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EXPANDED PROGRAMME ON IMMUNIZATION AMONGST CHILDREN IN PHILLIPINES

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ABSTRACT
The goal of EPI is for universal access of all relevant vaccines for all targeted groups is to control disease and achieve better health for all. This research was aimed at providing a universal access of all relevant vaccines for all children in order to control disease and achieve better health for all, which will ensure significant reduction of mortality and morbidity among the children against the most common vaccine preventable diseases (such as measles, tuberculosis, pertussis, poliomyelitis and diphtheria). This study was conducted in Dagupan City and data were obtained from the City Health Office (CHO), under the Department of Health where all the records from 2014-2016 were collected. The subjects of this study were children between the ages of 0- 5years, and parents were the respondents for the concerns of children under five years. The CHO health officials were also interviewed for the concerns in the implementation and interventions of the child immunization program. Mothers of the children under five years old were interviewed on their concerns. Documents for analysis for this study were collected from the City Health Office (CHO), Dagupan City and analysed using descriptive research design. For the childhood immunization program on EPI, the following vaccines are included: BCG (Bacillus Calmette Guerin), Hep B, PENTA Vaccine- (DPT- Diphtheria, Pertussis; HEP B- Hepatitis B; Hib-Haemophilus Influenza Type B Vaccine), OPV (Oral Polio Vaccine), Measles Vaccine, MMR (Measles, Mumps, Rubella), and PCV (Pneumococcal Conjugate Vaccine). Vaccines and their Dosages administered through the EPI. The highest average dose administered based on total population was PENTA Vaccines, followed by PENTA 2 and PENTA 3. From the record, it shows that there were no PCV and ROTA Vaccines in the year 2014 and 2015. This lack of vaccine is a major constraint in the implementation of the child immunization program.

KEYWORDS: DPT- Diphtheria, Pertussis; HEP B- Hepatitis B; Hib-Haemophilus Influenza Type B Vaccine.

INTRODUCTION
The Expanded Program on Immunization (EPI) is one of the world's health organization programs, which has a goal to make vaccines available to all the children through-out the world. EPI has been delivering the immunization services to the targeted children below one year old. It is an evidence-based tool for controlling and even eradicating infectious diseases. It protects against childhood communicable disease, which can result in death and severe (World Health Organization. 2016).

The goal of EPI is for universal access of all relevant vaccines for all targeted groups is to control disease and achieve better health for all. The major objectives include; reduce the mortality and morbidity among the children against the most common vaccine preventable disease, i.e. measles, tuberculosis, pertussis, poliomyelitis and diphtheria, to reduce maternal mortality, to immunize all infants/ children against the most common vaccine preventable disease, to eliminate measles infection, to eliminate maternal and neonatal tetanus, to prevent extra pulmonary tuberculosis among children, to coverage at least 80% in all townships and 95% nationally, to eradicate poliomyelitis and reduce disability from poliomyelitis, to improve economic well-being of the society, to help health both mother and child, control of rubella syndrome, to get vaccination coverage targets in every district and community and to introduce new vaccines and technologies.

The various target groups for EPI have pointed out in all children under 1 year of age for Diphtheria, Polio, Tetanus (DPT), Bacillus, Calmette & Guerin (BCG), Oral Polio Vaccine (OPV) and Measles vaccination. Other children who have not fully immunized.

Expanded Program on Immunization (EPI) was established in 1976 to ensure that infants/children and mothers have access to routinely recommended infant/childhood vaccines. EPI includes vaccine-preventable diseases such as tuberculosis, poliomyelitis, diphtheria, tetanus, pertussis and measles. Vaccines under the EPI are Bacillus, Calmette and Guerin (BCG) birth dose, Hepatitis B birth dose, Oral Poliovirus Vaccine, Pentavalent Vaccine, Measles Containing Vaccines (Antimeasles Vaccine, Measles, Mumps, Rubella) and Tetanus Toxoid. In 2010, an estimated 85% of children under one year of age globally had received at least three doses of DPT vaccine (DPT3). Additional vaccines have now been added to the original six recommended in 1974.

