that the respondent strongly agreed that ornamental plants were very cheap ($\bar{X}$:4.51). This could be attributed to the fact that ornamental plants are available in the study area and may require in most times little or no cost in getting them. The respondents agreed that ornamental plants are highly medicinal ($\bar{X}$:4.46), very effective ($\bar{X}$:4.33), simple to use ($\bar{X}$:4.32), reliable ($\bar{X}$:4.27), very accessible ($\bar{X}$:4.12), efficient ($\bar{X}$:4.06), culturally compatible ($\bar{X}$:3.93) and good for all age classes ($\bar{X}$:3.82). This trend could be because the respondents had in one time or the other employed ornamental plants in taking care of some health problems and they worked for them. The study showed further that the respondents disagreed that ornamental plants has standard units of measurement ($\bar{X}$:2.92), takes so much time to be converted to medicines ($\bar{X}$:2.38) that ornamental plants are not reliable ($\bar{X}$:1.36). The respondents attested during the focus group discussion that although there is no scientific/ standard dosage for the intake of ornamental plants, but overtime they have been able to realise the dosages that work for them.

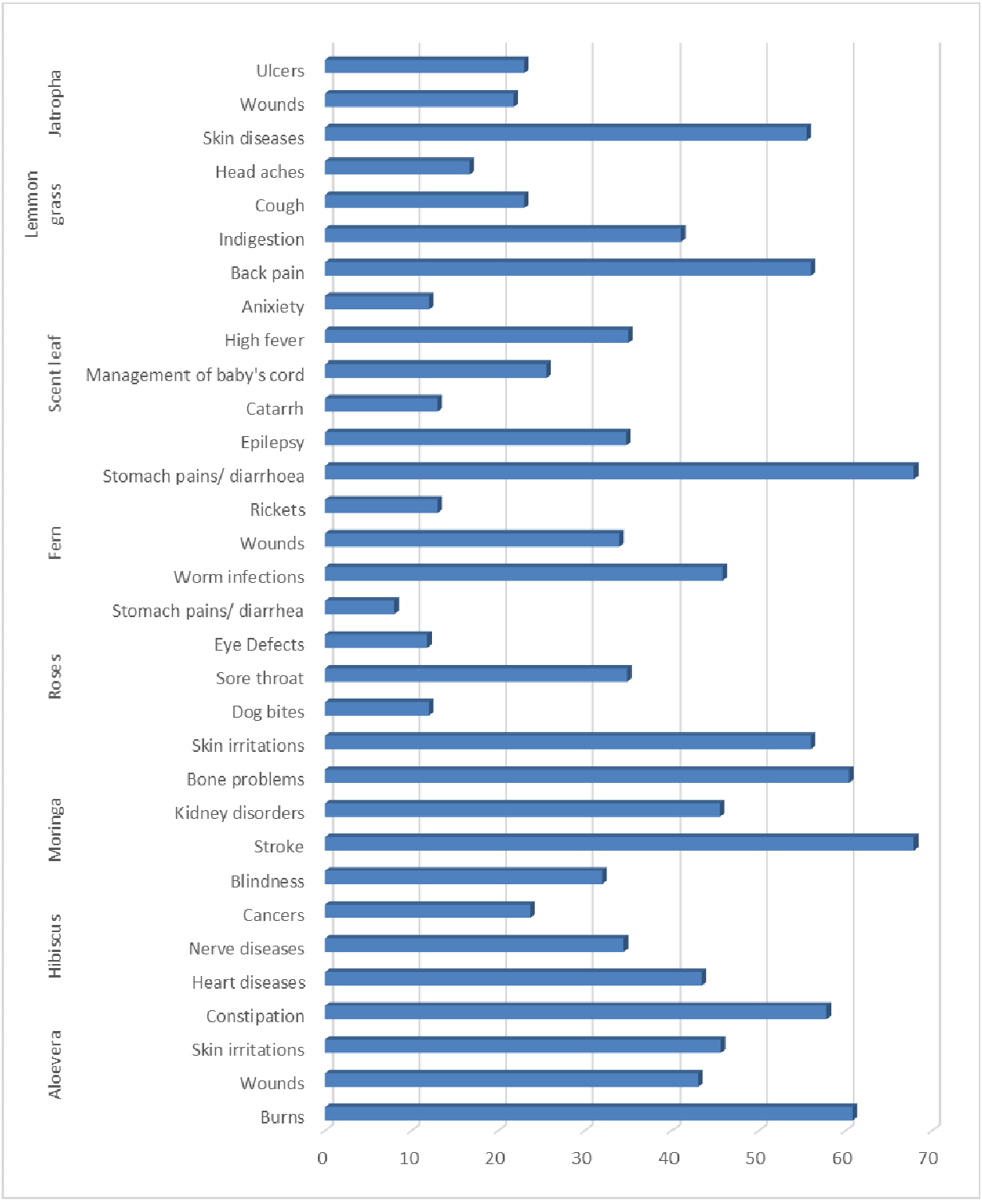

Figure 4: Ornamental Plants and their Utilization
* Multiple choices

Table 3: Respondents' Perception about Ornamental Plants

Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean($\bar{X}$)
Ornamental plants are very cheap	71 (59.2)	44 (36.7)	3 (2.5)	-	2 (1.7)	4.51
Ornamental plants are highly medicinal	62 (51.7)	56 (46.7)	-	-	2 (1.7)	4.46
Ornamental plants are very effective	51 (42.5)	57 (47.5)	3 (2.5)	6 (5.0)	3 (2.5)	4.33
Ornamental plants are simple to use	48 (40)	57 (47.5)	6 (5.0)	4 (3.3)	5 (4.2)	4.32
Ornamental plants are reliable	17 (14.2)	24.2 (29)	10 (8.3)	56 (46.7)	7 (5.8)	4.27
Ornamental plants are very accessible	51 (42.5)	57 (47.5)	3 (2.5)	6 (5.0)	3 (2.5)	4.12
Ornamental plants are very efficient	57 (47.5)	56 (46.7)	1 (0.8)	3 (2.5)	2 (1.7)	4.06
Ornamental plants are culturally compatible	5 (4.2)	11 (9.2)	5 (4.2)	67 (55.8)	32 (26.7)	3.93
