

Knowledge, Attitudes, and Practices of Households in Relation to Avian Influenza

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Avian influenza, commonly known as bird flu, once threatened the lives of birds as well as of human beings. Caused by a virus, it is considered endemic in many parts of Indonesia and Vietnam and in some parts of Cambodia, China, and Thailand. Outbreak of many similar diseases can easily reach epidemic level because households have minimal knowledge of precautionary measures. This study conducted a survey on Filipino households' knowledge, attitudes, and practices related to avian influenza. Results of this assessment can help in the development of intervention strategies for the mitigation of the hazards the outbreaks may cause to humans. This is also beneficial to the country since it is concluded that there should be an improvement on the publics' knowledge of transmission and preventive measure, and that health professionals and other concerned agencies should provide effective information to prevent the disease.

Keywords: knowledge, attitudes, practices, avian in fluenza

1. Introduction

Every now and then, there are outbreaks of new diseases threatening the life of the entire human race. Some years ago, avian influenza became a public health concern among Filipino households. While it barely reached epidemic level, it still caused the public health officials to assess readiness among different stakeholders to deal with such problems.

Avian influenza—most commonly called bird flu—refers to an illness brought by any of the different strains of flu viruses, in particular, strains that has adapted to the human host. Bird flu viruses that are known to have adapted to human host belong to a species of virus called *Influenza A* virus. It has resulted to destruction of so many birds and even human deaths.

Most avian flu infection cases were identified in Southeast Asian countries like Vietnam and Indonesia. Though these countries are very near, the Philippines have remained bird flu free. The Philippine government, in cooperation with other private institutions, campaigned to keep the Philippines bird flu free. Several measures have been launched to protect the country's poultry industry and population from the influenza virus. The government formed the National Avian Influenza Task Force (NAITF) to strengthen bird flu protection program. All government agencies were mobilized to protect the Philippines from this deadly disease.

The Department of Agriculture (DA) provided the communities with practical information about bird flu. The Department of Health (DOH) also facilitated activities disseminating information on the current health threat. Symptoms on the disease and the necessary actions to be taken if a case of bird flu infection occurred were their primary topic of discussion. Upgrading 21 hospitals in preparation of a possible outbreak was also part of their program.

Public health authorities closely monitored outbreaks of human illness associated with avian flu especially in the nearby Asian countries. Airports and immigration officials implement a health check-up for the arrival of travelers to ensure that they are not carrying the disease. However, migratory birds also visit the country and can potentially spread the virus.

The Department of Environment and Natural Resources (DENR) and DA were tasked to draw up maps of specific areas in the country where migratory birds congregate and to publish a “do's and don't's” primer which lists down what one must do when in contact with birds. The Philippines has about twenty identified areas hosting migratory birds. These areas are major concerns of health officials since migratory birds are known to be likely carriers of the virus. In line with this, concerned authorities were asked to publish an inventory of avian flu symptoms and corresponding management procedures to take when infection is suspected. The government also requested the media to broadcast information on the bird flu.

In response to the rampant outbreaks of bird flu in different Asian countries near the Philippines, World Vision Development Foundation (WVDF) would like to do its share by implementing an intensive information campaign nationwide regarding the avian flu. The purpose of the education campaign is to prepare the communities in the prevention of this disease and to prepare them in the event of an outbreak of the avian flu in the country. Hence, to determine specific information

needs to be disseminated, WVDF in coordination with the UP Statistical Center Research Foundation Inc. (UPSCRF Inc.) and the Civic Welfare Training Service class of the School of Statistics, conducted this study to understand households' perception on the avian flu.

The ultimate goal of the study is to prepare mitigation strategies intended for the households once avian flu happens by providing them practical information and useful knowledge regarding the disease and its prevention. Specifically, it aims to assess the knowledge, attitudes, and practices of adults and youths in both urban and rural households related to avian flu influenza. This study shall provide inputs for the information campaign which the WVDF intends to implement to enhance preparedness among various stakeholders.

2. The Epidemiology of Avian Influenza

Avian Influenza is a disease from viruses adapted to birds, but is sometimes mistakenly used to refer to other flu subsets (such as H5N1 flu) or the viruses that caused them (such as H5N1). All known avian flu viruses belong to the species called *Influenza A* virus. All subtypes (but not all strains of all subtypes) of Influenza A virus are adapted to birds, which is why avian flu is commonly interchanged with Influenza A virus.

According to the World Health Organization (WHO 2006), Avian flu virus transfers between poultry by contact of saliva, nasal secretions, blood and feces of an infected bird or with surfaces that are contaminated by these excretions, and body fluids from infected birds. Infection with avian influenza viruses in poultry causes two main forms of disease: the “low pathogenic” form may go undetected and usually causes only mild symptoms (such as ruffled feathers and a drop in egg production); and the “highly pathogenic” form which spreads more rapidly through flocks of poultry. This form may cause disease that affects multiple internal organs and has a mortality rate that can often reach 90 to 100 percent within 48 hours.

The highly pathogenic avian flu virus, H5N1—named after two proteins (hemagglutinin and neuraminidase)—is the newest virus responsible for this disease. It is easily transmissible between birds and poultry and is also highly lethal. H5N1 virus does not usually infect people, but infections with these viruses have occurred in humans. Most of these cases have resulted from people having direct or close contact with H5N1-infected poultry or H5N1-contaminated surfaces [Center for Infectious Disease Research and Policy (CIDRAP) 2006].

Low pathogenic H5N1 avian influenza virus, also known as “North American H5N1,” is commonly found in wild birds. This form may go unnoticed and is not dangerous to birds and humans, although mutation of this form to a more lethal strain is a cause of apprehension. The highly pathogenic form of H5N1 however, is

now considered the world's biggest current pandemic threat. This virus has raised concerns since it is especially virulent; it is spread by migratory birds; it can be transmitted from birds to mammals and in some limited circumstances to humans; and, continues to evolve (CIDRAP 2006).