A study conducted in Nigeria revealed that the risk of children being incompletely immunized in Nigeria was influenced by not only individual factors but also community- and state-level factors. Interventions to improve child immunization uptake should take into consideration these contextual characteristics. More than three-quarter of the children (76.3%) were not completely immunized. About 83% of children of young mothers (15-24 years) and 94% of those whose mothers are illiterate did not receive full immunization. In the fully adjusted model, the chances of not being fully immunized reduced for children whose mothers attended antenatal clinic (adjusted odds ratio [aOR] = 0.49; 95% credible interval [CrI] = 0.39-0.60), delivered in health facility (aOR = 0.62; 95% CrI = 0.51-0.74) and lived in urban area (aOR= 0.66; 95% CrI = 0.50- 0.82). Children whose mothers had difficulty getting to health facility (aOR=1.28; 95% CrI = 1.02-1.57) and lived in socioeconomically disadvantaged communities (aOR = 2.93; 95% Crl= 1.60-4.71) and states (aOR = 2.69; 955 CrI =1.37-4.73) were more likely to be incompletely immunized (Adedokun 2017).

In North West Province of South Africa. It was found out that 432 (76.2%) of the children were fully immunized for their age, 97 (17.1%) had incomplete immunizations and immunization status was unknown for 38 (6.7%). The primary caregiver for most of the children was the biological mother (85.5%). There was a low level of education amongst the primary caregivers with only 15.3% having completed matric or attained higher level of education. Caregiver knowledge of immunization was poor and only 21.1% of caregivers correctly mentioned three diseases that can be prevented by immunization. The majority of the caregivers (96.0%) believed that immunizations help to keep children healthy. Approximately half (49.9%), of the caregivers perceived immunization service delivery in Mmakaunyane village to be good. Factors that were found to be associated with incomplete immunization included age of caregiver, gender of the child and knowledge of the caregiver on immunization (Sehure. 2011).

In a survey conducted in the province of Occidental Mindoro, considered to be the district at highest risk, it was found that there was no case of neonatal tetanus among the births identified in the survey. Because Occidental Mindoro was selected as the "highest-risk" province for neonatal tetanus in the Philippines, with the exception of the Autonomous Region in Muslim Mindanao (ARMM), it is likely that neonatal tetanus has also been eliminated in the other provinces at lower risk. To complete the validation of Maternal and Neonatal Tetanus Elimination (MNTE) in the Philippines, a three-round Tetanus toxoid immunization of childbearing age women will be held in Autonomous Region in Muslim Mindanao (ARMM) beginning this year with focus on areas that are not usually reached by routine health services World Immunization Week: Eliminating Maternal and Neonatal Tetanus in Occidental Mindoro, Philippines (Ducusin, 2015).

A survey study was carried out in Nurpur Shahan village to assess the immunization status of children under the age of 5 years. It was a: ross-sectional community based study for which a questionnaire was prepared and administered in an interview style. Systematic random sampling was done and mothers who had children less than or equal to 5 years of age were questioned in every 6th house. If there were no children within that age group, the next 6th house was surveyed. The sample size was calculated using EPI Version 3.5. Out of a population of 35,000 the expected number of under 5 populations was 35%. The sample size after applying 95% confidence interval and precision of + / - 2% was 349 but only 204 could be gathered due to time constraints. The variables that were assessed included the age and educational background of the mother, the gender of the child, place where the vaccine was administered (primaiy, secondary or tertiary care unit) as well as the reasons for either partial or non-administration. The current health status of the child and the presence of any communicable diseases in the household were inquired about. In the end the respondents gave their opinion regarding the most convenient place to get their children vaccinated. The results from the survey were found to be highly informative of the immunization services in the area. Of the children surveyed, 96.6% had received some form of vaccination, with 58.3% up to date with the EPI course and 19.1% having complete it. Only 3.4% children had received no immunization at all. Of the children who received no immunization, the most frequently cited reason was lack of awareness followed by facilities being too far away. During follow up 19.1% children had discontinued the programme before completion. Again, lack of awareness was the predominant reason, followed by facilities being too far away. Furthermore, seven children cited having had a reaction to previous vaccines as a discouraging factor. There was no difference in immunization status between male and female children. The children who had not received any vaccinations all had mothers with no formal education. As the educational status of the mother increased, so did the rate

of vaccination of her children, with all mothers who studied until Intermediate or higher achieving 100% vaccination, and none having discontinued the programme. The immunization rate was significantly higher, at 49.5%, when vaccinations were provided at home as compared to 27.9% for children who had to be taken to a hospital or clinic to receive vaccinations. On enquiring 95% of respondents said that immunization teams reached their homes but only had provision for administration of polio drops. The rate of discontinuation was decreased in households who were receiving the vaccinations at their doorsteps (15.1%), whereas this was much higher in those who had to travel away from their homes (54.0%) (Ahmad, 2015).

