Extent of Compliance to Immunization: Reasons for Non-Continuity and Its Consequences

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Abstract

Expanded Program of Immunization (EPI) is established to reduce the morbidity and mortality among children against the most common vaccine-preventable diseases. In this study, the perceptions about the importance and reason for noncompliance were asked among 175 non-compliant mothers. The findings of the study showed that most of the participants are married and views that EPI is important for their children The study recommends for further dissemination of the information on EPI to increase the number of compliant mothers.

Keywords:
Immunization, compliance, continuity, program, mortality, vaccine

INTRODUCTION

Immunization is the process wherein a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. It is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between two and three million deaths each year (Olivia and Wenger, et al., 2011). Immunization starts from Bacillus CalmetGuirine (BCG) of one dose at birth or any time after birth. Diptheria Pertussis Tetanus' (DPT) first dose is given at six weeks minimum age. It should be given in three shots with an interval of four weeks in each dose. Oral Polio Vaccine (OPV) is also given at a minimum age of six weeks in three doses with a minimum interval of four weeks. Hepatitis B (Hep B) is given at birth, it also given with three shots. The interval of the first and second dose should be six weeks and the interval between second and third dose is eight weeks. Measles vaccine is given in the age of nine moths and it is only one dose.

However, in 2002, World Health Organization estimated that 1.4 million deaths among children under age five was due to diseases that could have been prevented by routine vaccination. This represents 14% of global total mortality in children under five years of age including the Philippines. Because of this, the Expanded Program on Immunization (EPI) in the Philippines was started in July 1979 with the objective of reducing the morbidity and mortality among children against the most common vaccine-preventable diseases (Department of Health).

The Republic Act No. 10152 otherwise known as "Mandatory Infants and Children Health Immunization Act of 2011" was signed by President Benigno Aquino III in July 26, 2010. The mandatory includes basic immunization for children under five including other types that will be determined by the Secretary of Health. The Act was to ensure that health services especially among children were given to them. The effort of the government is to strengthen the vaccine-preventable surveillance for the eradication or elimination efforts of measles and the indigenous wild polio virus as well especially in identifying their true cases (http://www.doh.gov.ph/node/1067.html).

From then on, the Philippines became successful in preventing measles as reported by the Department of Health. Rapid coverage assessment was conducted in selected areas to validate immunization coverage, assess high

quality and assume that there is no missed child to be vaccinated in every barangay. Overall results showed that 70,594 (97.6%) out of 72,353 nine months to eight years old children living in the randomly selected barangays were vaccinated. There are 3,494 barangays with a population of 1000 and above that were randomly selected. 97.6% of all eligible children were given the MR vaccine during the immunization campaign. The Government of the Philippines spent PhP 635.7M for the successful conduct of the MR campaign. Continuous vaccination for infants and children is the key in the Control of other common vaccine-preventable diseases such as Diphtheria, Pertussis, Hepatitis B and Meningitis/Encephalitis secondary to H. influenzae type B (http://www.doh.gov.ph/node/1067.html) .

However, in 2010, measles outbreak have erupted in some parts of the country and some cases resulted to death . Despite the effort of the government in aspiring children to be vaccinated, cases of measles still became a problem. According to the Department of Health, NCR had the most number of measles cases at sixty three percent, followed by Region IVA (10.3 %), Region V (7.6 %) and Region III (5.7 %). It was found that sixty-eight percent of the laboratory-confirmed cases had no history of measles immunization.

With this, the researcher became interested in determining the perception of mothers towards the importance of immunization. Immunizations among children are in the hands of their mothers. Only if mothers of all children will realized the importance of immunization and the consequence it will bring if they will not comply, will inspire them to have their children immunized.

Related Literature

Expanded Program in Immunization

The World Health Organization (WHO) initiated the Expanded Program on Immunization (EPI) in May 1974 with the objective to vaccinate children throughout the world. Ten years later, in 1984, the WHO established a standardized vaccination schedule for the original EPI vaccines: Bacillus Calmette-Guérin (BCG), diphtheria-tetanus-pertussis (DPT), oral polio, and measles. Increased knowledge of the immunologic factors of disease led to new vaccines being developed and added to the EPI's list of recommended vaccines: Hepatitis B (HepB), yellow fever in countries endemic for the disease, and Haemophilusinfluenzae meningitis (Hib) conjugate vaccine in countries with high burden of disease (Hadler , Cochi, and Bilous, 2010).

Likewise, the Expanded Program on Immunization (EPI) in the Philippines began in July 1979,and, in 1986, made a response to the Universal Child Immunization goal. The four major strategies include: sustaining high routine Full Immunized Child (FIC) coverage of at least 90% in all provinces and cities;sustaining the polio-free country for global certification; eliminating measles; andeliminating neonatal tetanus.Every Wednesday is designated as immunization day and is adopted in all parts of the country. Immunization is done monthly in barangay health stations, quarterly in remote areas of the country. The standard routine immunization schedule for infants in the Philippines is adopted to provide maximum immunity against the seven vaccine preventable diseases in the country before the child's first birthday. The fully immunized child must have completed BCG 1, DPT 1, DPT 2, DPT 3, OPV 1, OPV 2, OPV 3, HB 1, HB 2, HB 3 and measles vaccines before the child is 12 months of age(National Statistics Office, 2009).