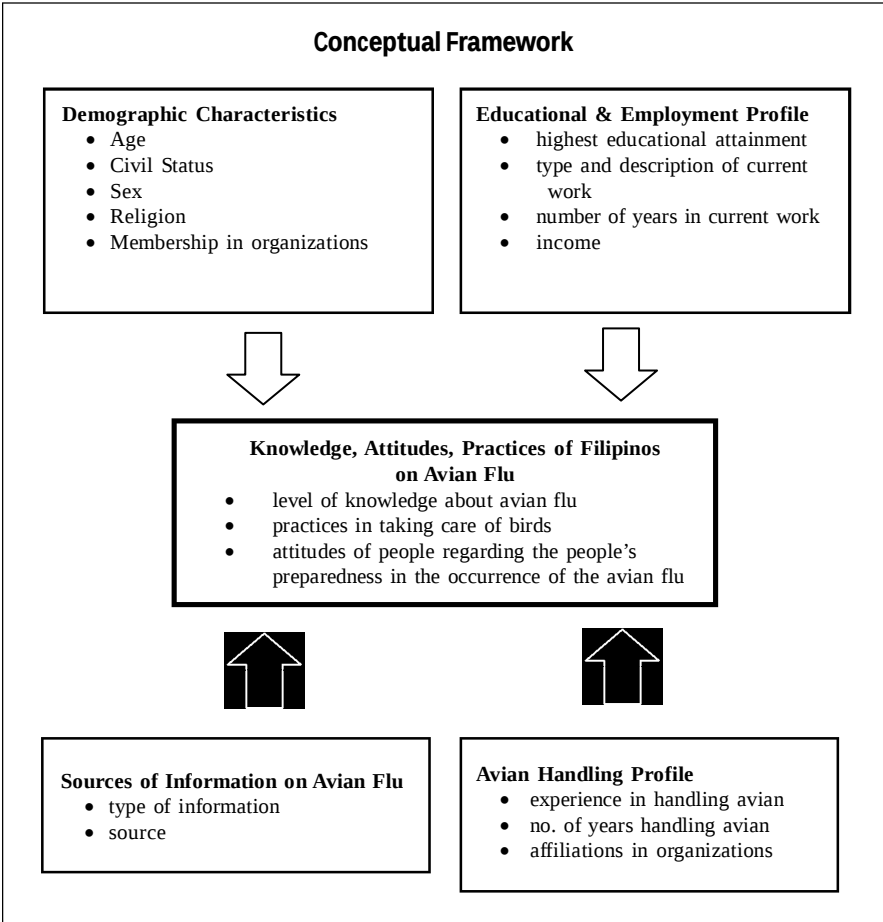
Flu infection in birds may show different symptoms that vary depending on the strain of virus that caused the infection. Symptoms range from mild common flu-like indications to highly fatal and contagious disease. Symptoms may include decrease in activity, drastic decline in egg production, facial swelling with swollen and bluish-violet colored combs and wattles, hemorrhages on internal membrane surfaces, virus isolation needed for definitive diagnosis, gasping for breath, muscle weakness/paralysis, diarrhea or sudden deaths that may reach 100 percent mortality [Center for Prevention of Disease and Control (CDC) and WHO 2006].

The US Food & Drug Administration has recently approved of Influenza A/H5 (Asian lineage) Virus Real-time RT-PCR Primer and Probe Set – a new and faster way of diagnosing strains of avian influenza in people suspected of carrying the virus (CDC 2006). Results of the test are available in four hours, much faster compared to past procedures that need two to three days. Rapid diagnosis of a person having a strain of bird flu is highly advantageous, given that H5N1 virus can cause death within 48 hours of infection.

Antiviral treatments for infected persons are available as Oseltamivir (commonly known and marketed as *Tamiflu*) and Zanamivir (*Relenza*) (CDC 2006). These treatments do not promise instant cure, but both can decrease the severity of the effects of the infection, if given to the patient within 48 hours after symptoms start to show. Tamiflu, the first H5N1 drug created, does not give immunity from viral infection but help decrease the effect of the symptoms and decrease the potential rate of transmission from person to person. One drawback from using this drug is its limited production due to low supply of its active ingredient – star anise. The recently discovered third drug alternative against H5N1 virus is *Peramivir*. Studies show that this new drug is more powerful than the two existing drugs in the market. Peramivir is considered as an emergency remedy for bird flu infections and a substitute drug if resistance from Tamiflu and Relenza develops. It is easier to administer and remains active longer since it is injected to the patients, while Tamiflu is taken orally and Relenza is taken through inhalation. It is also easier to mass produce since it is made of readily available synthetic raw materials. Peramivir is due to be licensed in 2008 or 2009 [Food and Drug Administration (FDA) and CDC 2006].

3. Methodology

The WVDF hopes to educate the people regarding the avian flu by having a comprehensive information campaign. As a benchmark, information on the



knowledge and awareness of the stakeholders is very important. Furthermore, attitudes and practices of the respondents could augment the data. The figure below illustrates this framework which shall be the basis of the data to be collected and the analysis to be done in this survey.

To describe the characteristics of the individual respondents, there is consideration of the demographic, education, and employment components. Data collected for these components will help determine the level of knowledge of households about avian flu, the attitudes of people regarding avian flu, and practices in handling and taking care of birds. This will also determine the source and type of information they have regarding avian flu.

3.1 Sampling design

Data was collected in March 2007 in the municipality of Naic, Cavite. Naic is stratified into urban and rural barangays, two barangays, namely Barangay Ibayo (urban) and Barangay Labac (rural) were selected for the study. A simple random sample of 700 respondents (350 adults and 350 youths) were selected from each of the urban and rural areas. Youth are defined to be between 12 to 21 years old and currently studying while those 21 years and over are considered adults.

3.2 Method of data collection

The study collected data through a survey. To substantiate the quantitative profile of the respondents, a focused group discussion (FGD) was subsequently conducted. FGD is intended to help explain the dynamics of stakeholders' knowledge, attitudes, and behavior toward avian flu.

A survey instrument accounting for the different components of the framework was constructed. The questionnaire has four parts: the first part contains 13 questions concerning the demographic characteristics of the respondent; the second part consists of 17 questions on the engagement of respondents to fowls and poultry; the third part include 36 questions on bird flu awareness; and the fourth part have 13 statements to determine the attitude of people regarding bird flu. The questionnaire was phrased in the local language of the respondents (Tagalog). The average time of each interview is 30 minutes.

After conducting the personal interview, tables are constructed and indicators that need to be probed for the focus group discussion were identified. Four FGDs were conducted namely: adults in the urban community; youth in the urban community; adults in the rural community; and youth in the rural community. All of these FGDs were conducted in the Community Research Center of World Vision Development Foundation in Naic, Cavite.

4. Results and Discussion

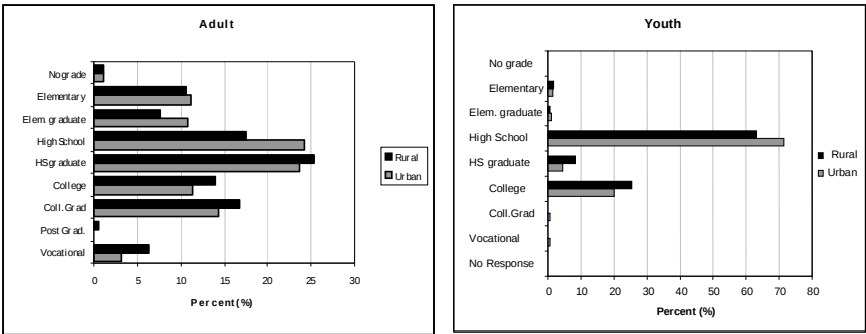
We discuss the findings from both the survey and the FGD. The profile of the respondents is first presented and then we identify the respondents' practices in taking care of chickens, ducks, and other birds, to assess the level of knowledge and awareness of the respondents concerning avian flu, and to determine their attitudes regarding avian flu.

4.1 Demographic and economic characteristics of respondents

We shall first look at the demographic profiles of the respondents. There are more female respondents both in urban and rural communities (66% and 61% respectively). Majority of the adults are married (67%) and almost all of the youths

are single. Among the adults, many reached high school (21%) or have graduated from high school (25%). As shown in Figure 1, more adults are high school graduate, at college level, and college graduate in the rural community than in the urban. The youths more or less exhibit similar characteristics. Majority are still in their high school years and more have graduated from high school or have reached college in the rural community than in the urban.