In Ghana, they found out that the overall, default rate for the entire recommended series of vaccines was 15.0 percent and a coverage level of 92.7 percent for children immunization. Further, partially immunized children were 14.5 percent and fully immunized stood at 85.5 percent. Only 14 percent of entire mothers interviewed had received all the live doses of tetanus toxoid vaccine prescribed by WHO as an intervention for both maternal and neonatal tetanus. The major reason for immunization failure for children was obstacles and prominent amongst the reasons being postponement of immunization session(s) until another time. MCH/FP staff at the facility level preferred outreach services most that is 43 percent to the rest of the immunization strategies approved and under full operation by Ghana Health Services nationwide (Badu, 2010). This research was aimed at providing a universal access of all relevant vaccines for all children in order to control disease and achieve better health for all. The major objective was to reduce the mortality and morbidity among the children against the most common vaccine preventable disease, i.e. measles, tuberculosis, pertussis, poliomyelitis and diphtheria.

METHODOLOGY

Descriptive research design was employed in the documentary analysis. A descriptive study design is one in which the primary goal is to assess a sample at one specific point in time (4 years) without trying to make inferences or causal statements. In general, there are three primary reasons to conduct descriptive studies. First, is to identify areas for further research. Second, is to help in planning resource allocation (needs assessment) and third, to provide informal information about a condition or disease. Descriptive studies are helpful in revealing patterns and connections that might otherwise go unnoticed (LaMorte, 2016). In this study, types of vaccines with the doses received by children and the concerns and problems in the implementation of EPI were described.

Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic. Analyzing documents incorporates coding content into themes similar to how focus group or interview transcripts are analyzed. A rubric can also be used to grade or score a document. There are three primary types of documents, and public records is one of such official, ongoing records of an organization's activities. The CHO document on vaccines received by children from 2014-2016 in barangay Bonuan Boquig was used by the researcher to analyze data.

Study Location: Bonuan Boquig is one of the Barangays in the City of Dagupan, Pangasinan. Bonuan is a local word which means "FIGHTING CARABAOS" which were used by the inhabitants in cultivating lands as a means of transportation during the early times. People used to come to this place from adjacent barangays and towns to witness carabao-fighting festival. Barangay Bonuan Boquig is bounded in the east of Barangay Bonuan Binloc; on the south is the Barangay Mamalingling and Tambac; on the north is surrounded by the water the Lingayen Gulf; and on the west is the Bonuan Gueset. The Barangay has a total population of 15710 (2016) and a total area of 549.60 hectares with its latest 50% Residential, 6% commercial, 9% Aquatic, 12% forest land 12% agricultural and 23% of idle lands. From the census report of 2014, it shows that the total population of the Barangay is 14078 with the bulk of the barangay's population falling within 18-35 years old age bracket (2591). It is followed by the bracket of 6-50 years old (2576), followed closely by the 13-17 years old (2569), D 11 owed by the bracket of 51-65 years old (1971), followed by the bracket f 6-12 years old (1825) and 0-5 years old (1562). This age bracket fall under the EPI program. The age bracket of adult 66 and above (984) has he least number of populations in terms of age groups. This Barangay /as suggested for this study by the City Health Officer and Barangay health worker based on the fact that the barangay has one of the highest lumbers of children between 0 to 5 years old and has some major constraints in the child immunization program.

This study was conducted in Dagupan City and data were obtained from the City Health Office (CHO), under the Department of Health where all the records from 2014-2016 were collected.

The subjects of this study were children between the ages of 0- 5years, and parents were the respondents for the concerns of children under five years. The CHO health officials were also interviewed for the concerns in the implementation and interventions of the child immunization program. Mothers of the children under five years old were interviewed on their concerns. Documents for analysis for this study were collected from the City Health Office (CHO), Dagupan City.

The data used for this study was collected from the City Health Office after approval of the letter of request. Interview guides were also used to interview the CHO health officials in charge of the barangay, BHWs and

mothers. The instruments were used in order for the researcher to obtain first hand data for analysis.

The data were generated from the respondents and with the use of the document analysis of existing records which were carefully analysed and considered in making necessary decisions.

