

MATERNAL CONSTRAINTS TOWARDS COMPLIANCE TO EXPANDED PROGRAM ON IMMUNIZATION

Beaven Andrew A. Atienza, Bella Rea S. Abing, Van Lendl T. Calibugar ,
Phoebe Mnemosyne Athena T. Galleposo
Mindanao State University – Iligan Institute of Technology College of Nursing,
Andres Bonifacio Avenue, Tibanga, Iligan City, 9200 Philippines

Background: *A goal of 95% immunization coverage is vital for the continuous control of vaccine preventable diseases. Unfortunately, Immunization coverage in certain areas in Iligan City has been unbelievably and alarmingly low increasing morbidity and mortality risk for susceptible individuals.*

Objective: *The reasons for incomplete and non-vaccination are not well understood and few data is available that could explain the situation. This study aimed to determine the maternal barriers that account for low immunization rate in Iligan City.*

Methods: *A descriptive, cross sectional survey was conducted to the 6 out of top 10 baranggays with the most unimmunized children. Two – Stage Random Sampling Method was utilize in selecting the 100 respondents. Questionnaires were distributed to the mothers who fail to immunize and/or completely immunize their children.*

Results: *Wrong notion and inadequate immunization information constitute the biggest barriers to EPI. The topmost reason for non-adherence to immunization is Childhood illness. Though not a contraindication, a staggering 100% of mothers pointed out that minor illness, such as mild upper-respiratory infection, loose stools, vomiting, colds, or even mild fever deter them from getting the child vaccinated. 92% and 86% of the respondents are unaware about completing 5 vaccines and that “mass vaccination” is available for children with incomplete immunization, respectively. 68% of the respondents misperceive vaccine as harmful. 55% of them claimed that hectic schedule prevent them from immunizing their children*

Conclusion: *Formulating strategies to break down the barriers to immunization compliance are not beyond our reach. Maternal education about the concept and value of immunization and improving health worker motivation can significantly contribute to enhance vaccination status. This study serves as an eye opener to the government to continue promoting Expanded Program on Immunization (EPI) for it could save and protect the precious lives of our future generations.*

Keywords: *Compliance, Maternal Constraints, , Expanded Program on Immunization,*

INTRODUCTION:

Philippines' Expanded Program on Immunization (EPI) strategy to achieve Universal Child Immunization goal is sustaining routine Full Immunized Child (FIC) to at least 90% coverage in all provinces and cities (PHN 2007). Infants must be vaccinated against the seven vaccine preventable diseases before their first birthday in order to gain maximum protection (child health survey 2002).

Unfortunately, UNICEF reported that 9.7 million under 5 yrs. old and an estimated 4 million neonates (first 28 days) worldwide are either killed or disabled by vaccine-preventable disease (UNICEF 2009).

A research in Nigeria among children aged 12-23 months, reported that not completing vaccination was due to maternal knowledge and attitudes, while partial immunization was more link to problems with vaccination services (Babalola 2011). This coincides with the study in Bangladesh noting only 51% of the subject were fully immunized and pointed out employment status and maternal education as the reasons for low immunization compliance(Perry et al 1998) . A study by Abbott and Osborn (1993) identified child illness and financial reasons for immunization delay. Low income is also associated with low immunization (Klevens and Luman, 2001; Bates and Wolinsky, 1998; Zimmerman, 1996).. Parents with lower income have bigger chances to experience constraints, such as transportation or access to health care services and keeping with the immunizations timing (Klevens 2001). Talani, et al(2000) revealed child illness, misinformation and unavailability of vaccines as top reason for incomplete immunization .Similar barriers were cited by Nace et al (1991) whose study presented child illness and no insurance coverage as obstacles to vaccination. (Bruce1990, Streefland 1999) surmised that availability of drugs, manpower and equipment should be considered in order to provide quality vaccination .Improvement of quality immunization services is still needed in developing countries according to an African and Asian studies (Streefland 1999)

Timing of vaccination schedule is a critical indicator of immunization quality coverage (Akmatov 2012, Datar 2007). The purpose of the present vaccination schedul advocated by World Health Organization is to give effective protection at the youngest age possible (WHO 2002) The common assessment of vaccination coverage is the number of children who have received the required number of vaccine doses irregardless of age. (Luman et al., 2005). However, in order to give maximal protection against vaccine-preventable diseases, a child should receive all vaccinations at the right schedule (Glauber, 2003).