Data from the National Statistics Office and UNICEF showed that 35 out of 1,000 Filipino infants die annually from vaccine-preventable diseases such as measles, tetanus, pertussis, hepatitis and meningitis. The launching of the Expanded Program of Immunization (EPI) by the World Health Organization (WHO) in the 60's caused a significant decrease in disability and death from these diseases. Thanks to the government support and implementation of the EPI, compulsory basic immunization is provided by the local health centers. As the number of fully immunized children increased to about 80 to 90%, the infant mortality rate subsequently declined. (Dr. Carina M. Frago, 2012)

On the other hand,in Pakistan, the Expanded Programme on Immunization (EPI) offers aseries of vaccines to children and many otherWHO member states. These include Bacillus Calmette–Gue´rin (BCG) and oral polio vaccine (OPV) at birth, three doses of diphtheria–tetanus–pertussis (DTP) ⁄OPV⁄ hepatitisB virus (HBV) vaccines at 6, 10 and 14 weeks, andmeasles vaccine at 9 and 15 months after birth (WHO 2009). A countrywide network of EPI in Pakistan offersthese vaccines to children at immunization centres at nocost, supplemented with outreach programmes in some areas (Usman, et.,al, 2011).

A principal indicator of immunization coverage levels by the WHO is the completion of three doses of DTP vaccine (DTP3). With some contribution of outreach programs, nationwide DTP3 coverage is primarily a function of the proportion of newborns that an immunization system brings in for the first immunization and the proportion of these children who return to the EPI centers for subsequent visits to complete DTP3. From 2002 to2005, the WHO-

reported DTP3 coverage in Pakistan was 65–72%. Socio-economically comparable countries in South-East Asia Region of the WHO have consistently achieved higher DTP3 levels than has Pakistan (WHO2006). The BCG coverage (80–82% during 2002–2005) in Pakistan suggests that a high proportion of newborns receive EPI services, but a substantial proportion of these children fail to return for subsequent immunization visits.

Despite progress in last two decades, it is unclear whether the measures currently in place in Pakistan will be sufficient to reach the desired national DTP3 coverage of more than 80%. In 2003–2004, the government designed a reminder-type immunization card and developed a central-based information and motivation session for mothers or caregivers for a randomized controlled trial to assess the effectiveness of providing these interventions on DTP3 completion at urban EPI centers in Pakistan (Usman et al. 2009). In the urban trial, we recorded 36%increase in DTP3 completion among children who received both redesigned card and center-based education to mothers and 26% increase among children who received redesigned card only, compared with standard care group.

Encouraged by the results of the urban study and considering urban rural disparities in literacy rate and socio ethnic distribution in Pakistan, we conducted a second randomized controlled trial in 2005–2006 to test the effectiveness of same interventions at rural EPI centres in Pakistan.

Immunizations protect children from serious diseases and also prevent the spread of those diseases to others. Over the years immunizations have thwarted epidemics of once common infectious diseases such as measles, mumps, and whooping cough. And because of immunizations we've seen the near eradication of others, such as polio and smallpox (Gesmundo, et.al. 2009).

Some vaccines need to be given only once; others require updates or "boosters" to maintain successful immunization and continued protection against disease. (WebMD, 2013)

On the other hand, between 2000 and 2008, measles deaths dropped worldwide by over 78%, and some regions have set a target of eliminating the disease. Maternal and neonatal tetanus has been eliminated in 20 of the 58 high-risk countries. (WHO, 2013)

Parents decide whether their children will be vaccinated, but they rarely reach these decisions on their own. Instead parents are influenced by their social networks, broadly defined as the people and sources they go to for information, direction, and advice. In a study conducted by Gesmundo,

et.al.(2009) social network analysis wasused to formally examine parents' social networks related to their vaccination decision-making. In addition to providing descriptions of typical networks of parents who conform to the recommended vaccination schedule and those who do not, this study also quantified the effect of network variables on parents' vaccination choices.

These results strongly suggest that social networks, and particularly parents' people networks, play an important role in parents' vaccination decision-making. An overwhelming majority of health professionals, medical researchers, and professional medical organizations such as the Canadian Paediatric Society and the College of Family Physicians of Canada recommend immunization. Getting immunized is important for at least two reasons: to protect children and to protect those around them. Vaccines are the best way we have to prevent infectious disease. A successful immunization program depends on the co-operation of every person.

Vaccinations prevent the child from getting diseases for which there are often no medical treatments. These illnesses can result in serious complications and even death. A small number of people may be susceptible to diseases, such as those with impaired immune systems. These people may not be able to get vaccinations or may not develop immunity even after having been vaccinated. Their only protection against certain diseases is for others to get vaccinated so the illnesses are less common. If exposure to a disease occurs in a community, there is little to no risk of an epidemic if people have been immunized (Brunson, 2013).