Frequency count and Percentage Method: To answer subproblems 18s 2, simple frequency count, percentage and average were used in testing the data gathered for percentage, the following formula was utilized.
% = f/n*100
Where: % = percentage
F = frequency
N = total number of respondents
Average = £x/n
Where: x = total percentages
n = no of population for each year

RESULTS AND DISCUSSION

Status of Child Immunization Program Implementation in Bonuan Boquig, Dagupan City
Specific sub-problem 1 reflects the status of immunization through types of vaccines and dosage given to children under five years old in Bonuan Boquig, Dagupan City from 2014 to 2016.

These vaccines are given to prevent, if not eradicate diseases. And also boost the immune system of children, especially children under five years old. For the childhood immunization program on EPI, the following vaccines are included: BCG (Bacillus Calmette Guerin), Hep B, PENTA Vaccine- (DPT- Diphtheria, Pertussis; HEP B- Hepatitis B; Hib-Haemophilus Influenza Type B Vaccine), OPV (Oral Polio Vaccine), Measles Vaccine, MMR (Measles, Mumps, Rubella), and PCV (Pneumococcal Conjugate Vaccine). Vaccines and their Dosages administered through the EPI

BGG (Bacillus Calmette Guerin): BCG is a vaccine for turberculosis (TB) disease. It is usually given to children at birth. The BCG vaccine contains a live but weakened form of a type of bacteria called Mycobacterium bovis. The vaccine is known as BCG because a strain of the bacterium known as Bacillus Calmette-Guerin is used. The vaccine is used to prevent tuberculosis, and works by stimulating the body's immune response to the bacteria, without actually causing the disease (WHO 2015).

In 2014, a total number one hundred and forty-five children (61.70%) <lyear received 0.05ml of Bacillus Calmette Guerin (BCG), in 2015, one hundred and fifty-three (64.29%) and one hundred and fifty-five received the same in 2016 giving an average of 63.10% of children who received the complete dosage of Bacillus Calmette Guerin (BCG) vaccine in 2014, 2015 and 2016 in Barangay Bonuan Boquig.

In Pakistan on EPI, it was found out that the EPI coverage is 80% for BCG, 65% for DPT3 and polio3 and a mere 67% for measles (Karachi. 2012).

Hep B (Hepatitis B) Vaccine: This is a type of vaccine given to children at birth either within the first 24 hours or after one week of birth. It is usually given to prevent Hepatitis B, which is a serious disease caused by a virus that attacks the liver. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. The vaccine works by causing your body to produce its own protection (antibodies) against the disease, Hepatitis vaccine recombinant is made without any human blood or blood products or any other substances of human origin (WHO, 2017).

Forty-one (17.45%), 34 (14.29%) and 139 (56.73%) of children in Bonuan boquig received 0.5ml of HEP B Vaccine - within the 24 hours of birth. This gave an average 29.50% children that received the vaccine in 2014, 2015 and 2016 respectively, while 29 (12.34%) only received 0.5ml of the vaccine after 24 hours but within one week of birth in 2014. In 2015 and 2016, the record shows that there was no child who received the vaccine. Therefore, only an average of 4.10% received the vaccine after 24 hours but within one week of birth.

Table 1: Showing types of vaccines and dosage given to children.

Types of Vaccines	Dosage	2014		2015		2016		Average % based on population
		f	%	f	%	f	%	
BCG (Bacillus Calmette Guerin)	0.05 mL	145	61.70	153	64.29	155	63.27	63.10
HEP B (Hepatitis B-within 24 hours of birth)	0.5 mL	41	17.45	34	14.29	139	56.73	29.50
HEP B (After 24 hours but within 1 week of birth)	0.5 mL	29	12.34	0	0	0	0	4.10
PENTA Vaccine - (DPT - Diphteria, Pertusis; HEP B - Hepatitis B; Hib - Haemophilus Influenza Type B Vaccine) 1	0.5 mL	238	101.28	201	84.45	216	88.16	91.30
PENTA 2	0.5 mL	235	100	173	72.69	218	88.98	87.22
PENTA 3	0.5 mL	273	116.17	171	71.85	215	87.76	91.93

Table 2: Showing types of vaccines and dosage given to children.