Understanding local barriers that adversely affect immunization compliance is critical to devise efficient vaccination services that would lower drop out number and improve coverage. No study to determine the impediment for low immunization rate was conducted in Iligan City. This study was undertaken to find out the reason behind poor adherence to EPI so that our government can identify, eliminate or minimize these problems.

MATERIALS AND METHODS:

This study follows a Descriptive correlational research design with a total of 100 respondents selected through a two stage random sampling method. The selection criteria consist of mothers of non-immunize or partially vaccinated child, regardless of age, marital status, number of children, educational attainment, beliefs, and economic status. Data was obtained from the 6 out of top 10 Baranggays in Iligan City with the most unimmunized or partially vaccinated child. The interview questionnaires were developed in the Visayan dialect and English Language. This set of questionnaires was subjected to test for reliability using the Cronbach’s alpha by testing this questionnaire to some mothers with unimmunized child who were not included in the research. With regards to the content validity, the weight of each statement was solved after they answered the questions. If the weight mean is greater than the undecided, then the statement is retained. Attached with the instruments is an accompanying letter addressed to the respondents requesting them to answer the questionnaires honestly with the assurance of confidentiality to their answers and identity.

The final data was tallied and analyzed using Statistical Package for Social Sciences (SPSS) software.

RESULTS AND DISCUSSION:

Table 1 summarizes the main reasons to non-attendance of mothers to immunization in their respective health center

Reasons for incomplete or non-adherence of mothers to EPI	% of respondents
A. Disease related factors	
Childhood illness	100%
B. Health care provider and health system factors	
1. No health teaching given	65%
2. Unable to understand the health teachings	65%
3. Vaccine not available	58%
4. Fear of being immunize with wrong vaccine	32%
5. Closed health center during the schedule	19%
6. Absent health care worker	4%
7. Unaccommodating health care worker	3%

C. Social and Economic factors		
1. Lack of time.		55%
2. Health Center is far from house		42%
3. Feel tired to go to the Health Center.		32%
4. Don’t have fare		9%
5. Late arrival		5 %
6. Lack of family or social support		3%
D. Psychological factors		
1. Wrong Perception		
a. The vaccine can cause harm or can bring diseases to my child.		68%
b. Vaccines contain bacteria or viruses and can make my child sick.		53%
c. Vaccines are useless.		45%
d. The elderly says that immunization is not effective		44%
e. A child will die due to immunization.		40%
2. Unaware:		
a. That a child should have a complete immunization of 5 vaccines?		92%
b. About “mass vaccination” for children who weren’t able to complete their immunization on their 1 st birth day?		86%
c. Of the schedule for immunization in their baranggay?		85%
a. That BCG and Hepa B vaccines are given after birth or any time after birth?		78%
b. That there are three (3) doses of DPT vaccine and is given every after 6 weeks?		76%
c. That Measles vaccine is given on the ninth month of your child?		58%
d. That the child should be fully immunized on or before his/her first birthday?		45%
d. That a local reaction at the site if injection and a low grade fever is normal after vaccination		15%
e. Of the importance of vaccination to your child?		7%

Decrease adherence rates are attributable to four factors:

DISEASE RELATED FACTORS

Results showed that childhood illness is the greatest barrier influencing low childhood immunization rate. Though not a contraindication, 100% of mothers pointed out that minor illnesses, such as a mild upper-respiratory infection with or without low-grade fever cold, loose stools, vomiting or even mild fever deter them from getting the child vaccinated. False contraindications like mild fever was also reported as reason for non-vaccination in Nigeria (Onyiriuka et al 2005; Anah et al 2006; Kabir et al 2004; Adeiga et al 2006). Nace et al 1991 cited the top three barriers as ill child wasting time at the clinic, and no insurance coverage led to incomplete vaccination. In Congo, similar obstacles were noted by Talani, et al (2000) presenting child illness, misinformation and unavailability of vaccines as main reason for under immunization. Bond (1998) also noted minor illnesses in the family (fever, headache) was associated with the non- immunization. Some thought that vaccines may only aggravate their child's disease. This delay might lead to decline adherence to the next vaccination schedule. A study by Abbott and Osborn (1993) pointed out child illness and financial reasons for delay in immunization.