Also, a study conducted in Nigeria entitled Rural Households' Perception of the Expanded Programme on Children Immunization (Epi) in the Southwest of Nigeria shows that level of participation in EPI is fifty-six percent of the respondents had high participation in EPI; twenty six percent had low participation while eighteen percent did not participate. By this result, it could be inferred that the households in the study area actually embraced the programme. This might however, be unconnected with the indoor to indoor approach with which the programme was being executed. With the success of the programme, there is the prospect that there would be less deformed children in the near future which would likely ensure future human labor supplies.

The assumption has always been that, if children fully take the immunization as specified by EPI, there would be a drastic reduction in the percentage of deformed children and child mortality. Moreover, the study has

found that more of younger mothers participated and generally, there was a high level of participation in EPI. The high level of participation cannot be divorced from the fact that the method of information dissemination was effective and timely as the people confirmed that they were very much aware of the programme. The use of electronic media, with which the people were mostly informed, was responsible for the feat. The provision of the immunization at the non-expense of the target group must be seen as a great motivating factor for the high participation. It is therefore recommended that the zero payment for immunization should continue. Another thing is that it cannot be out of place if local town criers are used to inform the communities a day to the programme as there is the possibility of the willing participants forgetting even when they were aware of it few days to the program. Rural people very much appreciate roles of town criers in information dissemination. (Alfred and Alfred, 2012)

The Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) conducted a national survey on the expanded program on immunization among Filipino children in 2011. The survey further noted that many of children die from diseases that can be prevented through vaccines. Immunization is a proven program for controlling and eliminating life-threatening infectious diseases. Aside from being one of the most cost-effective health investments, immunization is also a strategy that is accessible to even the most hard-to-reach and vulnerable population groups. Vaccines can be delivered effectively through outreach activities and do not require any major lifestyle change. However, despite the success of immunization campaigns, many children still remain unprotected and at-risk to life-threatening diseases. The WHO also observed an increase of 14.8 percent in reported cases of vaccine-preventable diseases from 7,985 in 2010 to 9,167 in 2011. The full benefits of immunization should be ensured as a universal right of all children, regardless of where they live and who they are. (Philippine Information Agency, 2013)

Principles of Immunization

According to Hoekstra (2007), because measles kill, every infant needs to be vaccinated against measles at the age of nine months or as soon as possible after 9 months as part of the routine infant vaccination schedule. It is safe to vaccinate a sick child who is suffering from a minor illness (cough, cold, diarrhea, fever or malnutrition) or who has already been vaccinated against measles. If

the vaccination schedule is interrupted, it is not necessary to restart. Instead, the schedule should be resumed using minimal intervals between doses to catch up as quickly as possible.

Moreover, Zimmerman (2010) pointed out that vaccine combinations, antibiotics, low-dose steroids that less than twenty milligram per day, minor infections with low fever that is below 38.5º Celsius, diarrhea, malnutrition, kidney or liver disease, heart or lung disease, non-progressive encephalopathy, well controlled epilepsy or advanced age, are not contraindications to vaccination. Contrary to what the majority of doctors may think, vaccines against hepatitis B and tetanus can be applied in any period of the pregnancy. There are very few true contra-indication and precaution conditions. Only two of these conditions are generally considered to be permanent: severe allergic reaction to a vaccine component or following a prior dose of a vaccine, and encephalopathy not due to another identifiable cause occurring within seven days of pertussis vaccination. Only the diluent supplied by the manufacturer should be used to reconstitute a freeze-dried vaccine. A sterile needle and sterile syringe must be used for each vial for adding the diluent to the powder in a single vial or ampoule of freeze-dried vaccine. The only way to be completely safe from exposure to blood-borne diseases from injections, particularly hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) is to use one sterile needle, one sterile syringe for each child.

Compliance to Expanded Program on Immunization (EPI)

In each country, immunization programs are monitored using two different methods: an administrative method and through community-based surveys. The administrative method involves using immunization data from public, private, and NGO clinics. Thus the accuracy of the administrative method is limited by the availability and accuracy of reports from these facilities. This method is easily performed in areas where the government services deliver the immunizations directly or where the government supplies the vaccines to the clinics. In countries without the infrastructure to do this, community based surveys are used to estimate immunization coverage (Orenstein, 2010).

Also, community-based surveys are applied using a modified cluster sampling survey method developed by the World Health Organization. Vaccine coverage is evaluated using a two-stage sampling approach in which thirty clusters and seven children within each cluster are selected. Health care workers with no or limited background in statistics and sampling are able to

carry out data collection with minimal training. Such a survey implementation provides a way to get information from areas where there is no reliable data source. It is also used to validate reported vaccine coverage and is expected to estimate vaccine coverage within ten percent.

Surveys or questionnaires, though frequently considered inaccurate due to self-reporting, can provide more detailed information than administrative reports alone. If home based records are available, not only can vaccination status be determined but also dates of vaccination can be reviewed to determine if vaccinations were given at an ideal age and in appropriate intervals. Missed immunizations can be identified and further qualified. Importantly, other systems of vaccine delivery besides clinics used for administrative evaluation can be identified and included in analysis.

