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# Knowledge and Attitude toward Lymphatic Filariasis (LF) and Compliance to Mass Drug Administration (MDA) among Households in Two Rural Barangays

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**Abstract** – *This descriptive relational study was conducted to determine the knowledge and attitude toward LF and compliance to MDA among households in two rural barangays in Libacao, Aklan. The respondents of this study were taken using a stratified, systematic random sampling technique that included the 187 eligible household heads who received the two-drug combination during the second treatment round (TR) in 2011. Results revealed that most the respondents are “highly” knowledgeable about LF but there are still misconceptions about the cause and transmission of LF. The respondents also have a “favorable” attitude toward LF’s disease process and its management. However, only about two thirds are “compliant” to MDA which is below the national coverage. Age, sex, civil status, educational attainment, employment status, poverty status, knowledge about LF and attitude toward the disease are not significantly associated with MDA compliance.*

**Keywords** – *Lymphatic Filariasis, Mass Drug Administration*

## I. INTRODUCTION

Lymphatic Filariasis (LF) or “elephantiasis” is a public burden that needs serious attention nationally and globally. It is the second most common vector-borne parasitic disease after malaria and ranks second as the most common cause of long-term disability and suffering after mental illness (WHO, 2012). In the Philippines, LF remains to be one of the public health problems that need to be given greater concern and attention. In 1998, consolidated field reports showed an LF prevalence rate of 9.7 percent per 1000 population (DOH, 2007). In 2007, there were 40 provinces established to be endemic (red areas) with reports of LF cases as validated by the Central Office and Center for Health Department. At present, latest available data

from DOH in 2011 reported to have 43 provinces endemic of the disease. Among these 43 endemic provinces, four out of six provinces of Western Visayas have LF cases and Aklan province registered the highest number. The DOH survey revealed that Libacao, Aklan has a microfilaria rate (MF rate) of 6.20 percent, tagging the whole province of Aklan “moderately endemic” of the disease according to the WHO classification (DOH, 2010).

As part of the anti-LF plan, the primary strategy of the WHO and DOH for the elimination of LF is centered on the annual mass drug administration (MDA) of endemic communities with albendazole and diethylcarbamazine (DEC) for a period of five years. The DOH targets 95 percent immunization of the population two years old and above, and about 85 percent of the target population must take the combination drug in order to interrupt transmission (DOH, 2007). Although the successful implementation of MDA has been reported in various parts of the World and nine provinces in the Philippines have reached elimination level (DOH, 2011; WHO, 2012), still, it is significant to note that the number of provinces tagged as endemic of LF are still increasing in the Philippines. Literature suggests that the rate of coverage or compliance (actual intake of the MDA tablets) is the most crucial factor in the success of MDA program (Gunawardena, Ismail, Bradley, Karunaweera, 2007; Kumar, et al, 2009). For this reason, noncompliance with MDA presents a serious programmatic obstacle for the LF program because systematically noncompliant individuals may serve as a reservoir for the parasite and permit recrudescence of infection (Talbot et al, 2008; Joseph et al, 2011).

With the aim of scaling up compliance, the views of the community should be sought and incorporated into any control measures (WHO, 2012). While international studies disclosed the positive relationship between

knowledge about LF and compliance to MDA (Amarillo, et al, 2008; Joseph, et al, 2011), studies done on community's knowledge and attitudes toward LF as well as compliance to MDA are limited in the Philippines. A study conducted in Agusan del Sur, Philippines revealed low to moderate level of knowledge regarding LF and MDA (Amarillo, et al, 2008). A study in Thailand also revealed moderate attitude toward LF (Suppadit, Pongsuk & Chaikitmongko (2006). The role of mosquitoes in transmitting the parasitic agents of LF is poorly known in many endemic communities (Rath, et al, 2006; Mukhopadhyay, et al, 2008; Amarillo, et al, 2008; Omudu, & Okafor, 2008; Wynd. et al, 2007; Dorle, et al, 2011).

In light of above stated problems, the principal challenge therefore is to find out what predicts compliance in order to improve program mechanism for future TRs.

## II. OBJECTIVES OF THE STUDY

This study was conducted to determine the knowledge and attitude toward disease process and management of LF, and compliance to MDA among households in two rural barangays in Libacao, Aklan . Specifically, it sought to describe the socioeconomic-demographic characteristics of the household heads in terms of age, sex, civil status, educational attainment, employment status; and poverty status; to determine the household heads' level of knowledge about LF and attitude toward LF; to determine the household heads' compliance to MDA; to determine whether or not there is a significant relationship between the household heads' (a) socioeconomic-demographic characteristics; (b) their level of knowledge about LF; (c) their attitude toward LF; and their compliance to MDA.