According to Schiefele, et al, (2011) deferring immunization for common, mild ailments in children resulted in missed chances for immunization. The health care provider should be reassured that minor illness is not a reason to delay vaccination schedule. Mothers prefer to miss appointments out of fear that vaccination can do more harm than good when their child is sick. (Szilagyí 1996) supported these with evidences citing misperceptions leading to missed opportunities in administering needed vaccines Among the most usual illness mistaken as contraindications are minor upper respiratory tract illnesses (including otitis media) with or without fever, diarrhea and being in the convalescent phase of an acute illness. (CDCP 2011)

HEALTH CARE PROVIDER AND HEALTH CARE SYSTEM FACTORS

Adherence is significantly affected by health care provider's attitudes and health care facilities.

No or vague health teaching

Health workers not giving explanation or not providing clear information about the vaccine is the strongest impediments for vaccination compliance. Health workers often communicate poorly and little with mothers, so that many mothers complained of not being informed about return date what to do with the vaccines side effects (Pillsbury B. 1990). Several studies found out that parents of partially immunized child noted lack of promotion or follow-up of routine immunization as an obstacle for not having their children vaccinated (,Bhanot 2004, Ministry of Health and Family Welfare 2004). Far too many parents leave sessions without knowing important information about return visits, side effects, etc. Benin, a review about EPI found that

one of the major barriers to vaccination was mother's lack of knowledge of return date for immunization (WHO 2008). Health workers in Somalia did not offer instruction about immunization side effects (La Fond 1990). This poor communication by health workers can lower adherence rate. Pertinent information about vaccines was not communicated well by healthcare providers in Niger (Fields R 1993). Mothers in Guinea complained that they were not told about the disease their kids were immunize against or the vaccine reactions. (Health Access International 1999; Wansi 2001). Studies reported that lack of information about schedules lead to low immunization compliance (Bond et al. 1998; Bukenya& Freeman 1991; Eng et al. 1991; Harmanci et al. 2003; Khanom & Salahuddin 1983). Few mothers in our study were satisfied about the health workers instruction to them about what to do with vaccine side effects. Effective communication of parents and health worker was pointed out in Armenia (WHO 2006). 97% of mothers in Dhaka have the knowledge when to return after health station visit (Perry 1996). 80% of parents in Uganda reported that health staff oriented them to return for next dose (Bukenya 1998).

Health care personnel

This study may show only 3 % of mothers citing unaccommodating personnel as barriers to immunization but the deeper problem here is the poor overall quality of mother –health worker relationship. 65% of mothers complained of vague explanation from personnel and were hesitant to clarify information, fearing they may be reprimanded or they may be rebuke by unfriendly staff. Various study in different places like W. Africa (Centre International de L'Enfance1990), Ethiopia (Ministry of Health, UNICEF/Ethiopia2001), Niger (Keith 1992), Zimbabwe (Razum 1993), Kenya (Abilla 1993), Nigeria (REACH 1992),Bangladesh (Khan 2005, Perry 1996) supported the fact that mothers were not treated right by Health staff. Mothers are embarrassed which deter them from visiting again the health facility for next vaccination (Bukenay 1998, Fields 1993, Perry 1996). Their reluctance of asking question can only compound their fears of having negative experiences such as being immunize with wrong vaccine. Various literature generally presented evidence that mothers' previous experiences with health care services cause them to either adhere or not adhere to vaccination .

Many families in Niger did not even try to have their kids immunize upon knowing about health workers rude treatment to others (Keith 1992).Wrong treatment of mothers by health providers was pointed out as the major factor of incomplete vaccination in Syria (Focus Group Research 1990).However only 13% in Uganda (Bukenya 1998) reported about being badly treated.