Prior to the initiation of the EPI, child vaccination coverage for tuberculosis, diphtheria, pertussis, tetanus, polio and measles was estimated to be fewer than 5 percent. Now, not only has coverage increased to seventy nine percent, but it has also been expanded to include other vaccinations such as for hepatitis B, Haemophilusinfluenzae type B, rubella, tetanus and yellow fever. The impact of increased vaccination is clear from the decreasing incidence of many diseases. For example, measles deaths decreased by 60% worldwide between 1999 and 2005, and polio, although missed the goal of eradication by 2005, has decreased significantly as there were less than 2000 cases in 2006 (Hoekstra,2007).

However, the general public must realize the importance of immunization. The program must be disseminated among every barangays so that everybody, even those in farflung areas of the country will be benefited. It is collaboration between Department of Health and other public institutions is common. For instance, most people are familiar with the mandatory collaboration between state health departments and school systems. All state immunization programs rely on schools, both public and private, as gatekeepers to enforce compliance with immunization requirements. This is a statutory relationship. Likewise, employers, again both public and private, may be required to ensure that certain employees “comply with occupationally mandated protections for their health (Biggs and Helms, 2009).

Public health programs also rely heavily on voluntary compliance, as in the effort to immunize infants. Voluntary compliance, in this case, is usually the result of strong professional guidance by physicians, public health educational campaigns, and the informed decisions of parents to protect their young

children. One might think of these efforts as collaborative, for without the guidance of physicians, in both the public and private sectors, and the voluntary compliance of parents, the immunization effort would surely fail.

Health departments collaborate with other institutions and organizations, either as a function of law or because of the need for goal-oriented partnering, or both. To conceptualize the functions of collaboration between institutions, it might be helpful to think of them along a continuum, with statutory relationships on the one hand and goal-oriented partnering on the other. For instance, in demanding proof of immunization for admission, schools provide a statutory public health function. A public health department may monitor the school's compliance with this law. Either school or the health department may propose an ititiative to educate parents in the community in the need for immunization (Butterfoss, Morrow and Webster, 2010).

Even local immunization coalitions can become institutions whose work can be coordinated for specific goals at the state level. A collaborative effort of Ohio's immunization coalitions was effective in the marketing of information and in the recruitment of vaccine providers into the statewide immunization registry system. More than 65% of the state's health care providers were contacted to enlist their participation (Modie and Rodriguez, 2010). Likewise, a statewide public/private partnership including the Virginia Department of Health, Sentara Healthcare, and Old Dominion University, formed to promote immunization across the lifespan (Tweed, Nasca, and Crews, 2010). Although results of their pilot project, the program is expected to increase the rate of fourth diptheria, tetanus, and pertussis (DTaP) shots for children in daycare in Hampton Roads, Virginia.

Given the increasing demand for more creative public health administration and noting these anecdotal success stories, and ask to what extent stateimmunization programs enter into coalitions for the purpose of improving public health outcomes. This question has several dimensions. First there is the question of whether public health agencies enter into any coalitions.

Both theory and case studies suggest that public health coalitions are useful, but bureaucratic impediments to partnering with the private and nonprofit sectors are nontrivial. Moreover, there is the corollary question of whether public health coalitions are functional policy tools for state administrators. If coalitions are only mechanisms for advocacy or developing professional networks, then administrators will have little confidence in the importance or impact of coalitions as public health policy tools. If coalitions are

important policy tools, however, it becomes necessary to investigate what types of organizations serve as coalition partners with state public health agencies. State programs may network with several sources, including other state agencies, local nonprofit social service agencies, pharmaceutical companies, local businesses, and healthcare provider associations. Each of these organization types can, in theory, make unique contributions toward public health outcomes, and the underutilization of some organizational types indicates lost opportunities in administering public health programs (Salamon, 2010).

Theoretical Framework

This study was based on the Health Belief Model (HBM). It was one of the first, and remains one of the best known social cognition models. It is a health behavior change and psychological model developed by Irwin M. Rosen stock in 1966 for studying and promoting the uptake of health services. The model was furthered by Becker and colleagues in the 1970s and 1980s. Subsequent amendments to the model were made as late as 1988, to accommodate evolving evidence generated within the health community about the role that knowledge and perceptions play in personal responsibility. Originally, the model was designed to predict behavioural response to the treatment received by acutely or chronically ill patients, but in more recent years the model has been used to predict more general health behaviors. The HBM suggests that your belief in a personal threat together with your belief in the effectiveness of the proposed behaviour will predict the likelihood of that behavior (Glanz, Rimer and Lewis, 2012; National Cancer Institute, 2010).

Moreover, the fundamental concept of HBM is determining the health behavior by personal beliefs or perceptions about a disease and the strategies available to decrease its occurrence. Personal perception is influenced by the whole range of intra-personal factors affecting health behavior. It provides a way in understanding and predicting how clients will behave in relation to their health and how they will comply with health care therapies.

The HBM addresses four major components for compliance with recommended health action: (1) perceived barriers of recommended health action, (2) perceived benefit of recommended health action, (3) perceived susceptibility of the disease, and (4) perceived severity of the disease. In addition, there are modifying factors that can affect behavior compliance.