Figure 1. Frequency Distribution of Highest Educational Attainment by Type of Barangay



Since college graduates among adults are atypical, unemployment would be usual. Majority of the rural adults are unemployed (55%), more in the urban area (59%). Among those employed, Figure 2 shows that majority are self-employed in both urban and rural communities. In addition, majority of those who are working only earn less than P10,000 a month. Figure 3 shows the income distribution of these adults in the urban and rural areas.

Figure 2. Frequency Distribution of Employment Type by Type of Barangay among Adults

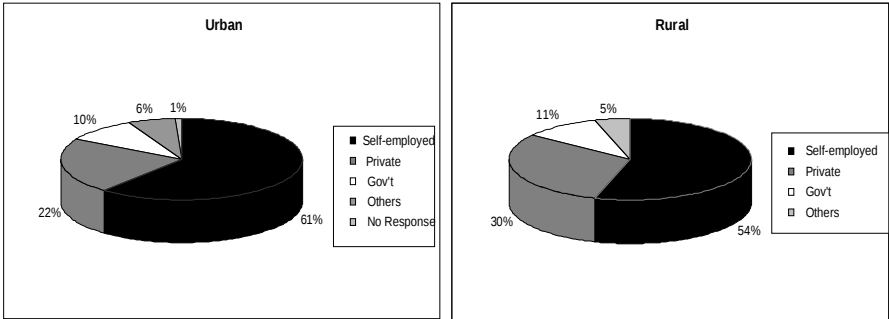
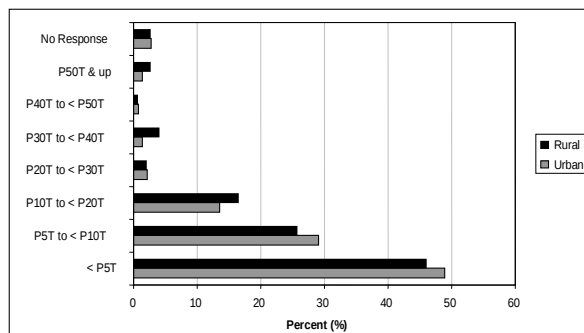
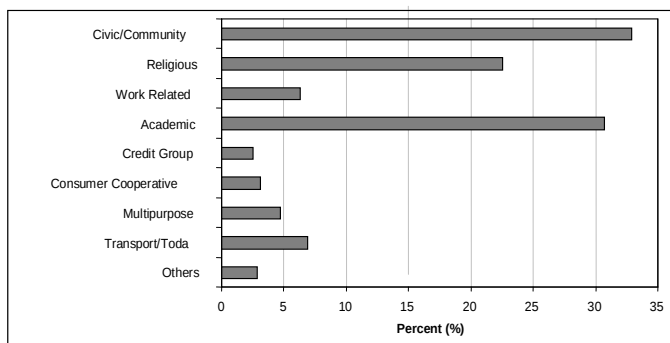


Figure 3. Frequency Distribution of Income by Type of Barangay among Adults



Organizations are particularly helpful to their members not only by providing assistance with respect to their declared mission and function, but also in disseminating news and information to its sphere of influence. Thus, with the avian flu information campaign in mind, knowing whether the respondents belong to a particular organization or organizations would be relevant. Most of the respondents are not affiliated with any organization (74% adults, 80% youths). On the other hand, Figure 4 shows that there are more organization memberships among adults than youths, both in the urban and the rural communities; and in addition, mostly are civic, academic, and religious in nature.

Figure 4. Percentage Membership among Different Organization Types



4.2 Characteristics of FGD respondents

The adult-urban respondents consist of six females and one male with ages 47 to 50 years old. Five are married, one is single, and the other one is a widow. All are Catholics of which six are high school graduates and one is a college graduate. Only

five adults are employed but all are members of an organization. However, for the adult-rural respondents, there are six females with ages 42 to 56 years old. Half are married and the other half are widows. There are four Catholics, one Christian, and one Baptist. Two of them are college graduates and the rest are high school and elementary graduates. Of the six, five are currently employed and all are members of organizations.

The youth-urban respondents are four females with ages 15 to 21 years old. All are single, three are Catholic and one is a Born Again Christian. Only one graduated from college and the rest are high school graduates. Lastly, the youth-rural respondents consist of three girls and two boys with ages 12 to 17 years old. All are single, high school students, and are members of an organization. Three of them are Catholic while the other two are Born Again Christians.

4.3 Practices in handling fowls and poultry

Respondents were asked in what ways (if there is any) they have had contact with poultry or fowls in the past six months. Their responses are summarized by type of barangay and by age classification in Figure 5. It is evident that eating chicken is the top answer, followed by preparing fowls for food. Raising poultry comes next in the rural area and among adults, which is then followed by raising pet birds. However in the urban area and among youths, raising pet birds comes on top of raising poultry. We shall focus on the practices of respondents regarding these top four answers.

Figure 5. Percentages on Ways of Contact with Fowls by Type of Barangay and by Age Class

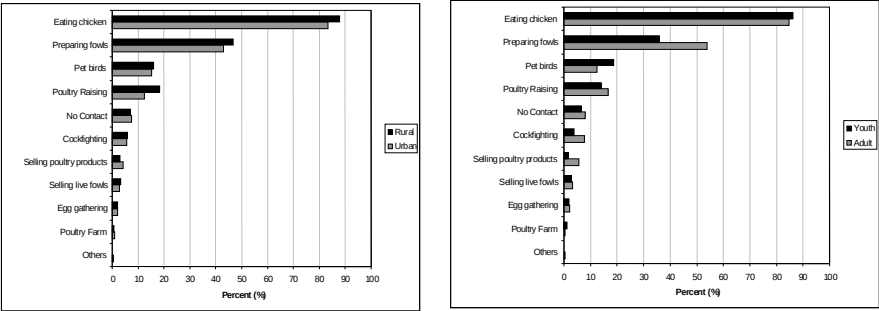
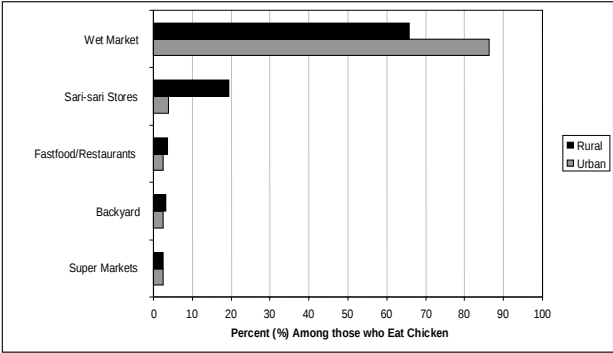


Figure 6 summarizes the top five responses to the question on where they usually get the chicken they eat. There is no doubt that majority buy chicken for food from wet markets over supermarkets, primarily because of the price and availability. The FGD supports this preference of wet markets to supermarkets for the same reason.

Figure 6. Top 5 Sources of Chickens Ate



One notable difference between the respondents in the urban and the rural area is that in the latter, there is quite a number who opt for sari-sari stores. Perhaps, a number of sari-sari stores in rural areas offer the convenience of selling chicken while in urban areas, chickens are primarily available only in markets. The FGD affirms the survey with respect to respondents buying chicken at sari-sari stores due to its ease and proximity.

Washing of hands has been widely accepted to be an effective way of preventing the spread of many diseases. Hence, the respondents were also asked how frequently they wash their hands. Mainly because of the hygienic culture of Filipinos, it is as expected in Figure 7 that majority of the respondents, both in rural and urban areas, always or often wash their hands when eating. There is however a very insignificant percentage reported not washing hands before eating.