Health workers acting rudely to mothers can be caused by several factors. Health workers in the Philippines like in Kenya (Abilla 1993) and Somalia (La Fond 1990), think they were not supported by the health system (not on time payment, low salary, no incentive; supervision, training work were not enough).They displaced their bitterness to mothers. A study in Benin shows that the lower the health worker's resource, the higher is the maltreatment incidents

(Social-Cultural Context of Immunization in Benin 1991). Mothers being irresponsible by forgetting immunization record, missing appointments and not maintaining child's health can be grounds for health staff to be rude to them in Gambia and Guinea (Fairhead 2005, Leach 2006, Bjerregaard 1991).

Health Services

Unavailability of vaccines is one of the most common barriers to immunization adherence in this study. This not only hinder mothers to comply with the present vaccination schedule but this may prevent mothers from coming back in the future as mothers may presume to be in the same predicament on the next appointment. In the Dominican Republic, 90% of mothers reported that the staff treated them right due to lack of vaccine and vaccinator (AlConde 2002). When vaccines are out of stock, mothers are told to visit next week causing delay. Closed health center and absence of health worker and can contribute to non-attendance because this has a discouraging effect especially to mothers who are busy and living far from the clinic

It was noted in Armenia that the primary causative factor for low or non immunization was lack of vaccine (UNICEF/Armenia, WHO/Armenia 2006). When parents travel far, miss work, spend more time waiting and then cannot have their kids immunize due to of lack of resources, chances of going back is slim. Vaccines should be present at health facility but repeated lack out of stock vaccine was also noted in other places (IPL 2011) A significant amount of studies supported the fact that health facilities was found to have inefficient cold chain or lack of vaccines (AlConde 2002, FGR 1990, Bukenya 1998). Vaccines are not available because of no funding, poor distribution systems, and other reasons (Leigh 2004, Ministry of Health and PAHO/World Health Organization. 2004, Ministry of Health Lusaka/Central Board of Health. 2004, Ministry of Health Socialist Republic of Viet Nam. 2004, Ministry of Health, Republic of Rwanda, Expanded Programme on Immunization. 2004, Rapid assessment of health systems barriers to immunization, August 2004). With shortage of immunization supplies they may miss being vaccinated on that day, which can consequently discourages future compliance. In Africa and Asia studies reported that the major reason of vaccination problem are insufficient supplies especially vaccines and inadequate vaccine information. (Streefland1999).

SOCIAL AND ECONOMIC FACTORS

Socio-economic constraints are enormous barriers to EPI adherence

Time constraints

Hectic schedule appears to be a significant factor in complying with the immunization adherence. Full-time housewives doing household chores and attending all their children needs all day often lack time to get all their kids immunize. With their burdensome schedule, they sometimes get tired in bringing in children to clinics, decreasing immunization rate. In Dhaka mothers a study revealed that mothers with multiple jobs was burn-out (Blanchet 1989)

while another findings in Dhaka showed 31% of mothers considered their work responsibilities as a factor for not vaccinating their children (Uddin 2008)..In Kenyan district, mothers claimed that they were too busy to have their kids vaccinated (Gaturuku 1990).. A study in Somalia reported that mothers complained about the time needed to treat the vaccine side effects and the required time to travel to health center (LaFond1990).

Distance

The Mother's distance to health center is a considerable barrier affecting adherence to EPI. A 2003 research in Mozambique (Sheldon 2003) cited distance to health center as the principal factor of non-immunization. Mothers in six states in Nigeria cited distance as a constraint (Babalola 2005); 30% in Liberia(Bender 1988) and 43% in Siaya, Kenya (Fields 1992).Data showed 63% of our respondents live 500-2999 meters away from the health center. In Bangladesh a study found that women living less than 1km from healthcare site has greater chances of immunizing their children. (Rahman M, 2010). This coincides with the study in Senegal which presented 71% completely immunized children live less than 10km from health facility. Only 10% of children from far villages were completely vaccinated (Health Access International 1999). A health facility within 2 km of an urban location and the children's vaccination status was found to positively link in India. (Ghei K, 2010) In addition with distance problem, bad weather, muddy road conditions, heavy rainfall and flood discourages compliance to health services. Other families consider these obstacles as too hard to solve (Indian Market Research Bureau 1987). Some parents also think that time should be better spend earning money and providing food for the family than being spent to long distance travel and waiting for long hours to have their children immunized (Bhanot 2004).