The Expanded Program for Children Immunization (EPI) is done to prevent and protect infants from developing dangerous childhood diseases. Compliance to this immunization will benefit the community since the spread of such disease will be decreased. EPI represents the kind of preventive behavior toward which the typical HBM was directed. The purpose of HBM is to discover conditions that either facilitate or impede utilization which is the same with this study that focuses on the non-compliance of the parents of infants regarding immunization. Its goal is to determine the factors affecting the failure to complete the immunization. It will also ascertain the relationship between respondents' extent of knowledge about its importance and profile; and their non-compliance.

Statement of the Problem

This study aimed to determine the perception of mothers in Brgy. Darasa,Tanauan City, Batangas about the Expanded Program for Immunization (EPI). Specifically, it sought answers to the following questions:

1. What is the demographic profile of the mothers with regards to
    1.1. Marital Status
    1.2. Number of children
    1.3. Educational attainment
    1.4. Monthly income of the family
2. What is the perception of mothers to the Expanded Program for Immunization (EPI) in terms of the following:
    2.1. Health promotion
    2.2. Disease prevention
    2.3. Reduce complication or death
3. What are the factors that affect the non-continuity of the immunization of the respondents?
4. Is there any significant relationship between respondents' profile and their perception to immunization?

METHOD

Research Design

The researchers used a descriptive normative survey. It is a self-reported data which were collected from the respondents to explore and describe real life situations, which, in this study was the compliance and non-compliance of parents to EPI. Data collection was done with the use of questionnaire made by the researchers. It aimed to determine the frequency, percentage and other statistical calculations thus identifying this study as a quantitative research.

Research Locale

The study was conducted in Brgy. Drasa, Tanauan City, Batangas. The researchers chose this barangay because the community health centers have already been utilized during their community rotations. They also had experienced during their clinical rotations wherein some mothers were not completing their child's immunizations due to some reasons which the Barangay Health Workers (BHW) could not identify. The group decided to choose this topic to further assess the perception of mothers to immunization for their children and the possible factors that leads to non-compliance.

Respondents of the Study

The respondents of the study were the mothers in Barangay.Darasa. There were one hundred seventy five (175) respondents.

Data Gathering-Tool

The data gathering instrument that the researchers used was a self-administered questionnaire. The instrument's content was validated by the thesis adviser. After the adviser's correction, the suggestions were incorporated within the questionnaire.

The questionnaire was composed of three parts. Part one was about the demographic profile of the respondents such as marital status, number of children, educational attainment and monthly income. Part two were questions regarding the perception of mothers about the expanded program in immunization. Part three of the questionnaire was about the factors affecting respondents non-continuity in bringing their children in the health center for immunization. The questions were answered using the given scale:

Scale	Interpretation
4	Strongly Agree
3	Agree
2	Disagree
1	Strongly Disagree

Data gathering Procedure

First, the researchers drafted a request letter addressed to the City Health Office (CHO) Nurse to allow the researchers to gather preliminary data from the Barangay Health Center and acquire the list of mothers who have children in need of immunizations. A copy of the survey questionnaires was also attached in the said letter.

After the approval of the request, the researchers personally distributed them to the target respondents and assisted them in answering. The researchers then collected the accomplished questionnaires and the statistical evaluation of the raw data was done.

Data Analysis

The researcher utilized the following statistical techniques to ensure valid and reliable analysis and interpretation of data.

1. Frequency: Calculated how often values occur within a range of values. The data was collated and tabulated to determine the demographic data of the respondents.
2. Percentage: This was used as a descriptive statistics to denote the proportion contributed by a part in a whole
3. Ranking: Returns the rank of a number in a list of numbers. The rank of a number is its size relative to other values in a list. If you were to sort the list, the rank of the number would be its position.
4. Mean: The mean is the arithmetic average of a set of values to denote the perception of mothers to the EPI as well as the factors affecting their non-compliance.

   4- Strongly Agree: Mothers are very much knowledgeable of the importance of immunization regarding health promotion

   3- Agree: Mothers are knowledgeable of the importance of immunization regarding health promotion

   2- Disagree: Mothers are not knowledgeable of the importance of immunization regarding health promotion

1- Strongly Disagree: Mothers are not very much knowledgeable of the importance of immunization regarding health promotion

5. Chi- square. This was used to test the relationship between the demographic profile of the respondents and their perception about the importance of immunization

RESULTS AND DISCUSSION

This chapter presents results and discussion about the perception of mothers to the importance of immunization and the factors of their non-compliance with it.

1. Demographic Profile of Mothers

Table 1 shows the frequency and percentage distribution of the respondents according to their marital status. For non compliant mothers, it is presented in the table that there are 114 (65.1%) mothers who are married, 43 (24.6%) of them are living-in with their partners, 17 (9.7%) are mothers without partners and remain singles while only one (0.5%) of them is widow.

The result indicates that not all mothers are married to the fathers of their children and that some have become impregnated but not married.

Table 1. Frequency and Percentage Distribution of Mothers According to Their Marital Status

Marital Status	**Noncompliant Mothers**	
	Frequency	**Percent**
Single	17	9.7
Married	114	65.1
Widow	1	0.6
Live-in	43	24.6
TOTAL	175	100 %

In terms of educational attainment noncompliant mothers, 121 (69.14%) are High School Graduate, 26 (14.86%) are College Graduate, 19 (10.86%) are elementary Graduate and nine (5.14%) are College Level.