For the second top answer, preparing fowls for food and sources of fowls prepared for food are presented in Figure 8, while the frequency of hand washing when preparing fowls for food is in Figure 9. Majority of those who prepare fowls for food get them from wet markets, and there is also a number in the rural area who opt for sari-sari stores as source. There is a higher percentage of respondents who wash their hands always in preparing food.

Another sanitary precaution to avoid certain diseases including bird flu is the use of gloves when handling poultry and other birds. The respondents were also asked whether they use gloves when preparing food. It is not surprising to note in Figure 10 that only a few do so. There are two possible reasons: first, Filipinos are not accustomed to wearing gloves when preparing food; and second, there is not a single case of bird flu yet in the Philippines. So Filipinos are still lenient in observing this precautionary measure. The FGD affirms that wearing gloves is not a usual practice when preparing food. One reason stated by a youth-rural respondent is that she finds the chicken clean.

Figure 7. Frequency of Washing Hands when Eating Chicken

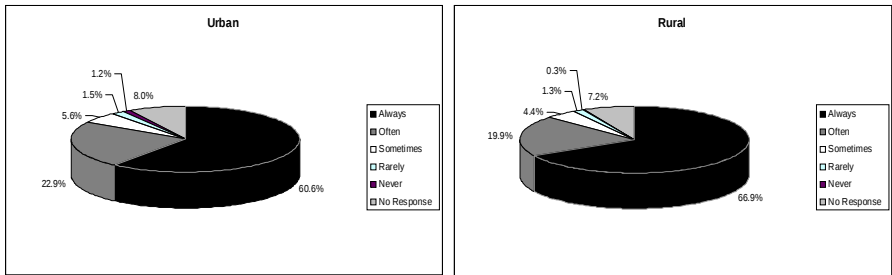


Figure 8. Top 5 Sources of Fowls Prepared for Food

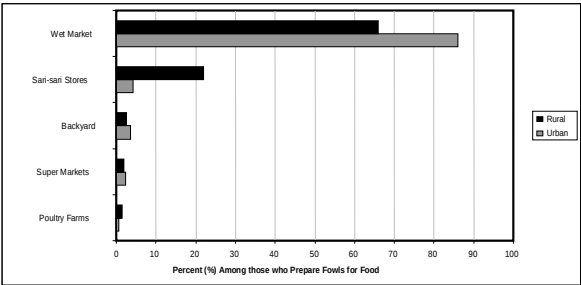


Figure 9. Frequency of Washing Hands when Preparing Fowls for Food

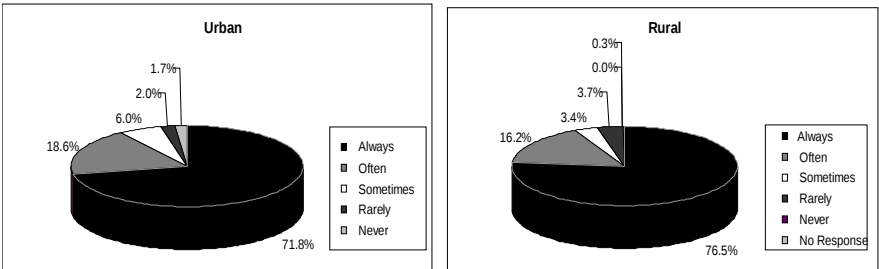
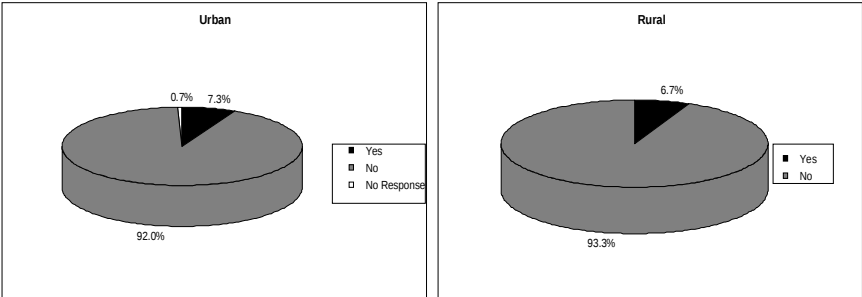


Figure 10. Frequency of Using Gloves when Preparing Fowls for Food



Meanwhile, among those who raise poultry in the urban area, top sources, in general, are wet markets, followed by backyard, and then relatives or friends (see Figure 11) . In the rural area, however, the top answer is friends and relatives, followed by backyard, and then wet market, with differences between percentage responses being quite small, though. When probed what they meant by “backyard,” majority said that they mean the offspring of their poultries – which they have had a long time ago, while some would reply that the poultries they raise went astray into their backyard. We can still observe the same practice of frequent hand washing among those who raise poultry in Figure 12, and reluctance in using gloves when handling poultries in Figure 13.

Figure 11. Top 5 Sources of Poultries Raised

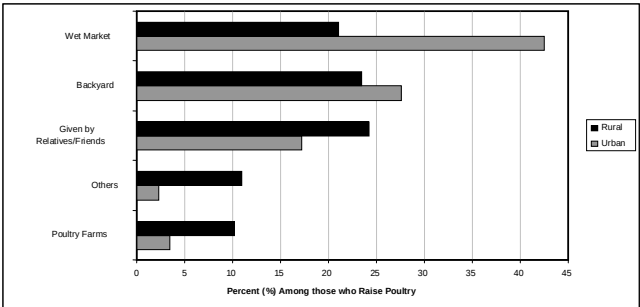


Figure 12. Frequency of Washing Hands when Handling Poultry Raised

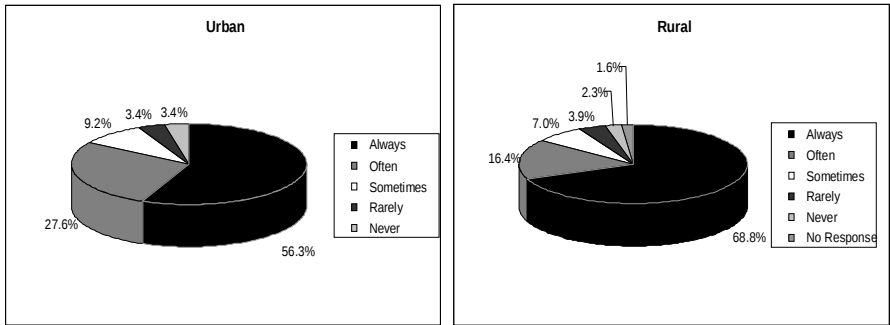
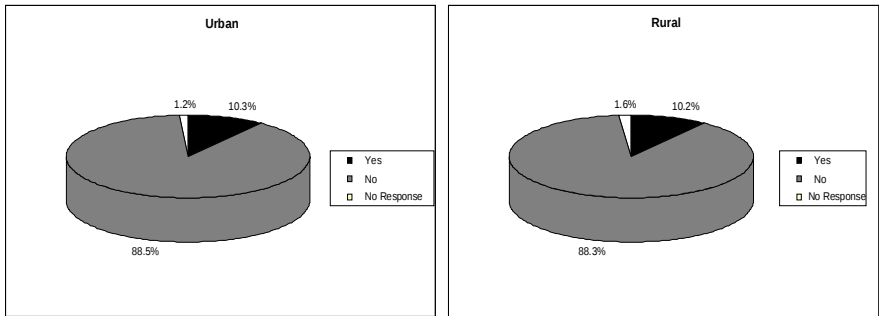


Figure 13. Frequency of Using Gloves when Handling Poultry Raised



Finally, for those who have pet birds, the urban and rural respondents somewhat have different responses on where they usually get or buy their pets (see Figure 14). Urban samples source primarily from wet markets, then from their backyard, or from pet shops. On the other hand, rural samples acquire their pet birds predominantly from relatives or friends, then from backyard, and wet market ranks third. They are normally expected to source out their pets from pet shops but that is not true in this case. Pet shops ranked fourth only in the rural community because of the lack of profusion or demand for pet shops in this area. As implied in Figure 14, many rural respondents acquire their pets from friends and relatives. As one might observe in the Philippines, pet shops are usually located in urban areas. Pet shops also impose higher prices.