Ornamental plants are good for all age classes	28 (23.3)	66 (55.0)	11(9.2)	8 (6.7)	8 (6.7)	3.82
Ornamental plants has a standard units of dosage	58 (48.3)	51 (42.5)	7 (5.8)	4 (3.3)	-	2.92
Ornamental plants takes time to convert to medicines	43 (37.5)	55 (66.0)	7 (5.8)	2 (1.7)	-	2.38
Ornamental plants are not as medicinal as other herbs	35 (29.2)	62 (51.7)	9 (7.5)	10 (8.3)	4 (3.3)	2.29
Ornamental plants are very difficult to use	6 (5.0)	15 (18.0)	12 (10.0)	63 (52.5)	27 (22.5)	2.14
Ornamental plants are for beautification and not for medicines	4 (3.3)	2 (1.7)	4 (3.3)	64 (53.3)	46 (38.3)	1.77
Ornamental plants are not reliable	-	-	1 (0.8)	43 (35.8)	76 (63.3)	1.36

3.6 Factors affecting the use of Ornamental Plants as Alternative Health Therapy

The figure 4 below shows the various factors that may influence the use of ornamental plants as an alternative health therapy in the study area. These factors range from efficiency (86.2 %), preservation (79.2%) and availability (59.0%), to standard units of measurement (53.3%). This implies that if ornamental plants as alternative health therapy will be adequately utilized, these major factors must be attended to. The study also indicated that other factors that may influence the use of these plants as revealed from the findings include natural form of consumption (47.0%), information about them (45.0%), mode of preparation (43.0%), smell after preparation (39%), traditions associated with usage (36.0%), an alternative to standard therapy (28.0%). This results implies that respondents will use ornamental plants as alternative health therapy to treat some sicknesses if they realised that the plants are efficient, available, easy to prepare, easy to prepare, possess good aroma, and have standardized units of measurement otherwise they the plants will lie unused despite their wide range of medicinal values. Information is very essential, if the respondents have adequate information about the medicinal values of various ornamental plants, they would appreciate them and use them.