## III. METHODS

This study utilized a non-experimental, descriptive relational research which employed the one-shot survey design. The population (N = 970) of this study was divided into two strata. The sample size (n = 283) was determined with a confidence level of 95 percent and was proportionately allocated between the two strata. Systematic random sampling was then used to draw the sample units. However, only the 187 household heads who received the MDA tablets during the second TR and were eligible to take the antifilarial drugs were included. Data were gathered with the aid of a researcher made instrument, validated, with knowledge and attitude scale having a Cronbach alpha reliability coefficient of 0.809 and 0.710 respectively. The

interview schedule was conducted during the months of June to July 2012. This gave the opportunity to observe the actual community setting and obtain qualitative data by probing questions during the interview. Moreover, unstructured interview was also conducted with key informants like the barangay captains, midwives, and the regional and provincial coordinators of the NFEP. Another method employed was a review of documents. These included field reports of the annual MDA coverage in 2010 and 2011 taken from the RHU of Libacao and the Provincial Health Office of Aklan. Access to these relevant documents was negotiated at the beginning of the study. This provided the rationale for the conduct of this study and information on aspects of the work that has been done prior to this study. The use of these varied methodologies gave more depth to the analysis of the results of the study and strengthened the validity of data obtained. Informed consent was also obtained prior to interview.

After all the data were obtained, these were encoded for tabulation and summation to facilitate processing. The data were processed and analyzed using the Statistical Package of Social Science (SPSS) software. Descriptive and inferential statistics were used to describe univariate data and Chi square, Cramer's V, and Pearson's r correlation set at five percent level of significance were used to determine relationships between variables.

## IV. FINDINGS AND INTERPRETATION

### Knowledge about LF

On the average, the knowledge of the respondents was "high" with a mean score of 15. This may be due to the concerted effort of the DOH in disseminating information in Libacao as a sentinel site of the elimination program. However, the result of this study negates the findings of Jayakumary, et al (2006) in a study of in endemic area of LF in India; that of Withanage, et al (2006) in Sri Lanka among selected grade 12 students; that of Suppadit, et al (2006) in Thailand among sampled groups living where there was LF infection and among patients and relatives with LF; and in a more recent study in Agusan del Sur, Philippines among 18 year olds and older sampled population of Amarillo, et al (2008) were low to average level of knowledge about LF was found.

While this study revealed that the respondents were generally highly knowledgeable especially in terms of prevention and treatment of LF, they however scored lowest in terms of determining correctly the cause and transmission of the disease.

**Table 1. Distribution of Respondents according to their Correct Answers on Knowledge about LF**

Knowledge Questions	%
1. People often get filariasis because of witch craft or supernatural causes.	96.8
2. Filariasis is transmitted by mosquito bites.	93.6
3. Body or physical contact with persons with filariasis can pass the disease.	69.3
4. Filariasis is not hereditary.	52.4
5. Filariasis can be acquired by drinking unsafe water.	53.5
6. Filariasis is caused by worms.	44.9
7. Filariasis can be diagnosed through blood examination.	97.3
8. One of the signs of filariasis is enlargement of legs and arms.	93.6
9. There is no available diagnostic tool for one to know he/she has filariasis.	89.8
10. People with filariasis experience painful swelling of the lymph nodes particularly in the axilla and inguinal area.	88.8
11. Untreated filariasis cannot result to hydrocele.	70.6
12. Signs and symptoms of filariasis manifest abruptly after a mosquito bite.	66.8
13. People with filariasis can be asymptomatic.	51.9
14. Filariasis can only be diagnosed through physical examination of a physician.	17.6
15. Sleeping under a mosquito net will prevent filariasis.	98.9
16. When a person has filariasis, going to traditional healers will cure the disease.	97.9
17. Antifilarial drugs are given to prevent transmission of filariasis.	94.1
18. Filariasis is treated with DEC and albendazole.	87.7
19. Antibiotic is given to cure filariasis.	66.3
20. Filariasis can never be prevented.	53.5
Mean = 15	<b>“Highly knowledgeable”</b>

It is significant to note that only less than half (44.9 percent) correctly identified parasitic worms as the cause of LF. It was also noted that there were still respondents who had incorrect knowledge about the cause and transmission of LF as they have attributed the cause of the disease to genetic predisposition, drinking unsafe water, body or physical contact with person with LF, and working in abaca plantations and carrying heavy workloads of abaca fibers. Moreover, only half (51.3 percent) knew that LF can be asymptomatic.