Types of Vaccines	Dosage	2014		2015		2016		Average % based on population
		f	%	F	%	f	%	
OPV 1 (Oral Polio Vaccine)	2 drops	238	101.28	214	89.91	165	67.35	86.20
OPV2	2 drops	235	100	230	94.64	162	66.12	87.60
OPV3	2 drops	273	116.17	217	91.18	134	54.69	87.40
Measles	0.5 mL	186	79.15	219	92.02	189	77.14	82.80
MMR (Measles, Mumps, Rubella)	0.5 mL	185	78.72	213	89.50	172	70.20	79.41
ROTA1 (Rotavirus Vaccine)	1.5 mL	0	0	0	0	73	29.90	9.97
ROTA2	1.5 mL	0	0	0	0	74	30.20	10.10
PCV1 (Pneumococcal Conjugate Vaccine)	0.5 mL	0	0	0	0	202	82.45	27.48
PCV2	0.5 mL	0	0	0	0	214	87.35	29.12
PCV3	0.5 mL	0	0	0	0	202	82.45	27.48

NB: The population of children less than 1 year are 235, 238 and 245for 2014, 2015 and 2016 respectively.

PENTA 1,2&3 Vaccine- (DPT-Diphtheria, Pertussis; HEP B- Hepatitis B; Hib- Haemophilus Influenza Type B Vaccine).

The pentavalent vaccine is a combination of five vaccines in one: diphtheria, tetanus, whooping cough, hepatitis B and Haemophilus influenza type b (the bacteria that causes meningitis, pneumonia and otitis). It was introduced to boost coverage of hepatitis B and Hib vaccines by making them part of routine immunization.

The first, second and third doses are usually administered within the first one and half months, two and half months and three and half months of birth respectively. From the table above, it shows that 0.5ml of the first dose of Pentavalent Vaccine was given to 238 (101.28%), 201 (84.45%), and 216 (88.16%) number of children in Barangay Boquig in 2014, 2015 and 2016 respectively. These indicate that an average of 91.30% of children age <lyear received the first dose of the vaccine. The second dose of the Pentavalent Vaccine was also given to 235 (100%), 173 (72.69%) and 218 (88.98%) number of children in 2014, 2015 and 2016 respectively. Thus, an average of 87.22% of the children received 0.5ml of the second dose of the vaccine. The record also shows that same 0.5ml of the Pentavalent Vaccine was given as third dose to the children. The number of children who received the third dose of the vaccine 2014, 2015 and 2016 is as follows; 273 (116.17%), 171 (71.85%) and 215 (87.76%), with an average population of 87.22% .

OPV1,2 & 3 (Oral Polio vaccines: Oral poliovirus vaccines (OPV) are the predominant vaccines used in the fight to eradicate polio. There are different types of oral poliovirus vaccines, which may contain one, a combination of two, or all three different serotypes of attenuated vaccine. OPV consists of a mixture of live attenuated poliovirus strains of each of the three serotypes, selected by their ability to mimic the immune response following infection with wild polioviruses, but with a significantly reduced incidence of spreading to the central nervous system. Three or more spaced doses of OPV are required to generate adequate levels of seroconversion. The action of oral polio vaccine (OPV) is two-pronged. OPV produces antibodies in the blood ('humoral' or serum immunity) to all three types of poliovirus, and in the event of infection, this protects the individual against polio paralysis by preventing the spread of poliovirus to the nervous system. OPV strains also produce a local immune response in the lining (’mucous membrane') of the intestines - the primary site for poliovirus multiplication.

(WHO 2017 - http://www.who.int/biologicals/areas/vaccines/polio/opv/en/ Retrieved 07/03/2017).

From the record obtained from the City Health Office (CHO), it shows that The first, second and third doses are usually given in the one and half months, two and half months and three and half months respectively. This record also shows that for the first dose, 2 drops of the vaccine were given to 238 (101.28%), 214 (89.91%), 165 (67.35%) children in 2014, 2015 and 2016 respectively and for the second done, 2 drops were also given to 235 (100%), 230 (96.4%) and 16.17%), 217 (91.18%), and 134 (54.69%) in 2014, 2015 and 2016, with an average population of 86.20%, 87.60% and 87.40% in 2014, 2015 and 2016 respectively.

Measles Vaccine: Measles vaccine is a vaccine that is very effective at preventing measles. One dose is usually given to children at nine months of age. The vaccine is usually even to prevent measles, which is the deadliest childhood rash/fever illness and spreads very easily. Getting vaccinated is the best way to prevent measles. The vaccine works by triggering the immune system to produce antibodies against measles. (https://www.vaccines.gov/diseases/measles/index.html -Retrieved 17/03/2017).

