Diagnostic Assessment of Morbidity Statistics

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ABSTRACT

Good health has long been regarded as the most valuable goal for people to achieve. In recent years, the concept of health has extended beyond the notion of not being sick. The levels of morbidity may be estimated relatively easily, where health services are accessible, via medical records. Currently, the principal and most reliable source for establishing and monitoring public health policies is information derived from morbidity statistics.

The study was conducted to assess the top causes of morbidity of the City of Malaybalay in order to measure the extent of the communities' health; and to identify the patterns of occurrence of illness to offer a valuable source of information for use in planning health services based from the data gathered.

The top five causes of morbidity of the City included the following diseases: (1) Intestinal Infectious Disease; (2) Diseases of Esophagus, Stomach and Duodenum; (3) Influenza and Pneumonia; (4) Diseases of the Urinary System; and (5) Chronic Lower Respiratory Diseases. Regardless of the gender, mostly the patients younger than 19 years old are greatly affected with these diseases.

KEYWORDS: *morbidity, health, disease, assessment, community*

INTRODUCTION

Good health has long been regarded as the most valuable goal for people to achieve. In recent years, the concept of health has extended beyond the notion of not being sick. It has come to mean maintaining a good appearance, keeping fit, avoiding obesity and having regular medical check-ups. But good health is not only valued as a right, it is also crucial to economic survival. Illness and death are facts of life with many social, psychological and biological implications. While life expectancy has improved in most countries over the past years, the level remains low in developing countries relative to developed countries. Morbidity statistics measure the extent of the communities' health and provision of health facilities. Effective evaluation of public health is reinforced by numerous objectives. These could help in the investigation of the patterns of occurrence of illness and provide a valuable source of information for use in planning health services.

The levels of morbidity may be estimated relatively easily, where health services are accessible, via medical records. Currently, the principal and most reliable source for establishing and monitoring public health policies is information derived from morbidity statistics. The demand for statistical data on diagnosis-based morbidity is increasing; however, the capability to respond to this increasing demand is constrained by limited data availability, quality, and use. It is

therefore important to collect morbidity statistics in order to have these indicators thoroughly implemented both in terms of definition and data.

Several considerations make community health assessments crucial now. Tough economic times force communities to make the best health improvement choices and community health assessments can help. Public health agencies have a long history with health assessments. The Future of Public Health identified assessment as a core public health function and recommended that "every public health agency regularly and systematically collect, assemble, analyze, and communicate information on the health of the community, including statistics on health status, community health needs, and epidemiologic and other studies of health problems."Thus, local health departments were identified as having primary responsibility for community health assessment, with assistance in data gathering and information exchange from state and federal governments (Institute of Medicine, 1998).

The emergence of the National Health Insurance Scheme - PhilHealth, may be a solution in sight. It aims to combat diseases that endanger thousands of children every year and to reduce out-of-pocket healthcare costs for catastrophic illnesses. Echavez and Bagaporo (2005) commended Bukidnon with its Provincial Indigency Health Program. It is a local health insurance program that enables the people to have unlimited access to out-patient services, like the free hospitalization in Bukidnon Provincial Health clinics and hospitals, from basic diagnostic tests to medicines

As noticed, very minimal research has been done related to morbidity statistics in the locality. There is a need to assess the top causes of morbidity of the City of Malaybalay in order to measure the extent of the communities' health and to identify the patterns of occurrence of illness to offer a valuable source of information for use in planning health services based from the data gathered from one of the major health service provider of the City.

STUDY OBJECTIVES

The study was conducted to (1) assess the top causes of morbidity of the City of Malaybalay in order to measure the extent of the communities' health; and (2) to identify the occurrence of illness to offer a valuable source of information for use in planning health services based from the data gathered from one of the major health service provider of the City.

REVIEW OF LITERATURE

Malaybalay is a first income class component city and the capital and administrative center of the province of Bukidnon. The City is mainly an agricultural area, and its products include rice, corn, sugarcane, vegetables, legumes, root crops and commercial crops such as rubber, coffee, banana and pineapple. During the past years, corn used to be the pre-dominant crop in the city. But as the corn areas gave way to sugarcane, agri-farms (poultry, hog), and residential areas, sugarcane and rice came out now as the predominant crops in terms of production volume. These products are usually sold in the local market, or in nearby municipalities of the province.

With the hope that the city will have a healthy populace, the city has a total of 45 Barangay Health Stations, 12 of which are SentrongSiglaand Nutrition Posts located in different barangays

in order to cater basic health and nutrition services in the area. The72 Barangay Nutrition Scholars and BHWs serve the household populations specifically the pre-schooler ages 0-71 months.