Other factors will come into play if the mother is living far from health center. Our data showed only 3% of mothers are not allowed by family members to go to clinic. This is due to the belief that vaccines are unsafe and ineffective. Fortunately most mothers were supported by their family to go to health center but long distance transportation cost hinders the trip. The more distant the clinic the more costly is the transportation. 79% of our respondents are unemployed. Most employed mothers also have low income. A study by (Klevens and Luman, 2001) cited parents with lower household incomes are more prone to experience vaccine service and transportation constraints which makes keeping with the on immunizations schedule tough. Past studies showed that family income was related with immunization coverage levels, and low family income is also a risk factor for low vaccination (Zimmerman, 1996; Bates and Wolinsky, 1998). This is supported by the previous study of Renstein (1990) showing a consistent relationship between income and vaccination.

PSYCHOLOGICAL FACTORS

Psychological factors appear to be an enormous barrier to vaccination. Mothers' lack or inadequate knowledge about vaccines significantly impacted their practices and behaviors which prevent vaccination compliance. This is supported by

the study of (Waisbord S,2005) which noted knowledge gaps as underlying factor for low adherence with immunization. Knowledge of mothers in Niger about vaccinations was link to childhood immunization rate. (Odusanya2008). Coreil et al.,1989 revealed similar findings presenting obstacles to child vaccination were poor perception and knowledge. After preliminary immunization, 92% stop bringing their child to clinic because they are unaware of the need to complete the 5 vaccines before their first birthday. Vaccination drop outs in different places was due to being uninformed about the needed number of vaccines and return schedule (Agarwal 2005 Devivanayagam 1992 Pillsbury 1990).Lack of awareness about “Mass immunization” to make up for the missed vaccines after the child’s first birthday and the immunization schedule has consequently led to poor adherence (Manjunath 2003). Lack of information about mass campaign was the most frequently-pointed factor given by caretakers of vaccination deterrence in numerous studies in different countries such as, Mexico (Perez-Cuevas 1999) Egypt (Reichler 1998), El Salvador (Lin 1971), Ghana (Belcher 1978) and Pakistan (Reichler 1997). Busy schedule was among the factors reported for not being able to attend mass campaign. This reason was documented in the studies in Ghana and Pakistan.(Reichler 1997, Bandyopadhyay 1996, Jajoo 1985, Belcher 1978).

Vaccine’s efficacy is also an issue. 34% of mothers in Pakistan felt uncertain about immunization efficacy (Consultants Consortium SoSec KEMC 2000). The effectiveness of vaccine was also doubted by most of the respondents in a large survey in Nigeria (Babalola 2005). In spite of being immunize the protection form vaccination was thought to be of limited effect by both health workers mothers in Somalia because it lasted only for a limited time (LaFond 1990). It is rumored in different places that children is still getting the disease like measles after being immunize (REACH 1992, Shafritz 1992).

Misperceptions about vaccine safety lowered mothers’ confidence in vaccines and cause them to refuse to have their children vaccinated. If more mothers decide not to have to their children immunized morbidity and mortality would most likely increase. Some mothers thought that child’s immune system could be weakened due to too many immunizations. This lay beliefs and vaccine myths are dangerous and has misled 68% of the respondents in this study. Myths that show vaccines as harmful, useless and ineffective had led to misperception which adversely affect vaccination adherence. A baby’s immune system can accommodate immunization and can respond to approximately 100,000 organisms at once. There is greater harm for not immunizing kids. Decades of research worldwide prove vaccinations are effective and safe. (DOH, new York, cdc.gov). 15% of mother state that low grade fever and a local reaction at the injection site such as swelling and redness, was the cause for non-immunization. A lot of mothers in Somalia (LaFond 1990), 30% in Armenia (UNICEF/Armenia, WHO/Armenia 2006) and more than half in Liberia (Bender 1988) stated fears of side effects as reasons for non-vaccination. In cases where older sibling had side effects, parents choose not to vaccinate the younger children (Bhanot 2004).Common vaccine side effects like mild fever, or swelling at the injection site indicate that the vaccine is

working. (cdc.gov).Health staff giving information about vaccines side effects would be of help according to some mothers (LaFond 1990).