In 2014, 2015 and 2016, 186 (79.15%), 219 (92.02%) and 189 (77.14%) lumber of children < 1 year of age received 0.5ml of measles vaccine in Barangay 3onuan Boquig. This indicates that an average of 82.80% of the population of children < lyear have received the vaccine.

VIMR (Measles, Mumps, Rubella): The MMR vaccine is very safe and effective. It is usually administered to children at twelve months of age. It is administered to prevent and protect against measles, mumps, rubella, and varicella (chikenpox). The MMR vaccines contains weakened versions of live measles, mumps and rubella viruses. The vaccine works by triggering the immune system to produce antibodies against measles, mumps and rubella (CDC 2016).

Table 2 shows that 0.5ml of MMR Vaccine was administered to 185 (78.72%), 213 (89.50%) and 172 (70.20%) number of children in 2014, 2015 and 2016 respectively in Barangay Bonuan Boquig.

ROTA1& 2 (Rotavirus Vaccine): Rotavirus vaccine is a type of vaccine administered to children to protect them from rotavirus diarrhoea. Rotavirus is a virus that causes diarrhoea, mostly among babies and young children. The diarrhoea can be severe, and lead to dehydration. Vomiting and fever are also common in babies with rotavirus. Two doses of rotavirus vaccine are available. The first dose is usually administered within the one and half months of birth and the second dose is administered within two and half months of birth. Almost all babies who get rotavirus vaccine will be protected from severe rotavirus diarrhoea. And most of these babies will not get rotavirus diarrhoea at all. The vaccine will not prevent diarrhoea or vomiting caused by other germs. Rotavirus vaccine works by provoking the body's immune response to the rotavirus organism, without actually causing illness. When the body is exposed to foreign organisms, such as viruses and bacteria, the immune system produce antibodies against them. Antibodies help the body recognize and kill the foreign organisms. They then remain in the body to help protect the body against future infections with the same organism. This is known as active immunity. (CDC 2016- https:// www.cdc.gov/vaccines/hcp/vis/vis-statements/rotavirus.html-retrieved 07/03/2017.

For the first and second doses of this vaccine 1.5ml is usually administered for each. In 2014 and 2015, children did not receive any the loses. But in 2016 73(29.90%) and 74 (30.20%) received the first and second doses respectively. These resulted to the average population of). 97% and 10.10% for the first and second dose of the vaccine. PCV1, 2 & 3 (Pneumococcal Conjugate Vaccine)

Pneumococcal conjugate vaccine (abbreviated PCV13) is a shot for infants and toddlers. It helps prevent pneumococcal disease, and it also helps stop the disease from spreading from person to person. The first, second and third doses are usually administered within the first one and half months, two and half months and three and half months of birth respectively. Both types of pneumococcal vaccine encourage the body to produce antibodies against pneumococcal bacteria. Antibodies are proteins produced by the body to neutralize or destroy disease-carrying organisms and toxins. They protect the children from becoming ill if children are infected with the bacteria.
(https://familvdoctor.org/pneumococcal-coniugate-vaccine-parent- needs-know/- Retrieved 07/03/2017)

There were no doses of PCV administered in Barangay Bonuan Boquig in 2014 and 2015. In 2016, 0.5ml of PCV was administered to 202 (82.45%), 214 (87.35%) and 202 (82.45%) for the first, second and third doses respectively. These resulted to an average of 27.48%, 29.12% and 27.48% of children <1 year of age that received the vaccine in Barangay Bonuan Boquig in the three consecutive years. Based on the above table, Pentavalent Vaccine has the highest number of children < 1 year in Barangay Bonuan Boquig that received the vaccine with an average of 91.30%, 87.22% and 91.93% for the first, second and third in 2014, 2015 and 2016. This may be because of the high level vaccination awareness of parents and guardians of the children and also education of the parents and guardians of the children. The lowest average of 4.10% is in the administration of Hep B (after 24 hours of birth but within 1 week of birth). With no Hep B vaccines administered in 2015 and 2016 but only 29 (12.34%) in 2014. This may be because some children may have received the first dose of the vaccine or may have received the vaccine from private hospitals and health centres. Another reason for those children who did not receive the vaccine may be because of lack of information on the side of the parents on immunization program and vaccination or discontinuation of the vaccination program.