As to medical institutions, there are four private hospitals and one public hospital (Bukidnon Provincial Medical Center (BPMC) in the City with 282 combined numbers of beds. BPMC help cater other patients from neighboring municipalities. There are also 13 medical clinics and 12 dental clinics. However, the establishment of health centers in almost every barangay with assigned health workers (BHWs – 465); midwives. Nutrition scholars, and trained hilots or Trained Birth Attendants (97) provide simple health services to the barangay residents (Citizens Charter).

Healthy people are a prerequisite to national development and economic growth. World Health Organization (WHO) Commission on Macroeconomics and Health (2002) explicitly stated that wealth undoubtedly leads to health, but health should also be seen as a form of human capital and therefore an input into the growth process, as well as an output. Countries with educated, healthy populations are in a better position to prosper, especially in a favorable policy environment. This shows that health is inextricably linked with development - a failing economy cannot provide adequate healthcare, and a sick population is unable to work productively and cannot boost the economy.

Analysts of the health society characterize and value health in a holistic sense, as a balance of physical, psychological, and community well-being. This view, consistent with the WHO definition of health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" is remarkably consistent across age, gender, nationality and culture. Furthermore, the Council for Health and Development (2003) sees health as a social, economic, and political issue and above all a fundamental human right.

The United States Institute of Medicine (2010), reported that non-communicable diseases are epidemic in urban locations of developing countries and are rapidly increasing in rural areas as well. There are within-country variations also and the report presents data on significant differences in regions and locations within countries and in many large nations such as the United States, Russia and China. The international community has recently focused attention on the challenges to development posed by morbidity and mortality due to the non-communicable diseases as well, in part through the 2011 Political Declaration on the Prevention and Control of Non-communicable Diseases.

The international community has intensified its focus on global disparities in health and survival in recent years. The roles of selected infectious causes of death, such as HIV/AIDS, malaria and tuberculosis, in impeding progress in survival in many of the world's less developed regions has received unprecedented attention, particularly through the Millennium Development Goals framework. Consequently, declining death rates due to these causes have ensued. More recently, the international community has highlighted the role of increasing incidence of noncommunicable diseases as well in further exacerbating the survival disadvantages experienced in less developed regions (Geneau and others, 2010).

The Political Declaration of the High-Level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases (WHO, 2003) adopted in September 2011 identified

prevention as the cornerstone of the global response to noncommunicable diseases and advocated multi-sectoral action to reduce morbidity and mortality due to noncommunicable diseases in both developed and developing regions.

Public Health Nursing in the Philippines (2007) reported that the Philippines has experienced considerable improvements in its health status for the past 50 years, as illustrated in the recent health status statistics from FHSIS (2007) showing infant mortality has dropped by two thirds, the prevalence of communicable diseases has fallen, and life expectancy has increased to over 70 years. However, even with better health outcomes in the management of many important diseases, the rate of decline is low; thus the country still lags behind its close neighbors in Southeast Asian region.

Regulatory reforms were implemented in the pharmaceutical sector in the late 1980s. An essential drugs list was established, a Generics Act promoted and required greater use of generic medicines – 55-60% of the public now buy generics – and capacities for standards development, xxii licensing, regulation and enforcement were strengthened at the Federal Drug Authority. In 2009, the DOH set maximum retail prices for selected drugs and medicines for leading causes of morbidity and mortality.

Universal immunization of children under age 1 against vaccine-preventable diseases is a cost-effective means of reducing infant and child morbidity and mortality. Following the success of the smallpox eradication program, the World Health Organization (WHO) launched the Expanded Program on Immunization (EPI) in 1974. Six vaccine-preventable diseases were initially included in the EPI: tuberculosis, poliomyelitis, diphtheria, tetanus, pertussis and measles. With the development of new vaccines and heightened efforts to eradicate childhood illnesses, countries have also increased their immunization agenda over the years (WHO, 2014).

However, during the assessment of the Philippines health system against a set of internationally recognized criteria, it suggests that, despite important progress in improving health status, successive waves of reform – from primary health care to decentralization to the more recent health sector reform agenda – have not succeeded in adequately addressing the persistent problem of inequity (NSCB, 2010).

Inequity in health status and access to services is the single most important health problem in the Philippines. Social, economic, and geographic barriers result in inequity in access to services and explain the inequity in health outcomes. Poor people in greatest need for health care, namely, pregnant women, newborns, infants, and children, are underserved (NSCB, 2010).

Based on the 2008 NDHS, 66.0% of women in the lowest quintile in the country received iron tablets or syrup, whereas 91.5% of women from the top quintile obtained this vital supplement. While 83.0% of children age 12-23 months from top quintile homes received the EPI vaccines (BCG, measles and three doses each of DPT and polio vaccine) in 2003, only 55.5% of those from low quintile families did so. For maternal health, the most striking comparison is regarding place of delivery, with 83.9% of highest quintile women delivering in health facilities compared to just 13.0% of those in the lowest wealth index quintile. During deliveries, 94.4% of highest quintile women were attended by a doctor, nurse or midwife, compared to only 25.7% of lowest quintile women.