In a way, mothers who have reached a higher educational attainment are most likely to know more about the importance of immunization because this is sometimes discussed in some of their subjects and sometimes being discussed in school. They become more aware of the Expanded Program for Immunization. The effort of the government to strengthen the vaccination among children become known to them for the eradication or elimination efforts of measles and the indigenous wild polio virus (http://www.doh.gov.ph/node/1067.html) .

Table 2. Frequency and Percentage Distribution of Mothers According to Their Educational Attainment

Educational Attainment	**Noncompliant Mothers**	
	Frequency	**Percent**
Elementary Graduate	19	10.86
High School Graduate	121	69.14
College undergraduate	9	5.14
College Graduate	26	14.86
TOTAL	175	100 %

In terms of their monthly income of noncompliant mothers, there are 100 (57.1%) of them who are earning a monthly income of Php 1,000 – 5,000, five or (2.9%) of them have a monthly income of Php 10,001 – 20,000 and only one of them has a monthly income of Php 20,001 – above.

Based on the result, nearly half of noncompliant mothers are receiving the lowest range of monthly income while most of the compliant mothers are receiving a little higher than them. Those families that are earning more may have the capability of bringing their children to the health centers for immunization because transportation maybe a factors for not complying with immunization among children which is scheduled every Wednesday (National Statistics Office, 2009).

Table 3. Frequency and Percentage Distribution of Mothers According to Their Monthly Income

Monthly Income	Noncompliant Mothers	
	Frequency	Percent
Php 1000 -5000	100	57.1
Php5001 -10,000	69	39.4
Php10001-20000	5	2.9
Php20000 and above	1	0.6
TOTAL	175	100 %

In terms of the number of the children of noncompliant mothers, 80 (45.7%) of them have two children, 48 (27.4%) have only one child, 24 (13.7%) have three children while ten (5.7%) of them have four children.

Noncompliant mothers have only two children which may suggest that they are planning their family. A small family is more likely to sustain the family's need which includes vaccination of the children because of its necessity. Immunizations protect children from serious diseases and also prevent the spread of those diseases to others. Over the years immunizations have thwarted epidemics of once common infectious diseases such as measles, mumps, and whooping cough. And because of immunizations there isa near eradication of others, such as polio and smallpox (Gesmundo, et.al. 2009).

Table 4. Frequency and Percentage Distribution of Mothers According to The Number of Children

Number of Children	Noncompliant Mothers	
	Frequency	Percent
1	48	27.4
2	80	45.7
3	24	13.7
4	10	5.7
5 – above	13	7.4
TOTAL	175	100 %

2. Perception of Mothers to Expanded Program in Immunization

2.1 Health Promotion

Table 5.Immunization as Health Promotion of Mothers in BrgyDarasa,Tanauan, City.

HEALTH PROMOTION	**Non-Compliant**	
	MEAN	**VERBAL INTERPRETATION**
Children who receive complete vaccines is healthy and less likely to get sick	2.59	Agree
Children who received completed immunization has stronger immune system	2.44	Disagree
Giving immunization at the right time is more effective in strengthening the immune system of the children.	3.11	Agree
Average weighted Mean	2.71	Agree

Table 5 illustrates the perception of noncompliant mothers agree that immunization at the right time is more effective in strengthening the immune system of the children (3.11) and also children who receive complete vaccines is healthy and less likely get sick (3.73), but disagree that Children who received completed immunization has stronger immune system (2.44).

Almost all mothers are limited in saying that giving immunization among children at the right time is more effective in strengthening the immune system of the child according to the mothers giving immunization at the right time is more effective in strengthening the immune system of the children. It is good that most mothers believe that it is important to have their children immunized so that it will strengthen their immune system because Gesmundo, et.al. (2009), immunization can help prevent diseases that can be commonly acquired and protect us from serious diseases and also prevent the spread of those diseases to others.

2.2 Disease Prevention

Table 6.Immunization as Disease Prevention of Mothers in Brgy.Darasa,Tanauan, City.

DISEASE PREVENTION	**Non-Compliant**	
	MEAN	**VERBAL INTERPRETATION**
Children who has completed vaccination prevents spread of communicable diseases	2.76	Agree
The more the number of children who are completely vaccinated, the lesser the risk of contracting immunization preventable diseases.	2.24	Disagree
Immunization helps in protecting the child from serious illnesses.	2.60	Agree
Average weighted mean	2.53	Agree

Table 6 shows the perception of noncompliant mothers, they agree that children who had completed vaccination prevents spread of communicable diseases (2.76) and also that Immunization helps in protecting the child from serious illnesses (2.60) but they disagree that the more the number of children who are completely vaccinated, the lesser the risk of contracting immunization preventable diseases (2.24).

2.3 Reduce complication or death

Table 7.Immunization as a Means in Reducing Complication/Death of Mothers in Brgy.Darasa,Tanauan, City.