Frequent hand washing is also prevalent among those who have pet birds, but they are disinclined to use gloves in handling their pet (see Figures 15 and 16). These are as well, consistent observations as with the practices of those who have contact with fowls in some other ways.

Figure 14. Top 5 Sources of Pet Birds

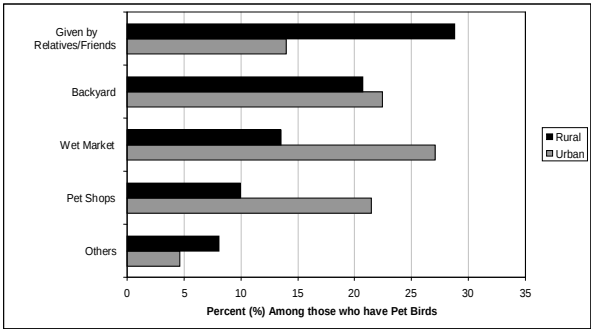


Figure 15. Frequency of Washing Hands when Handling Pet Birds

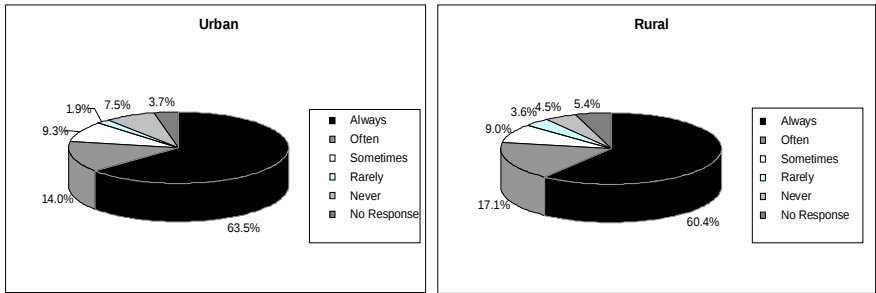
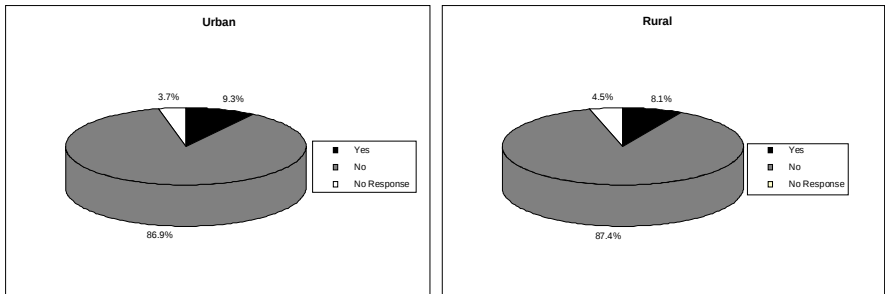


Figure 16. Frequency of Using Gloves when Handling Pet Birds



Aside from chicken, Filipinos are also consumers of poultry products and their derivatives. The most common, among all these, are eggs. If fresh from the poultry house, eggs are probably still stained with chicken feces or urine. Thus, in case of a bird flu outbreak, eggs can be a source of infection. The respondents were asked whether they wash the eggs before consuming or using them. In Table 1, most of the respondents practice washing eggs before consuming them. The proportion who washes eggs before using in the rural community is around 10 percent higher than that in urban communities. Adults behave similarly as the youths. From the FGDs, they usually wash the eggs with water if there are feces, dirt, stains, and feathers on its shell. However, some noted that if they find the shell clean, they do not wash it anymore especially if the egg is to be fried since egg shells will be removed anyway. On the other hand, if the egg is to be boiled, they have to wash it first since egg shell is included in the boiling process.

Table 1. Frequency Table for Washing Eggs by Type of Barangay and by Age Class

	Type of Barangay				Age Class				ALL	
	Urban		Rural		Adult		Youth		Count	%
	Count	%	Count	%	Count	%	Count	%		
Yes	381	59	444	68	401	62	424	65	825	64
No	253	39	195	30	235	36	213	33	448	34
No Response	14	2	12	2	9	1	17	3	26	2

Those raising fowls are the most vulnerable carriers in the event of an outbreak. The respondents were asked what type of fowls or birds they raise. The top 3 answers, shown in Figure 17, are chickens, doves, and pet birds (e.g., love birds, mynah, and parrots). Other answers include quail, turkey, and goose, reported by very few respondents. Chicken naturally ranked number one since this is perhaps, among the birds, the most common food for man. A higher percentage in the rural area raises chicken than in the urban. It can also be seen in the graph that more adults raise this bird than youths. Doves however, are more common in the urban area than in the rural. Since raising doves is more of a leisure than business, one can notice that youths are more inclined in raising them than adults. This is also true for pet birds. Rural people, meanwhile, are also more predisposed to pet birds than urban people.

Table 2 shows the duration the respondents have been taking care of these birds. More than half of those who are taking care of chickens have been doing so for more than a year. Of those who have doves, many have been engaged for more than a year also. This too goes for those who have pet birds. Barely a few started raising these fowls just recently.

Figure 17. Top 3 Fowls Raised

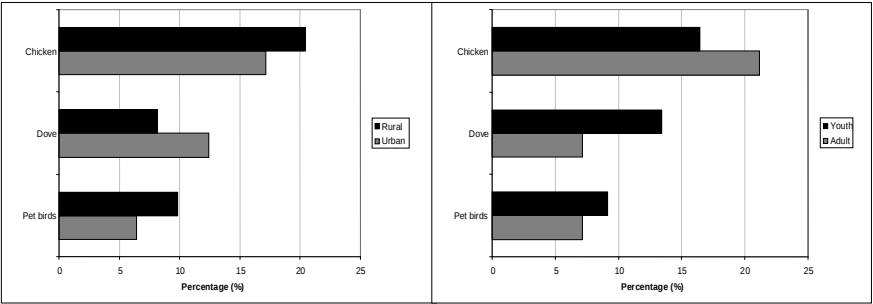


Table 2. Since When the Fowls were Raised

	Chicken		Dove		Pet Birds	
	Count	%	Count	%	Count	%
Less than a week	6	2	5	3	3	3
A week	5	2	8	6	5	4
Almost a month	11	4	11	7	5	4
A month	18	7	21	15	10	9
Almost a year	53	20	34	24	28	25
A year	20	8	14	10	14	2
More than a year	141	54	45	31	45	39
Others	9	3	5	3	-	0
No Response	-	0	1	0.7	4	4