Communicable diseases continue to be major causes of morbidity and mortality in the Philippines. Infectious diseases such as tuberculosis and pneumonia are leading causes of death. Malaria and leprosy remain a problem in a number of regions of the country and the prevalence of non-communicable diseases, such as diseases of the heart, diabetes mellitus and cancers. The National Nutrition and Health Survey in 2003-2004 revealed the prevalence rates of risk factors for cardiovascular diseases, such as coronary artery disease, stroke and peripheral arterial disease. Of the 4753 adults who participated in the nationwide study, 60.5% were physically inactive, and 54.8% of women were obese. Among males, 56.3% have a history of smoking. Alcohol intake among adults had a prevalence of 46%. These are only a few of the risk factors that contribute to the rising incidence of non-communicable diseases in the country.

The rise in non-communicable diseases along with the existing prevalence of infectious diseases indicates the Philippines is in an epidemiologic transition characterized by a double burden of disease. This disease pattern indicates that even as degenerative diseases and other lifestyle-related illnesses are increasing, communicable diseases are still widely prevalent.

Acute respiratory tract infections, which include pneumonia, influenza, and respiratory syncytial virus (RSV), are the leading cause of illness and death among children under five, particularly in developing countries. ARI is caused by bacteria and viruses and may result from malnutrition, air pollution, tobacco use, and overcrowding (World Lung Foundation, 2010). Pneumonia is the most serious acute respiratory tract infection. About 1.4 million children under age five die of pneumonia annually; this represents 18% of yearly under-five deaths worldwide (UNICEF, 2013). Pneumonia is characterized by cough with difficult or rapid breathing and chest in-drawing and can be treated with antibiotics. Early diagnosis and treatment with antibiotics can prevent deaths caused by ARI, particularly pneumonia.

Accurate diagnostic tests have a key role in patient management and the control of most infectious diseases. Unfortunately, in many developing countries, clinical care is often critically compromised by the lack of regulatory controls on the quality of these tests. The information available on the performance of a diagnostic test can be biased or flawed because of failings in the design of the studies which assessed the performance characteristics of the test.(Peeling, et. al 2006).

The lack of access to good quality diagnostic tests for infectious diseases contributes to the enormous burden of ill health in the developing world, where infectious diseases are the major causes of death and account for more than half of all deaths in children (WHO, 2004). Each year, more than 2 million people die of malaria, approximately 4 million of acute respiratory infections and almost 3 million of enteric infections. HIV and tuberculosis together are estimated to kill some 5.8 million people each year (WHO, 2003). More than 95% of these deaths are in developing countries. Early diagnosis and treatment not only reduces the risk of the patient developing long-term complications but for diseases such as tuberculosis, sexually transmitted infections (STIs) and HIV, prompt treatment   also reduces further transmission of the disease to other members of the community.

METHODS AND DESIGN

This study is a descriptive research. According to Burns and Grove (2003), descriptive research is designed to provide a picture of a situation as it naturally happens. Its value is based on the premise that problems can be solved and practices improved through observation, analysis, and description. The current research studies the top 5 causes of morbidity of Malaybalay City based from the data gathered from one of the major health service provider of the City. Also, the demographics of the data were also collected with the following indicators: age and gender. Based from the collected data, the researcher employs applications of scientific method by critically analyzing and interpreting data, and by arriving at generalization and conclusion.

RESULTS AND DISCUSSION

Figure 1 illustrates the top 5 causes of morbidity with age and gender distribution of patients from one of the major health service provider of the City. Accordingly, intestinal infectious diseases is the number one cause of morbidity of the Malaybalay City. These diseases include cholera, amoebiasis and the like. Results further show that the diseases of esophagus, stomach and duodenum is the major cause of morbidity of patients under 1 year old. Moreover, Figure 1 shows intestinal infectious disease is the number one cause of morbidity for females and diseases of esophagus, stomach and duodenum for male.

Figure 1. Top five (5) causes of morbidity with age and gender distribution of patients from Malaybalay Polymedic General Hospital

Cause of Morbidity/Illness/Injury	Age Distribution of Patients																																	Sub total		Total
	Under 1		1-4		5-9		10-14		15-19		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70 & over				
Spell out. Do not abbreviate.	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1. Intestinal infectious diseases	173	122	354	228	151	98	75	84	55	72	63	49	68	39	45	42	29	31	31	28	26	28	23	23	19	24	13	12	9	14	18	24	1,152	918	2,070
2. Diseases of esophagus, stomach and duodenum	1,515	10	56	36	48	38	32	32	22	27	19	14	19	18	11	14	15	15	11	8	10	13	11	7	9	10	7	5	3	9	6	8	1,794	264	2,058
3. Influenza and pneumonia	146	116	265	237	74	64	18	16	23	14	10	6	19	15	17	18	19	21	13	18	22	10	22	33	26	25	36	38	30	33	102	124	842	788	1,630
4. Other diseases of the urinary system	38	34	86	126	69	75	37	38	23	44	14	20	14	40	14	31	19	16	11	8	10	13	11	7	9	10	7	5	3	9	6	8	371	484	855
5. Chronic lower respiratory diseases	68	45	139	104	60	40	27	22	6	12	12	10	8	11	15	17	9	13	7	11	5	14	5	11	2	4	4	4	3	6	4	20	374	344	718