**Table 2. Distribution of Respondents according to their Favorable Responses on Attitude toward LF**

Attitudinal Statements	%
1. I am at risk of acquiring filariasis.	61.5
2. Filariasis is a normal occurrence in our barangay.	35.8
3. Protecting myself from filariasis is my responsibility.	98.4
4. I am not worried to have filariasis because it is not a serious disease.	72.2
5. I consider filariasis as an incurable disease.	17.6
6. There is no danger that my family members will be infected with filariasis.	50.3
7. I am worried that I might have filarial infection now.	51.3
8. I am afraid to take the drugs for filariasis.	77.5
9. Taking antifilarial drugs are not worth the side effects.	59.9
10. Antifilarial drugs protect me from having filariasis.	96.8
11. Filariasis is an important health problem in our barangay.	70.1
12. I pity people with filariasis because they have limited marriage prospects.	7.5
13. I am ashamed to be associated with people with filariasis.	79.1
14. Antifilarial drugs should be taken even if I don't have symptoms of filariasis.	90.9
15. I am physically able to take all the antifilarials tablets given during Mass Drug Administration.	91.4
Mean = 10	<b>“Favorable attitude”</b>

The average score of the respondents was 10, meaning a “favorable” attitude toward LF. Result is different from that of Suppadit, et al (2006) in a study in rural Thailand where majority of the respondents had only moderate level of attitude.

While the respondents’ attitude toward LF was found to be “favorable”, social stigma was still apparent as many of the respondents (92.5 percent) regarded people with LF to have limited marriage prospect and there were still some (20.9 percent) who felt ashamed to be linked with these individuals. Moreover, one out of five (22.5 percent) still mentioned that they were afraid of taking the drug and two out of five (40.1 percent) believed that MDA tablets are not worth taking if side effects are experienced even if the tablets provided protection against the disease. This could be potential reasons for noncompliance in the next TRs of MDA that needs to be dealt with.

**Table 3. Distribution of Respondents according to Compliance to MDA**

Compliance	f	%
Compliant	121	64.7
Noncompliant	66	35.3
<b>Total</b>	<b>187</b>	<b>100</b>

Of the one hundred eighty seven eligible respondents who received the tablets, only about two thirds (64.7 percent) have taken all the tablets while slightly more than one third (35.3 percent) have not taken all or any tablet given to them. Of the 66 noncompliant respondents, sixty three have not taken any tablet at all while there were three who have taken either albendazole or incomplete number of DEC tablets.

In addition, nearly all (97.7 percent) of these respondents were given instructions by the drug distributors on how to take the tablets. Because of this, out of the 121 “compliant” respondents, nearly all of them (95.9 percent) have taken the tablets on full stomach. However, only a few (21.5 percent) were seen by the drug distributors taking the drug and the rest were seen by their household members or have taken the tablets by themselves.

The figure on compliance in this study is much lower than the 85 percent national standard set by the DOH that ensures protection of the community from the scourge of the disease and prevents future transmission. The finding of Amarillo, et al (2008) in Agusan del Sur, had a higher (94.5 percent) compliance rate compared the finding of this study. It was noted in the same study however, that there were also a few members of the sampled population in the Agusan del Sur who did not ingest all the drugs that were part of the combination therapy. In this study, only very few respondents were seen by the drug distributors taking the drug. This is comparable to the findings of Lahariya & Mishra (2008) in Pradesh India and Ravish (2011) in Karnataka, India where drug intake was not ensured by the distributors.

Among the sixty three “noncompliant” respondents, the main reasons why they did not take the tablets were they forgot to take the tablets (34.9 percent) and fear of side effects (28.6 percent). Other reasons given were: they were breastfeeding (11.1 percent), lack of trust to drugs (6.3 percent), not well informed about the drug, (6.3 percent), not checked by the doctor before taking the tablets (6.3 percent), too old to take the tablets (4.8 percent), had asthma (4.8 percent), tablets given were crushed and easily becomes wet (3.2 percent) and were

sick during distribution (3.2 percent). Still, others said they did not take the drugs because they have hypertension, experienced previous allergic reaction to the drugs, and had a history of head injury.

The result of this study is similar to the findings of Amarillo, et al (2008) in Agusan del Sur; Babu & Mishra (2008) in Orissa, India; Cantey, et al (2010) in another district in India, in which fear of side effects was one of the major reasons given for not taking the drugs.