REDUCE COMPLICATION/DEATH	NonCompliant	
	MEAN	VERBAL INTERPRETATION
There is little to no risk of an epidemic if children have been immunized.	2.12	Disagree
Immunization provides an opportunity to deliver other life-saving measures.	2.53	Agree
Immunization can prevent death caused by communicable diseases.	2.03	Disagree
Average Weighted mean	2.23	Disagree

Table 7 presents the perception of noncompliant mothers regarding the expanded program on immunization in terms of being a means in reducing complication such as death. It is indicated that for noncompliant mothers, they agree that immunization provides an opportunity to deliver other life saving measures (2.53). But, they disagree that there is little to no risk of an epidemic if children have been immunized (3.38) and that immunization can prevent death caused by communicable diseases (2.03). The answer of the two groups of mothers have always discrepancy. It seems that they did not understand the importance of immunization or have little knowledge about it because they disagree that immunization prevent death caused by communicable disease.

Getting immunized is important for at least two reasons: to protect the childrenfrom infectious diseases today and to protect them from its complication. Vaccines are the best way we have to prevent infectious disease. A successful immunization program depends on the co-operation of every person (Emily K. Brunson, MPH, PhD, 2013).These illnesses can result in serious complications and even death. A small number of people may be susceptible to diseases, such as those with impaired immune systems. These people may not be able to get vaccinations or may not develop immunity even after having been vaccinated. Their only protection against certain diseases is for others to get vaccinated so the illnesses are less common. If exposure to a disease occurs in a community, there is little to no risk of an epidemic if people have been immunized.

3.Factors that affect the non-continuity of the immunization of the respondents

Table 8 shows the factors that affect the non-compliance of the mothers regarding financial aspect, belief and attitudes. In terms of financial aspect, the respondents agree that they do not have enough money allocated for the health of their children as indicated by its weighted mean of 2.51. However, they disagree that their job is more important than immunization of their children (2.14) and the cost of transportation from their house to the center is costly (1.66),

Table 8 : Mother's non-compliance in Barangay Darasa, Tanauan City, Batangas

FINANCIAL	**MEAN**	**VERBAL INTERPRETATION**
We don't have enough money allocated for health.	2.51	Agree
My job is more important than the immunization of my children.	2.14	Disagree
The cost of transportation from here is too costly.	1.66	Disagree
Average weighted mean	**2.10**	**Disagree**
BELIEFS		
Immunization is not that important for my children.	1.7	Disagree
Immunization is not safe.	1.52	Disagree
Immunization is not effective	1.66	Disagree
There are larger risks in immunization than benefits.	1.6	Disagree
It is against my religion.	1.48	Strongly Disagree
Average weighted mean	1.59	Disagree
ATTITUDE		
I'm too lazy to go to the barangay health center.	1.76	Disagree
I always forget that immunization schedule.	2.68	Agree
I'm not motivated enough to continue the immunization of my child/children.	1.8	Disagree
Average weighted mean	2.08	Disagree

In terms of belief as the factor that affect the non-compliance of the mothers on immunization, the finding shows that the result of the weighted mean (1.59) indicates that the beliefs are not the reason for non-continuity of the immunization of the child. And from that, they are able to decide whether to have their child involved or not in the immunization program.

In terms of attitudes towards immunization as a factor that affect mothers non compliance to EPI, The table above shows that the results of the weighted mean (2.08) shows that the attitudes are not the reason for non-continuity for the immunization of the child as a whole, however,there are some of them who said that they always forget the immunization schedule as suggested by its weighted mean of 2.68.

The findings indicate that as a whole the enumerated factors such as location and belief are totally not a factor that affects the respondents' non-compliance with the EPHI. On the other hand, financial, time/schedule and attitudes are partially affecting them because some of them say that they do

not have enough money allocated for their health, sometimes no one is available in the family to bring the children for immunization and some says that they forget the schedule of the immunization.

A study by McIlvennys and Barr (2007) confirmed that high cost of transportation to and from the clinic were associated with completion of immunization. Thus, the more expensive the immunization is, the more likely it is not to be fully immunized. Abdulraheem, Onajole, Jimoh and Oladipo (2011) in their study explored factors influencing incomplete vaccination among rural Nigerian Children. They found that parents' objection, disagreement or concern about immunization safety accounted for 38.8% and long distance walking 17.5%.

Ibnouf, VandenBorne, and Maarse (2007) found that children in urban and rural areas differed significantly in their reported vaccination coverage and their receipt of each vaccine. They found that in urban areas, accessibility to immunization centres is high compared to rural areas where amidst the few centres immunization is schedule based.

According to Pub Med (2009), among children who started their vaccine series with BCG vaccine against tuberculosis, 68.0% received the measles vaccine the last of the series, 67.1% completed the vaccine series receiving all required vaccines but only 19.4% were correctly vaccinated according to the program's vaccination schedule, with the correct number of boosters at the appropriate time. Non-compliance with the immunization schedule was related to parents' lack of time (40.3%), forgetting to return (33.2%), losing the immunization card (10.3%), travels (7.7%), and lack of money (1.1%). Completely vaccinated children were more likely to be male, to have their immunization card available, to have parents aware of the vaccines' side effects and the immunization schedule, and to have their immunization paid for by their father. In Ndoulo, health district of Diourbel, adequate immunization coverage is very low because of the high rate of abandonment and poor compliance with vaccination schedules."