Intestinal Infectious Diseases

Intestinal infectious diseases or gastroenteritis is the number one cause of morbidity of Malaybalay City. Figure 1 shows that the pattern of the occurrence of the disease decreases as the age increases. Mainly it affects the ages below 19 years and most cases involve the male patients. Viruses, bacteria, parasites, or other pathogens can cause infections in the stomach and

small and large intestines, which often lead to gastroenteritis. Most cases reported accordingly is because they eat food or drink water that has been contaminated with disease-causing organisms or toxins which is called food poisoning or foodborne illness. Food poisoning usually affects the stomach and/or the intestines. Occasionally, however, the organism or toxin behind the illness can travel through the bloodstream and cause various symptoms in other parts of the body, such as the liver.

Intestinal infections can be spread in many ways. Some people become infected by eating contaminated shellfish, raw or undercooked meat, or unpasteurized dairy products, or from drinking or swimming in contaminated water. Others get sick after touching a surface such as a kitchen counter or bowel movement when changing a diaper or doing laundry contaminated with an infectious organism. If they forget to wash their hands, they can carry the organism to their mouths on their hands or on food that they eat. Outbreaks of intestinal infections occur when many people eat or drink the same contaminated food or water.

Intestinal infections are very common, particularly in developing parts of the world. The World Health Organization (WHO) estimates that about 2 million children worldwide die each year from diseases that cause diarrhea. Children, the elderly, and people who have weak immune systems are most likely to contract intestinal infections (CDC, 2007).

Early reporting of cases of the infectious diseases to the local Medical Officer should be ensured so that necessary controls to restrict the spread of the disease can be put in place as rapidly as possible. As soon as the medical practitioner becomes aware of the situation of the patient on whom they are attending. Identification of the carrier of an infectious disease is required in order to transmit a written or electronic notification to a Medical Officer of Health. This is to ensure that any unusual clusters and outbreaks of any infectious pathogen or disease and changing patterns of any illness be notified to a Medical Officer of Health.

Acute infectious intestinal disease (IID) or gastroenteritis continues to produce a considerable load on the health system, and on the wider social system, and reducing the incidence of these illnesses provides the possibility for significant reduction in disease burden.

Diseases of Esophagus, Stomach and Duodenum

The second top cause of morbidity is the diseases of esophagus, stomach and duodenum in Malaybalay City. Figure 2 shows that alarmingly 74% of the affected age is under 1 year old, however, it is decreasing as the age increases. Further, 87% of the affected gender is the male group.

In the daily practice of pediatrician, it is often faced with children who have chronic diseases of the digestive system. Prevalence of gastrointestinal diseases is from 0 to 14 years. Diseases of the stomach and duodenum among are the most common diseases the digestive system in children. Timely diagnosis and treatment of these diseases significantly improves the quality of life of sick children.
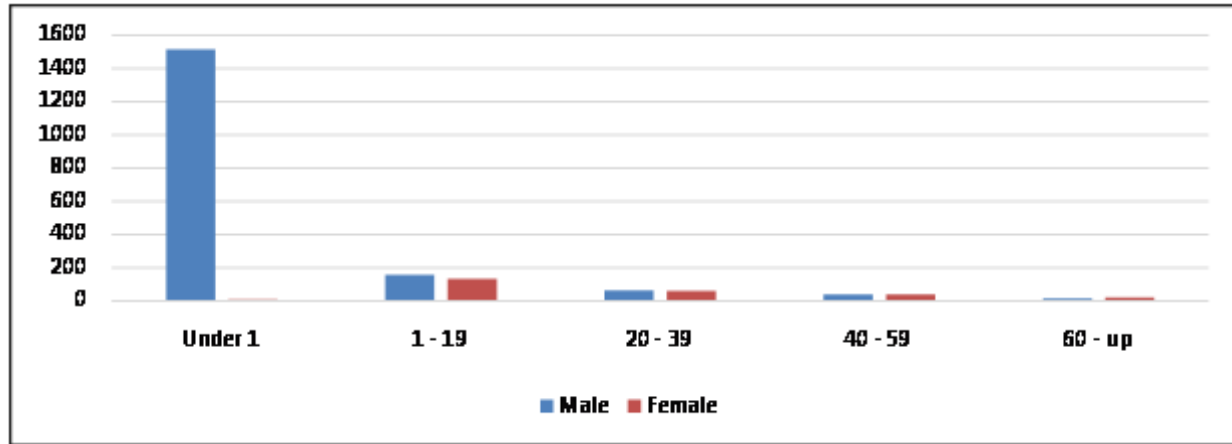
Figure 2. Diseases of esophagus, stomach and duodenum age gender distribution of patients