### **Relationship between Socioeconomic-Demographic Characteristics, Knowledge and Attitude toward LF and Compliance to MDA**

As to age, majority of young adult (18 to 40 years old, 69.0 percent) and middle-aged adults (61 to 65 years old, 63.6 percent) respondents were “compliant” to MDA whereas less than half (44.4 percent) of older adults “complied” to treatment. Although the data tend show an association between the two variables, the Chi square value was not statistically significant at 0.05 level. Finding is similar to those of Nandha, et al (2007) where the percentage of coverage and consumption was found to decline with increasing age. The findings of Talbot, et al (2008) in Haiti where age was not significantly associated with noncompliance and of Amarillo, et al (2008) in Agusan del Sur that revealed age was not significantly related to MDA acceptance find support in this study. The studies of Cantey, et al (2010) and of Suppadit, et al (2006) however found that age was a significant predictor of adherence to MDA in India and adoption of practices of LF prevention and control in Thailand, respectively.

In addition, there is a little difference in the proportion of male (67.2 percent) and female (63.6 percent) respondents who were “compliant” to MDA. The study found no significant relationship between the respondents’ sex and their compliance to MDA. Data suggest that respondents’ compliance does not differ between sexes. Although, it was found in this study that there were female respondents who did comply with MDA because they thought breastfeeding was a contraindication to taking antifilarial tablets, hence were excluded for analysis of compliance.

The result corroborates the findings of Cantey, et al (2010) in India, where male sex as a univariable was not a predictor of adherence to the DEC regimen and that of Amarillo, et al (2008) in Agusan del Sur study, where sex was also not significantly related to MDA acceptance.

**Table 4. Distribution of Respondents according to their Socioeconomic-demographic Characteristics, Knowledge and Attitude about LF and their Compliance to MDA**

Socioeconomic-demographic Characteristics	MDA Compliance			
	Compliant		Non Compliant	
	f	%	f	%
<b>Age</b>				
Older (above 65 y.o.)	4	44.4	5	55.6
Middle (41 to 65 y.o.)	68	63.6	39	36.4
Young (18 to 40 y.o.)	49	69.0	22	31.0
Pearson's $r = 2.257$	<i>not significant</i>			$p = 0.323$
<b>Sex</b>				
Male	49	67.2	19	32.8
Female	82	63.6	47	36.4
Chi square = 0.237	<i>not significant</i>			$p = 0.627$
<b>Civil Status</b>				
Single	19	59.4	13	40.6
Married	102	65.8	53	34.2
Chi square = 0.480	<i>not significant</i>			$p = 0.448$
<b>Educational Attainment</b>				
College level	39	60.9	25	39.1
High school level	38	62.3	23	37.7
Elementary level	38	69.1	17	30.9
No formal education	6	85.7	1	14.3
Cramer's $V = 0.133$	<i>not significant</i>			$p = 0.449$
<b>Employment Status</b>				
Employed	68	65.4	36	34.6
Unemployed	53	63.9	30	36.1
Chi square = 0.047	<i>not significant</i>			$p = 0.828$
<b>Poverty Status</b>				
Not poor (below poverty line)	35	60.3	23	39.7
Poor (below poverty line)	86	66.7	43	33.3
Pearson's $r = 0.272$	<i>not significant</i>			$p = 0.000$
<b>Level of Knowledge</b>				
High	78	63.4	45	36.6
Low	43	67.2	21	32.8
Chi square = 0.262	<i>not significant</i>			$p = 0.608$
<b>Attitude</b>				
Favorable	74	67.3	36	32.7
Unfavorable	47	61.0	30	39.0
Chi square = 0.771	<i>not significant</i>			$p = 0.380$

However, data from Pondicherry, India as well as other regions, demonstrate rates of noncompliance that are higher in men than in women from participating in MDA (Talbot, et al, 2008).

Likewise, there is a little difference in the MDA compliance of the respondents when grouped according to civil status. The married (65.8 percent) and single (59.4 percent) "compliant" respondents were almost

similar in terms of their compliance to MDA. The Chi square test result yielded no statistically significant relationship between the two variables. The finding corroborates those of Amarillo, et al (2008) which also disclosed no significant association between civil status and MDA acceptance. Similarly, in Sri Lanka, there was no observed significant relationship between

marital status and drug compliance (Gunawardena et al, 2007).

Furthermore, majority (85.7%) without formal education and more than half (69.1 percent, 62.3 percent and 60.1 percent correspondingly) who were elementary, high school and college level respondents “complied” with MDA. The Cramer’s V value however revealed no statistical significance between educational attainment and compliance to MDA. This supports the findings in Haiti of Talbot, et al (2008) and in Agusan del Sur, Philippines of Amarillo, et al (2008) where educational level was not significantly associated with noncompliance and acceptance.