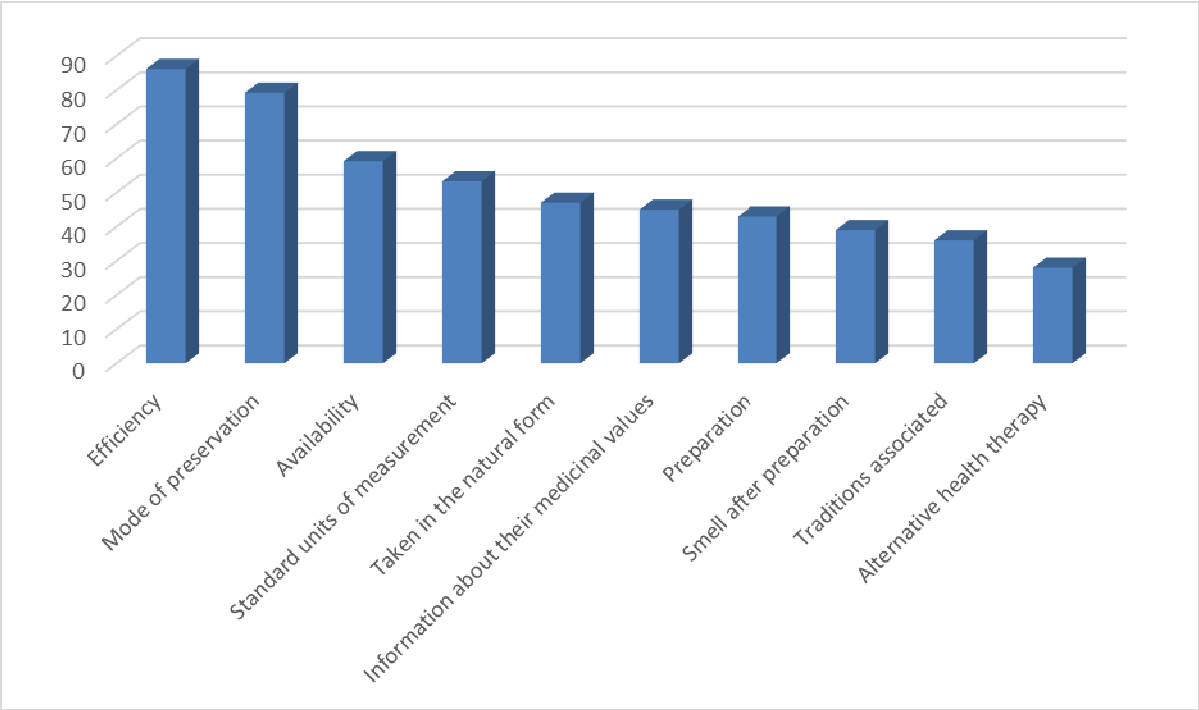

Figure 4: Factors affecting the Utilization of Ornamental Plants as Alternative Health Therapy

3.7 Hypothesis Testing

Association between the Socio-Economic Characteristics of the Respondents and the use of Ornamental Plants as Alternative Health Therapy

The Chi-square result on Table 4 shows that there was no significant relationship between the sex (P= 0.321≤ 0.05), marital status (P= 0.479≤ 0.05), educational status (P= 0.501≤ 0.05), religion (P= 0.291≤ 0.05) and primary occupation (P= 0.321≤ 0.05) of the respondents and the use of ornamental plants as alternative health therapy. This implies that the use of ornamental plants as alternative health therapy among the respondents was independent of whether male or female, married , single or divorced, educated or not educated, being a Christian, Muslim or a traditionalist , being a farmer, trader or a civil servant.

Table 4: Association between Selected Socio-Economic and use of Ornamental Plants

Socio economic characteristics	Chi-Square ($\chi 2$)	Df	p- value	Decision
Sex	10.8	1	0.321	NS
Marital status	307.8	5	0.479	NS
Educational status	100.8	1	0.501	NS
Religion	118.9	2	0.291	NS
Primary occupation	88.5	17	0.321	NS

Conclusion

The study shows that the respondents in the study area were aware that certain ornamental plants such as moringa, aloevera, fern, hibiscus, roses, jatropha, scent leaf and lemon grass have medicinal values. The findings also shows that the respondents had utilized these ornamental plants to treat certain health cases ranging from malaria, stomach pains, hypertension to mouth diseases. This study has also identified factors influencing the utilization of ornamental plants and therefore established that the factors affecting utilization ranges from preservation, information to standard measurement of dosage.

Recommendations

Based on the findings from the study, the following recommendations were made:

1. Research institutions should be encouraged to go into research in other to find ways to prepare and preserve medicinal ornamental plants for people to use..
1. NGOs who are interested in the health related issues of the people should make adequate dissemination of information regarding the medicinal values of ornamental plants and the health cases that are best use for to the general public by the right personnel using the right means since the healing power inherent in

ornamental plants cannot be under-estimated.

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