The Provincial Health Office annual report (2012) states that infant mortality rate of the province stood at 4.96 in 2012 (PHO). This means that an average of about 5 infants (age under 1 year) deaths occur for every 100,000 live births. Further, the report shows that gastritis/hyperacidity was included on the top 10 causes of morbidity in Bukidnon (PHC, 2012).

Gastric problems are the most common problems experienced by everyone at some time or the other that some may be a minor character while others may involve a severe pain which require treatment. The term gastric pain is usually used to describe any kind of discomfort in the stomach or other organs in the upper abdomen which starts below the rib cage and extends up to the navel.

The organs situated in the upper abdomen include the esophagus, stomach, liver, pancreas and gall bladder and any discomfort associated with any of these organs can create gastric pain. In both adults and children, gastric pain may be accompanied by stomach bloating, heartburn and at times headaches and commonly occurred at some stage in pregnancy due to the pressure applied by the growing uterus and against the digestive organs. It causes the stomach and other organs to be pushed up against the diaphragm resulting in gastric reflux and ache.

Gastric problem has become a chronic faced by maximum of people all over the globe due to indigestion as a result even a very healthy person ends up with irritation and improper bowel movement. Those with highly nervous and emotional temperament and those involved in high-stress jobs must be persuaded to adopt entire lifestyle modification measures if ulcers build up, they ought to be diagnosed soon and treated to prevent further complications like perforations duly going for long term therapy if needed.

Esophagitis caused by reflux, often manageable but proper treatment is needed to prevent relapses. Ulcers due to acidity caused by infection or inflammation are generally treatable with medications, diet or behavioral changes and in some cases, surgery. Modern medical advances have enhanced the understanding of ulcer formation among the people owing to invention and implementation of advanced and more scientific and precise treatment options.
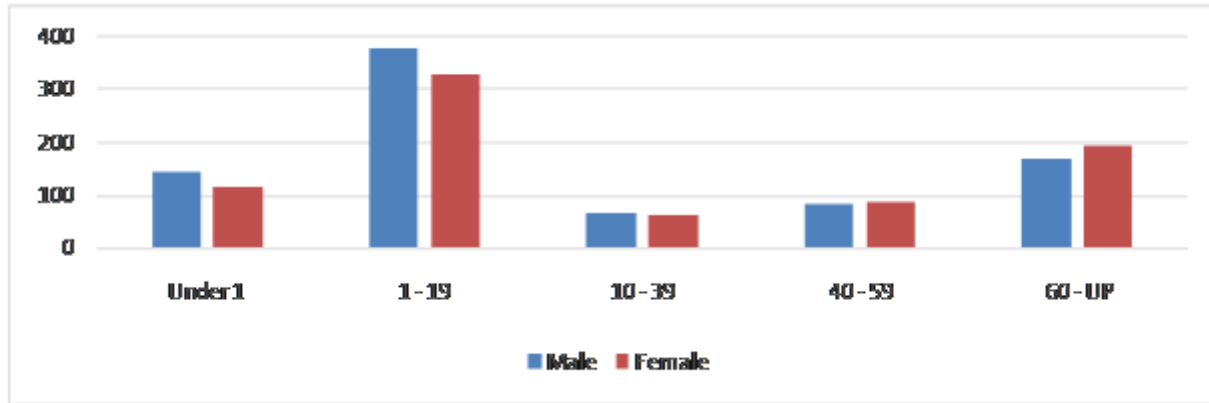
Influenza and Pneumonia

Figure 3. Influenza and pneumonia age and gender distribution of patients

Influenza and pneumonia is the third main cause of morbidity in Malaybalay City. Figure 3 shows the distribution of the disease according to age and gender. It can be observed that individuals at greatest risk for being hospitalized with influenza and pneumonia were infants younger than 19 years and adults 60 years of age or older regardless of the gender. Further, pneumonia is the second top cause of morbidity in the Province of Bukidnon. A record of 14,029 cases has been reported by the Provincial Health Office on its 2012 annual report.

The top three leading causes of infant mortality were Pneumonia (3,146; 14.3%); Bacterial sepsis of newborn (2,731; 12.4%); and Respiratory distress of newborn (2,347; 10.7%). The listed top ten leading causes of infant mortality in 2013 were the same with what was recorded in 2012 which only differ in ranks.