The low educational level of mothers has a strong relation with low vaccine uptake (Markland 1976, Marks 1979). Educational status of 74 % of our respondents ranges from elementary to high school graduate. Only 16% of mothers graduated in college. (Markland 1976, Marks 1979) study showed that over two-thirds (70.4%) of mothers who failed to vaccinate their kids had either primary school education or no formal education while (Altinkaynak et al., 2004) study cited increase immunization to educated mothers.

Knowledge versus perception

There indeed are strong association between good vaccination rate and scientific knowledge as cited by some studies ((Babalola 2005, Ibnouf 2007). However, numerous research findings presented high vaccination status to families with very low understanding of immunization (Bukenya 1998, Leach 2006, Sheldon 2003). Rwandan mothers and other family members had only moderate level of understanding about schedule, vaccines, etc., but immunization status was very high (Habimana 1991). In spite of extremely low levels of scientific knowledge about vaccination in Uganda more than 90% of mothers believe in the importance of vaccination (Bukenya 1998) . “29% of urban and 48% of rural mothers in Gambia can’t rightly name any vaccine preventable disease, but national coverage was 90% (Leach 2008).

Knowledge about immunization is important but what really matters in improving immunization rate is the belief, appreciation and correct perception about basic concept of vaccination. (AlConde 2002, Bhanot 2004 , Brown 1980, Indian Market Research Bureau 1987, Sheldon 2003).

CONCLUSION:

The greatest maternal constraints to adherence in EPI are misconception and lack of knowledge about vaccination. Simple steps can be started to break down the barriers which can significantly impact maternal compliance to immunization. Primary strategies must focus on maternal education. Since health providers was a potential source of information dissemination strengthening their communication and education skills was valuable step for enhancing health service delivery.

Seminars not only for the healthcare providers but to families and their significant others can be organized and conducted. Home visit must be done to families with immunizable children in order to disseminate information about vaccination and its importance. (Manjunath, 2003) noted that if mothers are aware of the value of immunization and perceive it as something that can provide and maintain optimum health for their children, they will find ways to do it. Health care workers and nurses need to be more fully prepared to have productive discussions with parents who resist or refuse immunization.

Mothers’ and family’s beliefs towards immunization must be given consideration. Some of them do not see the importance of learning about immunization because they are

not aware of the possible risks their children might get from the delayed administration of vaccines. This matter could then be discussed during home visits or even at health center at times of consultation. Mother's feelings toward being reluctant to have their children immunized can be explored and the importance of having their children immunized at exact time and schedule should be explained. The complaints of mothers regarding anticipated side effects of vaccine or any adverse reactions should be properly addressed and managed. Mothers need to be educated about medical contraindications in order to minimize deterrence of vaccination due to non-contraindicated mild illnesses. (Burgess et al., 1998; Prislín et al., 2002). Referral to specialist can also be suggested as necessary (Wood, 2003; Gold et al., 2003).

The issue of vaccination program quality must be addressed at different levels to improve the efficiency of this critical public health program. Alternative schedule for vaccination, wrong intervals, designed for dropouts and late starters can be devised to increase immunization rate. Success of EPI in Iligan City requires a concerted effort between the governmental and the various private health agencies that provide vaccination service. Their collaboration must be strengthened and more budget should be allocated to ensure complete vaccination supplies. Salary increase, giving rewards and providing incentives for health care provider can be necessary to enhance worker's motivation especially for maternal education. Combined efforts of government, health sector, health staff and families can aid in delivering vaccination to at least 90% of infants and can significantly help in decreasing child morbidity and mortality which is a Millennium Developmental Goal (United Nations 2015).

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