Consider now the practices of the respondents in taking care of these three birds. Sound feeding practices are very important for those who have been taking care of or domesticating not only birds, but other animals as well. The health of their pets mostly depends on the quality of food that they give. The respondents were asked how frequent they give their pet birds the prescribed feeds. Most of the respondents who raise chicken, doves, and pet birds are providing prescribed feeds for their fowls daily. More respondents in the rural area (90%) practice the daily supply of feeds for chicken than in the urban area (83%). Adults (91%) also are more inclined to do this than youths (82%). Meanwhile for those who raise doves, the proportion of respondents who give daily prescribed feeds in the urban and rural area are practically equal. However, adults (90%) tend to practice this more than the youths (74%). The same pattern as those who raise doves is exhibited by those who have pet birds. The proportion of respondents who give daily prescribed feeds in the urban and rural area are almost the same, but a higher percentage of adults (82%) give daily prescribed feeds to their pet birds than youths (59%).

The respondents were also asked how frequent they provide the birds they raise with vitamins or food supplements like booster or grower. Their responses are quite different from the previous question. Many respondents (37%) give food supplements to chickens daily and to those who have pet birds, with 22 percent of the respondents practicing this. It is quite the opposite though, for those who raise doves, where more than half (51%) prefer not to give any vitamin or food supplement to their pet. Generally, rural people are more inclined to give vitamins and food supplements daily than urban people, and adults prefer also to practice this more than youths.

Feeding though, is not the only factor affecting the health of the fowls that people raise. Proper cages or housing structure for raising them in a sanitary way is also a must. Those who raise fowls therefore were asked where they keep their pets. For each of the three fowls, the top answer is “in the backyard,” followed by “in a separate coop.”

Interestingly, there are a few who keep chickens inside the house. Nonetheless, a higher percentage of those in urban (84%) keep their chickens in the backyard compared to those in the rural area (75%). A higher proportion of rural respondents (21%), however, keep their chicken in separate coops than urban respondents (9%). Also, a higher proportion of youths (84%) prefer to raise their chickens in the backyard compared to adults (75%), while a higher proportion of adults (18%) prefer to raise their chickens in separate coops compared to youths. These behaviors are also exhibited among those who raise doves, and among those who raise pet birds, except that in the latter, a higher percentage opt to keep their pet birds in the backyard instead in the rural area (70%) than in the urban area (58%).

When asked how frequent they clean the bird cages or houses of the fowls they raise, 52 percent of urban residents replied daily cleaning of cages while 48 percent for rural residents. Surprisingly, there are those who said that they never clean the cages/houses of the fowls they raise. There is a higher percentage of respondents who clean the birdcages or houses in the rural community compared to the urban community among those who raise dove and pet birds, but it is the other way around among those who raise chicken. Moreover, adults are more prompted to clean the cages daily than youths, as indicated by the consistently higher percentages, in each of the three kinds of fowls.

Another important factor in controlling the contagion effect of bird flu is the practices in handling dead fowls since the inflicted can easily die. Most of the respondents (61%), in general, have not experienced having their fowls dying. However, there are similar proportions of respondents who experienced death of their chickens, doves and pet birds. Meanwhile, there are higher percentage of respondents who have had fowls dying due to a disease in the rural area (40%) than in the urban (35%), and among the youths (43%) as compared to adults (31%). This is a result of the differences between the feeding and sanitation practices of adults and youths that was noted.

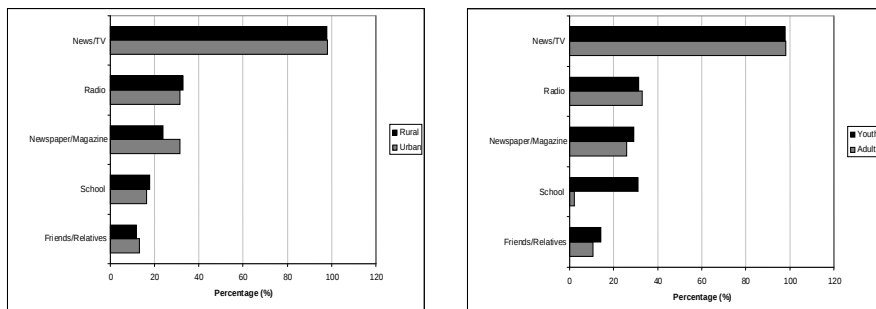
Respondents who have had some dead fowls due to the disease were then asked how they dealt with the dead bird. Majority buried the bodies of the dead fowls whether it is a chicken, a dove or a pet bird. The rest either threw them away or burned them. There are those who still perceive a dead chicken (6%) or a dead dove (2%) edible. Higher proportion of respondents are accustomed to burying in the urban area (77%) compared to the rural area (70%) for chickens and pet birds, but a lower percentage for doves. On the other hand, it seems that youths (80%) are inclined to burying dead fowls more than adults (69%).

4.4 Avian flu knowledge and awareness

The respondents were asked whether or not they, at the very least, heard about avian flu or bird flu. Greater majority responded positively. There is little difference in the percentage of those who have heard about bird flu between urban (90%) and rural (89%), but it seems that more youths (92%) have heard it compared with adults (87%).

Those who have heard about bird flu were then asked where they have heard about it. The top 5 responses were (as shown in Figure 18) news/TV, radio, newspapers/magazines, school, and relatives/friends. The FGD supports television as the primary source of information. They learned about the disease from news programs like *TV Patrol* and *24 Oras* of ABS-CBN and GMA networks, respectively.

Figure 18. Sources of Information about Avian Flu



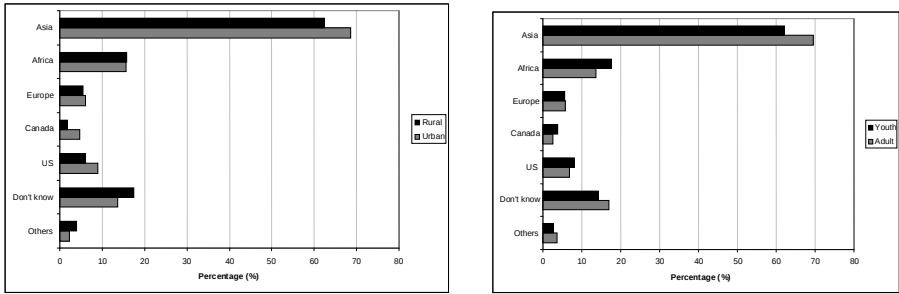
The urban and rural areas do not exhibit much difference with respect to their sources of information, though it seems that slightly more respondents sourced from newspapers or magazines in the urban area than in the rural. From the FGD, both urban and rural adults get additional information about avian flu from newspapers like *Tumbok* and *Philippine Star*. However, other respondents got their information from seminars given by DOH and WVDF. Youths and adults do not show large differences on the source of information.

The respondents were also requested to assess how much they know about bird flu. Majority (77%) reported that they are somewhat aware about the issue. Barely 4% believe that they are very familiar with bird flu, and there are still those who are not aware (19%). The level of awareness in the rural area and urban area do not differ much. More adults believe that they are very aware of the issue compared to youths, but ironically, a few more adults also are not aware of bird flu in contrast to the youths.