There is no easy way to estimate the number of individuals who contract influenza or pneumonia. Neither illness is a reportable disease nor may sick individuals not seek professional medical treatment. However, the impact of these diseases can be measured by examining hospitalization and mortality rates of individuals with a primary diagnosis of either influenza or pneumonia. This method allows for comparison between geographic areas and over time, but only provides information on the more severe cases in the community.

Infants are the most vulnerable to different types of diseases in the Philippines. Health statistics suggests that Filipino children are predominantly affected with infectious diseases and nutritional problems. Because of different circumstances, these diseases should be given priority by policy makers and health program planners.

The city has partially addressed this problem by providing free pneumonia and influenza vaccine to about 900 senior citizens. It is also considering expanding the program to other senior citizens if financial capability will allow. Further, a negotiation with the DOH to provide with the vaccines at half the price is on the process. Also, in the pursuit of wellness of the city government employees as well as the people it has continued to implement the HATAW program which is on its 11th year as well as the recently implemented "EhersisyongPangkalahatan" program which is done every Friday at the City Covered Court (State of the Local Government Report, 2012).

In 2013, WHO and UNICEF launched the integrated Global action plan for pneumonia and diarrhea (GAPPD). The aim is to accelerate pneumonia control with a combination of interventions to protect, prevent and treat pneumonia in children with actions to protect children from pneumonia include promoting exclusive breastfeeding and adequate complementary feeding. Also, prevent pneumonia with vaccinations, hand washing with soap, reducing household air pollution, HIV prevention and cotrimoxazole prophylaxis for HIV-infected and exposed children. And lastly, treat pneumonia which is focused on making sure that every sick child has access to the right kind of care -- either from a community-based health worker or in a health facility if the disease is severe -- and can get the antibiotics and oxygen they need to get well.

Diseases of the Urinary System

Another cause of morbidity in the City of Malaybalay is the diseases of the urinary system. Figure 4 shows that infants under 1 are the most affected, thus the number of cases decreases as the age increases. It can also be observed that the females are the most susceptible to the disease.

A urinary tract infection (UTI) is a bacterial infection that affects any part of the urinary tract. It is one of the most common bacterial infections among children. However, the epidemiology of UTI is confounded by the variability and non-specificity of signs and symptoms of infection in infants and young children (Alinea, 2002). The incidence of UTI and its clinical impact are very different for both sexes and at different stages of life (Jose, 1997). It is known that UTI is more frequent in boys in the first 3 months of life, with sex distribution of 5:1 (male predominance). By preschool age, the sex ratio is reversed, with majority of UTI occurring in females (Qureshi, 2015).
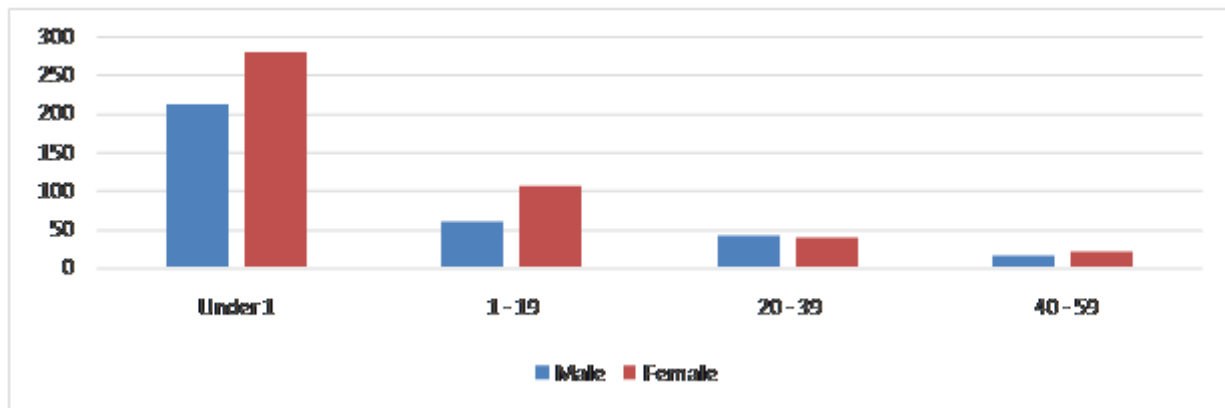

Figure 4. Diseases of the urinary system age and gender distribution of patients

Estimates of the global burden of disease indicate that diseases of the kidney and urinary tract account for approximately 830,000 deaths and 18,467,000 disability-adjusted life years annually, ranking them 12th among causes of death (1.4 percent of all deaths) and 17th among causes of disability (1.0 percent of all disability-adjusted life years). This ranking is similar across World Bank regions (Mathers and others 2006).

Although UTI is infrequently associated with mortality, it is still a significant cause for morbidity. Delay in the treatment of UTI can lead to vesicoureteral reflux and renal scarring.