A study that was carried out in NurpurShahan village to assess the immunization status of children under the age of 5 years. The variables that were assessed included the age and educational background of the mother, the gender of the child, place where the vaccine was administered (primary, secondary or tertiary care unit) as well as the reasons for either partial or non-administration. The current health status of the child and the presence of any communicable diseases in the household were inquired about. In the end the respondents gave their opinion regarding the most convenient place to get their children vaccinated. The results from the survey were found to be highly informative of the immunization services in the area. Of the children surveyed, 96.6% had received some form of vaccination, with 58.3% up to date with the EPI course and 19.1% having completed it. Only 3.4% children had received no immunization at all. Of the children who received no immunization, the most frequently cited reason was lack of awareness followed by facilities being too far away. During follow up 19.1% children had discontinued the program before completion. Again, lack of awareness was the predominant reason, followed by facilities being too far away (Ahmad, 2015).

Immunization program related concerns reported in Bonuan Boquig

Specific problem number 2 refers to the concerns encountered in the administration of the vaccines under the immunization program and the interventions of CHO. These reflect the problems that develop as results of the immunization program or vaccination of the children in terms of the types of vaccine, the recipient children and the efforts of the CHO in handling the concerns.

It can be gleaned from table 4 that some of the concerns encountered during the vaccination depend on the type of vaccine given to the children. The table indicates that when BCG is administered, a large abscess (collection of pus) appeared at the injection site and keloids also developed in other cases.

In a study conducted in London, United Kingdom, it was found out that sixty children were presented with adverse reactions. Two-thirds (65%) were presented with BCG lymphadenitis, one-third (30%) were presented with injection site complications and two children (3%) were presented with both injection site reaction and lymphadenitis; only one child (2%) had disseminated BCG disease. The majority (88%) of children with injection site reactions were managed conservatively; overall, 95% showed complete resolution within 6 months (Venkataraman, 2015).

When Pentavalent vaccine is administered, pain was felt at the injection site, redness, swelling where the shot was given and mild fever was also noticed. It's natural to be concerned that your child will have a side effect after having a Pentavalent vaccination. While all vaccines have the potential to cause side effects in some people, in most cases it tends to be mild and don't last longer than a few days (http:// www.nhs.uk/Conditions/vaccinations).

For the cases of administration of Measles Vaccine and MMR, sore forms at the injection sites. Table 3 shows that there were no PCV and ROTA Vaccines in the year 2014 and 2015. This lack of vaccine is a major constraint in the implementation of the child immunization program.

Table 3: Concerns Reported and Interventions of CHO on the Child Immunization Program Implementation in Barangay Bonuan Boquig.

Types of Vaccines	Concerns Reported	Interventions by CHO
BCG	A large abscess (collection of pus) and keloid appear at the injection site.	Mothers are educated on this and told about the appearance of keloids and large abscess and also told that it is natural and thus, will heal naturally.
PENTA	There will be pain at the injection site Redness and swelling where the shot was given Mild fever	Paracetamol given in cases of pain Parents are educated on this and told that it is a natural body reaction for the vaccine. Paracetamol is given
Measles Vaccine	Sore forms at the injection site in some cases.	Parents are educated on this and told that it is a natural body reaction.
MMR	Sore forms at the injection site in some cases	Parents are educated on this and told that it is natural body reaction.
PCV	Unavailability of the vaccine in City Health Office in 2014 and 2015	The Barangay Nurse wrote to the CHO's Health Office 1 to request vaccine.
ROTA	Unavailability of the vaccine in City Health Office in 2014 and 2015 Reports of cases of diarrhoea in children due to lack of ROTA	The Barangay Nurse wrote to the CHO's Health Office 1 to request vaccine. The Barangay Nurse wrote to the CHO's Health Office 1 to report cases on diarrhea and again to request vaccine.

In a research conducted in Pakistan, it shows that in the last two decades, the EPI program has not achieved the expected reduction of Vaccine Preventable Disease (VPD) burden. The reasons for the poor performance result from some factors. These factors include; procurement of vaccines and other required items, cold chain monitoring. The procedures and mechanisms needed to manage the logistics system within the limited available resources have been cumbersome. The EPI is too underfinanced to provide a comprehensive immunization service to the community. Additional resources are needed for vaccines, and logistics (Masud *et al.*, 2012).

CONCLUSION

The results and findings of the study are of great importance to the Department of Health, children (0-5 years old), Parents or Guardians, Hospital Administrators, Paediatricians, Government Officials and future researchers.

The research was able to propose plan action to promote child immunization program implementation in Dagupan City. For effective and proper immunization, all vaccines for the exercise must be available.

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