Regarding the length of time the respondents have been aware of bird flu, more than half of the respondents (52%) responded to be aware for more than a year already. This is consistent on the fact that bird flu has been reported in other parts of the world more than a year ago. Other respondents became aware of it for a year (28%), a month (17%), and a week (3%).

In trying to identify what particular aspects about bird flu the respondents do know, certain questions were asked and they were requested to answer them to the best of their knowledge. They were asked to identify what areas have been or is affected by bird flu. In Figure 19, a lot of them believe that bird flu has already infected Asia. There is a higher percentage of respondents in th rural area, however, do not have any idea on places already infected. A slightly higher percentage also of adults does not know what to answer in comparison to youths.

Figure 19. Areas Affected by Bird Flu according to the Respondents



When asked to identify the original carrier of bird flu virus, more than half (58%) answered wild birds, some believe that poultries (16%) are the carriers, a few think it is humans (7%) and mammals (8%), and a few do not have any idea. The respondents were then asked if they are aware of any migratory birds from other countries that visit our country, and if they know any law about birds. Majority of the respondents (67%) are not aware of any migratory bird that come to the Philippines and more than half (55%) are not aware of any law regarding fowls. The

FGD supports the results of the survey on the lack of knowledge of respondents about migratory birds and laws regarding fowls.

The respondents were asked how they think fowls get infected with bird flu. The top answer is “contacts with live fowls infected with bird flu” (49%), followed by “touching the feces/urine of infected fowls” (40%), and “contacting dead fowls infected with bird flu” ranks third (34%). Many also believe that contacts with dead fowls even without bird flu can still be a cause of infection (21%). Only the top answer in the survey is consistent to that cited by adult respondents in the FGD. Other reasons cited by the adults on how fowls get infected with bird flu are chemicals mixed in food, inventions to make the chickens healthy for export, polluted air, hot temperature, dirty food, water, environment, and weather. The youth respondents, on the other hand, say that birds get infected with avian flu due to food eaten, pollution, dirt they get from surroundings, dirty coops, no vitamin supplements, and improper taking care of birds.

More than half of the respondents believe that bird flu cannot be detected in birds. Perceptions between urban and rural communities are basically the same for this question, as well as between adults and youths. Those respondents who said that bird flu can be detected in birds were asked what symptoms are present when a bird is infected with bird flu. The most frequent response is “moves with difficulty” (47%), followed by “refuses to eat” (46%), then by “secretes nasal mucus” (45%). A handful have no idea. In the FGD, the respondents also reported the same symptoms present in birds infected with bird flu with the addition of “rashes,” and “feathers falling-off.”

The respondents were asked whether they believe if bird flu can infect humans. Majority of the respondents (83%) think that humans can possibly acquire the bird flu disease. When asked about their opinion on how humans can be infected with bird flu, more than 70 percent replied “eating infected poultry products” and 49 percent answered “contact with fowls infected with bird flu.” Some believe that “contact with other people infected with the disease” and “contact with dead fowls infected with bird flu” are possibilities. The FGD is consistent with the results of the survey.

The respondents were asked about how they perceive bird flu as a threat to themselves, their family, and the country as a whole. Most of the respondents (70%) believe that it is indeed a big threat. Certain hierarchy was observed with the highest percentage exhibited when they were asked with respect to the country, and then on second rank, with respect to their family, and with respect to self is last. This structure can also be observed in the urban and rural subgroups, as well as the adult and youth subgroups.

The respondents were also asked how they think humans can be protected from bird flu infection. The most frequent answer is “washing hands after contacting fowls” (44%). This is reflective of the practices in handling fowls discussed in the previous section, where most respondents are accustomed to frequent hand washing, see Table 3 for details.

The respondents were then asked if they have heard or read any antiviral drug to treat a person with regular flu and a drug to treat someone with bird flu. Though majority of the respondents (68%) are aware, it is rather surprising that 32 percent are still uninformed about any drug used to treat regular flu. This is more evident among youths (35%) than adults (28%). On the other hand, nearly 90 percent said that they have not heard any drug to treat bird flu yet, which is consistent even after zooming in to the different subgroups.

Table 3. How Humans can be Protected from Bird Flu according to the Respondents

	Type of Barangay				Age Class				ALL	
	Urban		Rural		Adult		Youth		Count	%
	Count	%	Count	%	Count	%	Count	%		
Washing hands after contacting fowls	217	42	228	46	219	47	226	41	445	44
Avoid fowls	148	29	143	29	151	33	140	26	291	29
Not using/consuming poultry products	150	29	137	27	141	30	146	27	287	28
Cooking poultry products well	134	26	147	29	138	30	143	26	281	28
Avoid dead fowls	127	25	130	26	109	23	148	27	257	25
Quarantine infected fowls/persons	104	20	132	26	124	27	112	21	236	23
Being aware and knowledgeable	0	0	5	1	3	0.6	2	0.4	5	0.5
Others	12	2	16	3	18	4	10	2	28	3
Don't Know	7	1	6	1	7	2	6	1	13	1

In lieu of launching an intensive information campaign, which is the fundamental reason why this survey was conducted, the respondents were asked to identify what particular aspects about avian flu they want to know more. In Table 4, we see that majority desire to be oriented on how to be protected from avian flu, to discern the symptoms of bird flu, or how will they be able to discern whether a person or fowl already has bird flu, and what to do in case they manifest symptoms of bird flu. Less than 50 percent want to know how human could be infected with bird flu,

consequences of bird flu, areas that have/had cases of bird flu, and on whether there are any cases of bird flu in the Philippines. There were few, however, who said that they do not need any additional information regarding bird flu.

There are few more items in the questionnaire that still deals with the knowledge of the respondents regarding avian flu, where they were asked to state their level of agreement or disagreement about a particular statement. The respondents are slightly inclined to agree that gloves can serve as protection from bird flu when handling fowls. Meanwhile, they are predisposed to disagree that eating poultry products is still safe even during a bird flu outbreak, as well as to that of infected fowls being safe to eat by cleaning and cooking them thoroughly. Majority agree that a bird flu outbreak can really disrupt and affect social and business activities. More than half also believe that the government has the capability to control and eradicate the disease in case of an outbreak in the Philippines.

Table 4. Information Desired

	Type of Barangay				Age Class				ALL	
	Urban		Rural		Adult		Youth		Count	%
	Count	%	Count	%	Count	%	Count	%		
How to get protected from bird flu	345	68	332	67	303	65	374	68	677	67
What are the symptoms of bird flu	299	59	304	61	279	60	324	59	603	60
What to do in case you happen to have symptoms of bird flu	260	51	260	52	255	55	265	49	520	51
How can human get infected with bird flu	233	46	259	52	229	49	263	48	492	49
What are the consequences of bird flu	206	40	210	42	176	38	240	44	416	41
Areas that have/had cases of bird flu	184	36	193	39	176	38	201	37	377	37
Are there any cases of bird flu in the Philippines	155	30	146	29	133	29	168	31	301	30
Do not need additional information	16	3	21	4	24	5	13	2	37	4

4.5 Avian flu attitude

The previous section has summarize the knowledge reported by the respondents pertaining to avian flu. This could serve as input in designing an efficient information campaign about the disease. It is not enough though, to present facts about avian flu

to people. In case of a bird flu outbreak, their attitudes will also be vital in the success of controlling the disease. This section is devoted to elicit information about the attitude of the respondents regarding avian flu. They were also asked to state the extent of their agreement or disagreement to certain statements.