Renal scarring has been cited as one of the most common causes of end stage renal disease in both adults and children.

UTI is a common cause for a significant number of outpatient visits. In the pediatric outpatient clinic of a tertiary hospital in the Philippines, it remains in the Top Ten Consults almost every year. Keeping in view the high incidence of UTI in children and its associated morbidity, it is imperative to diagnose UTI early and to treat the infection promptly.

In 2005, a study was done at Ayub Teaching Hospital in Pakistan to look into the clinical profile of UTI in children admitted at the pediatric wards. Said study showed that the majority of UTI patients (46%) belonged to the age group 13 to 60 months: The number of UTI cases was less among neonates; the number of cases increased in the older age group, but it declined in the thirteen to fifteen age group. Fever was the most common presentation; 92% of the patients had history of fever. Dysuria is a common presentation in older children (4% to 60.8%).

The identification of risk factors can prevent or limit disease through lifestyle modifications or specific therapeutic interventions (Appel, 2003). For example, familial predisposition for a disease, which is not amenable to modification, can be used to identify high-risk populations for future monitoring.

Low socioeconomic status and limited access to health care are strong risk factors for kidney failure but account for among African Americans (Perneger, Whelton, and Klag 1995), whereas racial and social factors account for most incidence (Pugh and others 1988; Rostand 1992).

Chronic Lower Respiratory Diseases

Chronic lower respiratory diseases completed the top five causes of morbidity in Malaybalay City. Shown in figure 5 is the age and gender distribution of the diseases recorded by the Malaybalay Polymedic General Hospital. It can be deduced that below 19 years old are the most affected age thus, declining as the age rises.

Chronic Lower Respiratory Disease (CLRD) actually comprises three major diseases: chronic bronchitis, emphysema, and asthma, that are all characterized by shortness of breath caused by airway obstruction. The obstruction is irreversible in chronic bronchitis and emphysema, reversible in asthma.
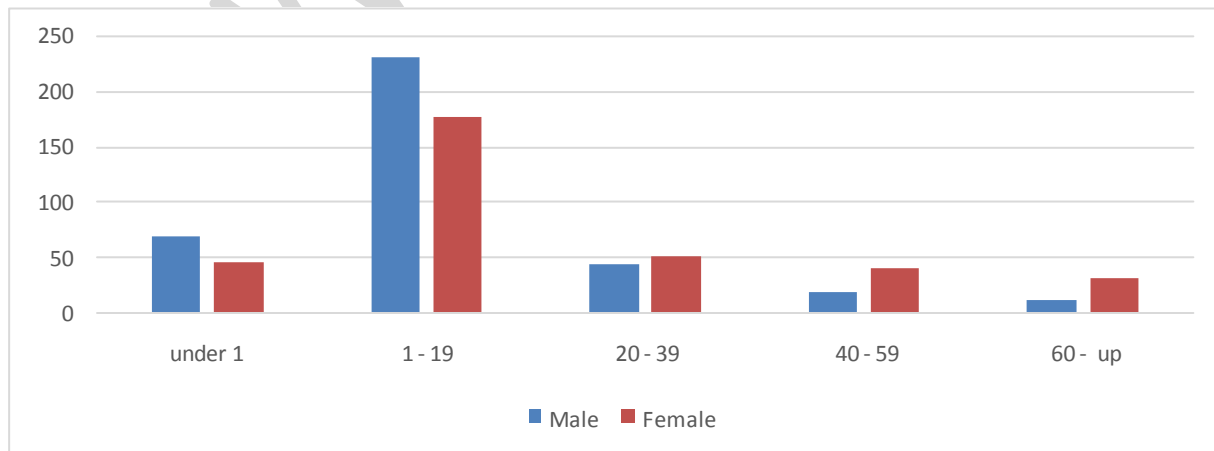
Figure 5. Chronic lower respiratory diseases age and gender distribution of patients

CLRD is a serious illness affecting millions of people. Currently the fourth leading cause of death in the United States, and is projected to move into third place nationwide by 2020. While mortality rates for the top two leading causes of death in the state and nation, heart disease and cancer, respectively, are decreasing, deaths from CLRD continue to rise (National Heart, Lung, and Blood Institute, 2001).

Before 1999, CLRD was called Chronic Obstructive Pulmonary Disease (COPD). The International Classification of Diseases used by the World Health Organization (WHO) to code diseases and mortality was revised in 1999, with slight changes to the category between the 9th and 10th editions (Indiana State Department of Health, 2002). While the two classifications are similar, in this document COPD is used to refer to chronic bronchitis and emphysema only (for compatibility with the majority of studies cited), and CLRD is used to refer to chronic bronchitis, emphysema, and asthma.