Moreover, according to Pub Med (2008), "Fifteen studies were included in this overview. Eight studies used semi-structured interviews, five used focus groups, and two used both methodologies. Themes fell under four major headings: issues of harm, issues of distrust, access issues, and other issues. Barriers identified in more than half of the studies included concern about the risk of adverse effects, concern that vaccinations are painful, distrust of by those advocating vaccines including belief in conspiracy, belief that vaccination should

not occur when the child has a minor illness, unpleasant staff or poor communication, and lack of awareness of the vaccination schedule.

4. Test of Significant Relationship Between the Profile of the Respondents and Their Perception to EPI.

Table 9. Relationship of Mothers Profile to their Perception Regarding EPI

Variable	Chi-square Computed Value	Chi-square Critical Value	Interpretation
Health Promotion and Marital Status	2.672	3.841	Not Significant
Reducing Complication and Marital Status	7.31	5.991	Significant
Disease Prevention and Marital Status	0.176	3.841	Not Significant
Health Promotion and Educational Attainment	8.264	7.815	Significant
Reducing Complication and Educational Attainment	4.531	7.815	Not Significant
Disease Prevention and Educational Attainment	8.917	5.991	Significant
Health Promotion and Income	8.635	5.991	Significant
Reducing Complication and Income	1.978	5.991	Not significant
Disease Prevention and Income	5.641	5.991	Not Significant
Health Promotion and No. of Children	3.195	7.815	Not Significant
Reducing Complication and No. of Children	7.462	9.488	Not Significant
Disease Prevention and No. of Children	3.091	5.991	Not Significant

Table 9 presents the test of significant relationship between the profile of the respondents and the respondents' perception to EPI. According to the results in table 9, there are significant relationships between the respondents' perception in immunization in terms of health promotion and their income and educational attainment. There is a significant relationship between perception in immunization in terms of disease prevention and their educational

attainment. Also, there is a significant relationship between perception in immunization in terms reducing complication and their marital status.

On the other hand, there are no significant relationship between number of children and the respondents' perception in immunization in terms of health promotion, reducing complication and disease prevention. Moreover, there are no significant relationship between the perception in immunization in terms of reducing complication and their educational attainment and income. There is no significant relationship between the respondents' perception in immunization in terms of disease prevention and their marital status and income. Furthermore, there is no significant relationship between respondents' perception in health promotion and marital status.

The result is similar to the study of Butterfoss, Morrow and Webster, (2003), it was found out that Educational attainment showed a great impact to the mother's perception immunization in terms of health promotion and compliance. They concluded that those with high educational background are most likely to comply than those with low educational background. However, monthly income gives no significance with the mothers' perception and compliance with immunization program. It was also included there that most mothers in Brgy. Janopol Occidental in the middle age ranging from 26-35 were complying with EPI. Though the researchers recommended not to include demographic profile since it had no relationship with their awareness or compliance.

Hoekstra (2007) suggested that program must be disseminated among every barangays so that everybody, even those in farflung areas of the country will be benefited and mothers must general public must realize the importance of immunization.

CONCLUSIONS

The findings show that the majority of the respondents is married, mostly re high school graduate who are receiving a monthly income of Php 5,001 – 10,000 and with two children. It can be deduced from the result that, although married couple outnumbered the unmarried couple, there are a number of couples who are living outside marriage and the society is now open to such issue. Also, the amount of income the family is receiving shows that the family is not receiving a big amount and, that could probably be the reason why the family has mostly two children only. And also, for them to save, they are having their immunization in the center so that they can avail it for free.

Almost all mothers are one in saying that giving immunization among children at the right time is more effective in strengthening the immune system of the child. The respondents strongly agreed that immunization is an effective way for prevention of diseases in children. However, they give highest rating n the perception that children who has completed vaccination prevents spread of communicable diseases and also reduces the likelihood of death. It also shows that being immunized can also help provides opportunities to acquire other life-saving measures.

The findings indicate that as a whole the enumerated factors such as location and belief are totally not a factor that affects the respondents' non-compliance with the EPHI. On th other hand, financial, time/schedule and attitudes are partially affecting them because some of them said that they do not have enough money allocated for their health, sometimes no one is available in the family to bring the children for immunization and some forget the schedule of the immunization.

It is shown in the result that there is relationship between the perception to the importance of immunization in terms of health promotion and their educational attainment and income as well as between marital status and their perception in reducing complication. With regards to other variable, there are no significant relationships.

RECOMMENDATIONS

Considering the preceding conclusions, the researchers have cited recommendations:

1. Develop further a study that evaluates the awareness and compliance of the mothers to EPI.
2. There should be more dissemination of information about the importance of immunization and its complication so that all mothers become aware of it as well as to do their best to bring their children to health centers and prioritize it even if they do not have enough money.
3. It is also suggested that health centers may ask the help of those nursing students wo may have their community duty to conduct teach-ins to all mothers about the health centers' program and its importance as well as the common diseases and its complications including immunizations
4. Barangay Health workers are also encouraged to also do mapping among the mothers in Barangay and list down that are in need of vaccination and ask help from Barangay Officials in following them up for immunization.

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