The respondents are really concerned about the threat that bird flu poses for them and their family. Majority of the respondents would feel concerned when they have symptoms such as fever, cough, sore throat, colds, body aches, and headaches, even if there are still no reports of bird flu cases. In relation to this, they want to make sure that if a family member exhibits some of the symptoms of bird flu, this will be treated immediately by medical specialists. In fact, nearly all respondents stood on the agreement side. Moreover, majority of the respondents either strongly agree or agree that vaccine should be developed that should serve as protection against bird flu. The FGD also exhibits the same sentiments as that of the survey result that sick family members should consult a medical specialist to make sure that they will be properly taken cared of, and giving importance to the development of a vaccine to help prevent and control the disease.

In the event of a bird flu outbreak in the Philippines, the proportion of those who agree that they are prepared are as much as those who are not prepared. There are however, quite a few more youths that do believe they are prepared than those who do not. On the other hand, there are lesser adults who do believe that they are prepared than those who do not. The FGD respondents are also divided as to whether they are prepared and not prepared in case of a bird flue outbreak. They are more concerned in becoming prepared by knowing the symptoms of bird flu, precautionary measures, and possible solutions.

With regard to the capability of the government to control a bird flu outbreak in the country, more respondents agree that our government can do so, though, about a fourth is unsure or neutral. The FGD supports the survey results for the adult-urban respondents. They believe that the government has the responsibility to respond to such problems and that they have confidence in the past performance of health authorities. However, the adult-rural, youth-urban, and youth-rural respondents have opposite sentiments to those of the adult-urban respondents. They believe that the government has no capacity to control or stop an outbreak of avian flu if that happens in the country. The reasons given are no/little health funds, corrupt government officials, no information dissemination, no medicines, does not prioritize important issues and concerns, not enough modern technology, and no scientific know-how.

In case of a bird flu outbreak, majority agree to hoard food, medicines, and other supplies. In the FGD, the respondents also agree to hoard food, medicines, and other supplies but the adult-urban respondents expressed concern about hoarding medicines since they believe that medicines are meant to be shared to others. In addition, they expressed disagreement to panic-buying to avoid chaos.

When there have been reports of bird flu cases in the Philippines, on the other hand, majority disagree to continue eating poultry products. This is confirmed in the FGD since the respondents' are fearful of being infected. They will only again eat poultry products if there is already an advisory from the government that poultry is safe to consume. However, one youth-rural participant says that he will still continue to eat poultry products since they get their chickens only from their place.

More than half agree, more than a fourth still stands to disagree, and 14% could not decide to kill all their pet fowls or chickens if some of the chickens or birds they raise were found to have bird flu. Moreover, a larger proportion tends to disagree among youths than among adults. This is validated in the FGD wherein the adult respondents agree to kill all their pet fowls or chickens if needed in case some are found to have bird flu. The reason they gave is to prevent further widespread infection. However, if the pet fowls or chickens are their source of income, they suggest doing the following: just kill only those who are infected and sell the healthy ones or have a veterinary doctor check the health condition of the birds. For the youth respondents, they disagree to kill all the birds since they pity them and treat them as pets. They would rather separate the infected ones from the non-infected and let the infected ones either die naturally or kill and burn them if suspected with bird flu.

Majority of the respondents are willing to adhere to the advice of health officials in containing the disease if they would have the bird flu and required to stay at home or away from other people for two to three weeks. Moreover, most of the respondents are cautious not to travel to infected areas. In the FGD, some respondents do not share the same sentiment in the willingness to follow the advice of health officials, if those infected are family members. However, they will comply if necessary. Pertaining to avoiding traveling to places in the world with cases of bird flu, the FGD is consistent with the survey results.

Finally, 80 percent of the respondents indicated willingness to attend seminars regarding avian flu.

5. Summary, Conclusions, and Recommendations

The most common way of respondents having contact with birds is through the preparation and consumption of fowls for food. Generally, but most especially among those in the urban area, they purchase or obtain these fowls from wet markets. There are quite a number of rural respondents, however, who consider sari-sari stores as an alternative. In line with the hygienic nature of Filipinos, most respondents have been practicing frequent hand washing when in contact with birds. They, however, are not accustomed to wearing gloves while handling fowls.

Many respondents are also engaged in raising poultries and pet birds. In the urban area, these fowls are more commonly acquired from wet markets, while in the rural area, the most common mode of acquisition is through the generous bestowment

of their friends or relatives. It was also observed that chickens, doves, and pet birds are the most common types of birds raised by the respondents. Many of them keep these fowls within the perimeter of their backyard or in separate coops, but interestingly, there are those who raise their chickens inside the house. In addition, though majority practice cleaning the bird houses or cages daily to weekly, some reported that they never clean the houses of the fowls they raise. Meanwhile, the respondents are highly conscious in giving them prescribed feeds but are less inclined to provide vitamins. The data also showed that some have experienced having their fowls die due to a disease. More often than not, they bury the corpses but there are a few who still consume them for food. These are the practices of the respondents.

Almost all of the respondents have already heard about the disease but only a small percentage thinks that they know the issue very well. Since they think that avian flu is a big threat not only to themselves but to their family and to the country as well, many expressed the desire to know how to be protected, discern the symptoms, and what to do in case a person happen to have these symptoms.

Attitudes about avian flu were also elicited from the respondents. It was found out that they are very concerned about an outbreak of the disease here in the country. Though many believe the capacity of the government to contain and control the disease, the proportion of those who think that they are prepared for an outbreak and that of those who think otherwise are nearly equal. Nonetheless, it is well enough that majority are willing to heed the advice and policies that shall be imposed by health officials in controlling the spread of the disease. Moreover, should seminars and information campaigns be conducted, almost all of them are willing to participate. The common sources of information are television, radio, and newspaper. Likewise, many youths have obtained information from school.

Hence, based on the knowledge, attitudes, and practices of respondents in relation to avian influenza, there should be proper, efficient, and consistent dissemination of information about bird flu. We now give a list of recommendations on the kind of information campaign about avian influenza to prevent the outbreak in the Philippines:

1. People who have frequent contact with birds should be targeted primarily. Enhancement of knowledge and change in behavior should be of utmost concern.
2. Community leaders especially in the barangay level should be knowledgeable about the avian flu disease and disseminate information thru forums or seminars to their constituents.
3. Proper information materials regarding avian flu should be developed for the different target groups like children (thru cartoon and games), teenagers (comics and stories), farmers (posters), professionals (posters and brochures), and others (billboards).

4. Television networks, newspapers, radios, schools, organizations are good venues to educate the people and diffuse information.
5. It will also be beneficial if a website devoted to avian flu be provided since many are acquiring and accessing information thru the internet.
6. To increase the effectivity of these efforts, there should be constancy in providing information. More emphasis should be given on topics covering ways to get protected from the disease, symptoms of bird flu and actions to be done in case of manifestations of these symptoms, and means of infection.
7. Experts on avian flu should be involved in these campaigns to increase credibility.

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