Tobacco smoking is by far the most important risk factor for chronic bronchitis and emphysema, accounting for about 80% of all cases. Pipe and cigar smokers also have greater COPD morbidity and mortality than nonsmokers; however, their rates are lower than those for cigarette smokers (National Heart, Lung, and Blood Institute, 2003). Other environmental exposures, i.e., occupational dusts and chemicals and indoor/outdoor air pollution, contribute to approximately 15% of COPD cases, with 5% due to genetic influences.

In the Philippines, more than half of Filipino households are not smoke-free. Among ASEAN members, the Philippines had the second highest smoking prevalence rate (SEATCA, 2007). Every year, there are about 20,000 smoking-related deaths in the country. Health experts estimate that 10 Filipinos die of smoke-related disease every hour. Lung cancer is one of the top cancer-related deaths among Filipino men and the third for women. COPD or Chronic Obstructive Pulmonary Disease is also in the 10 leading causes of death among Filipinos. Bukidnon, home to some of the largest agribusiness firms in the country engages in burning of sugarcane to facilitate its collection, and for this reason the practice destroys a large part of themicroorganisms of the soil, pollutes the air, and causes respiratory diseases. The processing of sugarcane by industrial plants also pollutes the air through the burning of waste, which produces smoke and dust.

Causes of the occurrence of the morbidity of Malaybalay City

The fact that the production of sugarcane has decimated forests, destroyed the environment, and affected the health of the population. Burning facilitates the harvest, but it destroys a large part of the microorganisms in the soil, pollutes the air, and causes respiratory diseases and other diseases.

According to The City Based Monitoring System of Malaybalay City, the higher the unmet needs the poorer the barangay. Results further show that the proportion of the cases increases as the unmet needs of the barangay increased (Barroso and Alava, 2012).

Also, another reason of the diseases is many households have no access to clean water. Some of the barangay's main source of water supply is deep well, while some residents get their domestic water supply from nearby springs are still underdeveloped. Based on interviews, it was revealed that garbage is dumped and thrown in creeks by nearby residents. These creeks are known to be

the playing grounds of children in the barangay. Thus, children are vulnerable to diarrheal diseases (Barroso and Alava, 2012). Moreover, Sergo (2007) confirms that inaccessible clean and treated water can contribute to the possibility of excess water pooling, which creates the perfect environment for disease.

Another factor that may contribute to the high incidence of such cases is many households have no sanitary toilets. According to the City Planning and Development Office (CPDO)-Malaybalay City, approximately 30% do not have sanitary toilets. There is also under utilization of sanitary toilet facilities in the communities which means that even with the presence of toilet facility rural folks especially farmers defecate anywhere. Such practices can contribute to an increase of insects and rodents and may contribute to the increase incidence of vector-borne diseases.

Any spillage of vomit or feces should be cleaned immediately by absorbing any excess with disposable paper towels or by scraping into a toilet and then thoroughly cleaning the area with hot water and detergent. Sanitizers may also be used once all visible soiling is removed. Soft furnishings should be cleaned with hot water and detergent or with a steam cleaner if available (HSPC, 2012).

Another significant factor may be the presence of banana plantations and piggery farms in most barangay. These plantation and piggery farms can be a source of water pollution through contamination of the water system with chemicals and wastes they release. With rivers, creeks and other sources of water supply contaminated, residents are at risk of having diarrheal diseases.

Educational attainment may also a factor. The CPDO report shows that 66.28% of the total populace are elementary undergraduates with illiteracy rate of 17.65%. According to PHN (2007) limited literacy would impede one's access to health care and chronic disease management. This will lead to poor understanding on how to take medication or how to manage chronic disease, not to mention being unable to navigate through the complex health care system, causing increased morbidity and mortality.

CONCLUSIONS

In line with the findings of the study, the following conclusions were drawn:

1. The top five causes of morbidity of Malaybalay City include the following diseases:

(1) Intestinal Infectious Disease; (2) Diseases of Esophagus, Stomach and Duodenum; (3) Influenza and Pneumonia; (4) Diseases of the Urinary System; and (5) Chronic Lower Respiratory Diseases.
2. Regardless of the gender, mostly the patients younger than 19 years old are greatly affected with these diseases.
3. It can be surmised that aside from poverty, poor access to safe water, poor toilet facilities, presence of pollutants such as piggery, poultry and agricultural farms and low educational background are factors that contribute to the causes of morbidity of such diseases.

RECOMMENDATIONS

That the City Health Office of Malaybalay City prioritize the giving of health care services to the infants and community members ages 19 years old and below, where the percentage of morbidity is higher.

That the local government strengthen and extend public health functions, other than health care, that create the basic conditions needed to achieve health like enforcing standards for major health determinants, including clean water and sanitation, food and drug safety, tobacco control, access to health-related education and information, and standards for safe working, housing, transport, and environmental conditions.

The schools should take part in the strengthening of the information dissemination of the different diseases affecting the morbidity in Malaybalay City.

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