In terms of employment status, there is almost an equal percentage (63.9 and 65.4 percent) of unemployed and employed respondents who were “compliant” to MDA. The Chi square value affirmed absence of relationship between compliance and employment status. The result corroborates the finding of Joseph, et al (2011) in a study among the LF infected population in Samoa which revealed no significant association between employment and compliance to MDA.

On the other hand, a higher percentage (66.7 percent) of poor than those not poor (60.3 percent) respondents “complied” with MDA. The result of the Chi square test however revealed no significant relationship between poverty status and compliance at five percent level. The finding of Amarillo, et al (2008) also revealed that household income was not found to be significantly associated with MDA acceptance. In contrast, Nandha, et al (2007) found in the urban areas of Pondicherry, India, that treatment coverage and consumption were lower in the two wards with high-income group residents in all TRs, being statistically significant in TR4 and TR5. Gunawardena, et al, (2007) also found in Sri Lanka, that the income was significantly related to drug compliance. Suppadit, et al (2006) also reported a significant relationship between social class and adoption of practices regarding LF in Thailand.

There is no significant relationship between knowledge about the disease and compliance to MDA. Although there is a higher proportion (67.2 percent) of respondents who received the drugs and ingested the tablets with “low” level of knowledge compared with those who had “high” level of knowledge (63.4 percent) about LF.

Also, there are more (67.3 percent) respondents who had “favorable” attitude than those with “unfavorable” attitude (61.0%) toward LF who were “compliant” to MDA. The result of the Chi square test however revealed that the respondents’ attitude toward

LF is not related to their compliance to MDA. This means that that the link between attitude and behavior is not always strong as people may tend do the opposite of what they say. The finding of the study in Agusan Del Sur, Philippines by Amarillo, et al (2008), where certain constructs of the HBM and attitude toward MDA were found not significantly associated with acceptance to MDA finds support in this study. The findings of Aswathy, et al (2009) that revealed compliance in MDA was positively associated with perceived benefits and usefulness of MDA; Talbot, et al (2008) which found that difficulty in taking pills appears to be a significant barrier for the MDA program in Leogane; Mukhopadhyay, et al (2008) and Cantey (2010), in Pradesh and Orissa, India which found that knowing everyone is at risk for LF predicts adherence to MDA contradict the result of this study.

## V. CONCLUSIONS AND RECOMMENDATIONS

Respondents in the specific urban and rural area of the municipality of Libacao are familiar and knowledgeable of LF and are supportive of the NFEP of the DOH by exhibiting favorable attitudes toward it and although not to a maximum extent and still short of the target national standard, by complying to MDA. While the respondents are supportive of and have complied to MDA, there are still problems regarding information dissemination, particularly, those related to the underlying cause of the disease, as well as ingestion of MDA and the management of its side effects, in cases of their prevalence. Compliance in both barangays is below the national 85 percent target. The selected socioeconomic-demographic characteristics as well as knowledge and attitudes do not influence compliant behavior.

It is recommended that there is a need to strengthen the MDA program planning and implementation because the achieved compliance is not sufficient to completely interrupt transmission. As long as there are individuals infected with LF in a community that serve as reservoir of LF, disease transmission will continue. Campaigns should be intensified especially a month or weeks before the Filaria Month in November and should be done in a variety of times. It should include informing the public that MDA is conducted in all barangays of the municipality. Because MDA compliance fell below the 85 percent target, noncompliant members of the community should be properly identified and counseled. The DOH and drug distributors should also ensure adequate supply of the MDA tablets. They should also enhance community participation and mobilize the community into action.

The fear of side effects of the drugs should be addressed as this has been one of the most common reasons for noncompliance. Instructions on how to manage side effects must also be provided to give greater control on the part of the recipients on how to address them. To lessen social stigma attached to people with LF, healthcare providers, should continue raising the public's awareness on LF. Once misconceptions are corrected, the community may be empowered to take better care of themselves. Intake of the tablets to be given in the succeeding TRs should be direct and supervised and should be done at least as soon as the tablets are given. This will help ensure that the reported coverage at the local level will be a reliable estimate of those who have received and swallowed the tablets. Training of implementers should also include proper inclusion and exclusion of the eligible population. The LGU should provide adequate support and should extend appropriate resources to ensure the campaign success. Healthcare providers and program implementers should also build upon the use of personal protection as support measures to prevent contact between the human host the mosquito filarial vector.

Since this study covered only the household heads, future researchers should include other age groups in other areas. Other factors affecting compliance but not covered in this study can also be explored. Evaluation of the program after its completion is also necessary. Conduct of research to address issues relating to stigma and the burden of LF is recommended.

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