A cross-sectional study on the knowledge, attitude and practices (KAP) of mothers and caregivers on immunization in Quezon City

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Abstract

Introduction Despite establishing immunization as an effective approach, the number of deaths from immunizable diseases among 0 to 14 years old remained high in 2012. This prompted the researchers to determine the knowledge, attitude and practices of mothers/caregivers regarding the immunization of their children.

Methods The research utilized a descriptive cross-sectional design. An interviewer-guided validated questionnaire was administered to mothers and caregivers with at least one child 12 months or younger who was eligible for immunization.

Results Around half of the 211 respondents were aged 20-35 years old, married and living in their own home. A large percentage were unemployed, and the highest educational attainment was high school. Most respondents had one child in care undergoing immunization, mostly in a health center. Results showed that all respondents scored below the MPL for knowledge. For attitude, all scored above the MPL. Only 45.02% of mothers/caregivers scored above the MPL for practices.

Conclusion Despite poor knowledge, mothers and caregivers displayed good attitude towards immunization, however this did not translate into bringing their children for vaccination.

Keywords: Immunization, vaccination, knowledge, attitude and practices

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The Expanded Program on Immunization (EPI), a project of the World Health Organization (WHO), was created to ensure that children and mothers have access to recommended vaccines.[1] In the Philippines, free vaccines for the recommended immunizations are available all year long in public health centers. The fully immunized child must have had one dose of BCG vaccine, three doses each of diphtheria-pertussis-tetanus (DPT), oral polio and hepatitis B vaccines and one dose of measles vaccine before the child is 12 months old.[2] However, in 2011, according to UNICEF, millions of children died from diseases that could have been prevented with readily available vaccines.[3] In 2012, the Philippine Statistics Authority reported that the highest number of deaths among 0 to 14 years old from vaccine-preventable diseases was

due to all forms of tuberculosis, followed by tetanus.[4] A local study revealed that "the greatest maternal constraints to adherence in Expanded Program in Immunization (EPI) are misconception and lack of knowledge about vaccination."[5]

There is a need to strengthen the promotion of patient safety, most especially of children against vaccine-preventable diseases in the country. This prompted the researchers to determine the knowledge, attitude and practices of mothers and caregivers regarding the immunization of their children, in order to provide data on the current understanding of the immunization program and identify possible barriers to achieving better rates of fully immunized children. This could provide a basis for improving the government's immunization program.

Methods

The research utilized a descriptive cross-sectional design. An interviewer-guided Knowledge, Attitude and Practices of Mothers on Immunization Questionnaire (KAPMCIQ) was developed by the researchers which was an adaptation of validated tools.[11,12] The tool was translated, validated and pretested on 30 women. The computed item-level and scale-level content validity indices (I-CVI and S-CVI) were 0.98 and 0.92, respectively. The overall reliability of the questionnaire computed using Cronbach's alpha was 0.70. The minimum passing level (MPL) for each domain was computed by a panel of experts using the modified Angoff method. The computed MPL for knowledge, attitude and practices were 84.65, 88.65 and 89.08, respectively.

Using convenience sampling, mothers and caregivers in District 4, Quezon City, who consented to participate and who had at least one child eligible for Expanded Program on Immunization (EPI): healthy infants ≤ 1 year of age, with no known contraindications for receiving the recommended vaccines, including BCG, three doses of pentavalent, three doses of polio and one dose of measles vaccine, at recommended schedules, until the age of 12 months were enrolled. The child may have been fully or partially vaccinated at the time of the survey. Those excluded were mothers and caregivers of infants were delivered preterm.

A caregiver was an adult 18 years or older who, in the absence of the mother, had primary responsibility for a child eligible for immunization and was with the child more than 8 hours daily for most days of the week; this was regardless of that person's sex and relationship with the child. A mother or caregiver was considered to have good knowledge, positive attitude or good practice if he/she scored above the minimum passing level (MPL) for that domain. He/she was considered to have poor knowledge, negative attitude or poor practice if he/she scored below the MPL for that domain. An infant was considered fully vaccinated if he/she had received all vaccines recommended for his/her age in months, as determined through the report of the mother or caregiver. An infant was considered partially vaccinated if he/she had missed at least one dose of the recommended vaccines.

The analysis was done using SPSS version 16.0. Descriptive statistics were used. Classification of the variables was determined based the computed MPL scores.

Results

There was a total of 211 respondents where three-fourths were mothers (78.7%). Around half of the respondents were aged 20-34 years old (56.9%), married (43.1%) and living in their own homes (58.3%). Moreover, 66.8% of the respondents were unemployed, 63.5% completed education up to high school level. Furthermore, only 8% of the respondents declared a household income of more than PHP 15,000, and there were 16 respondents who classified themselves as having no permanent address (Table 1). More than 90% of the respondents had only one child in care undergoing immunization mostly at health centers. Majority of the mothers and caregivers (64.9%) walked to the place of immunization, taking them less than 15 minutes to get there (78.8%); majority of those who commuted (58.1%) took less than 10 minutes to reach the location.

Knowledge Though the participants had a generally correct response for individual questions, all the total scores were below the MPL of 84.65. Thus, the overall knowledge scores were classified as poor (Table 2). Half of the respondents (53.5%) knew that children should complete the vaccination program when they reached one year of age. Less than half (41.2%) knew that there is no alternate to prevent vaccine preventable diseases. Information such as BCG vaccine is used to prevent tuberculosis, that OPV vaccine keeps the country polio-free and that chicken pox is not a vaccine-preventable disease

initially included in the EPI were not known to most of the respondents.

Nine of 10 respondents had a misconception that vaccine should not be given to a child with fever up to 38.5ºC and/or if the child is malnourished. Two respondents had not heard any information about vaccination; the rest heard about it mainly through their friends and health professionals. More than 80% of the respondents were knowledgeable on the importance of vaccination, were aware that they could visit the health center more than once and that there was more than one disease that could be prevented

Table 1. Summary of predominant sociodemographic characteristics of respondents

Characteristics	Predominant response	Percentage (%)
Relationship to child	Mother	78.7
Age category of mother/ caregiver	20-34	56.9
Total number of children/ children under their care	2-3	46.0
Total number of ≤ 1 children/ children under their care	1	88.6
Total number of ≤ 1 child/ children under their care undergoing immunization	1	90.1
Place of immunization	Health center	92.8
Marital status	Married	43.1
Mother's/caregiver's occupation	Unemployed	66.8
Mother's/caregiver's education	High school graduate	63.5
Household's monthly income	5,000-10,000 PHP	35.1
Type of housing	Owned	58.3
Means of transportation	On foot	64.9
Time taken to health centers (on foot)	< 15 minutes	78.8
Time taken to health centers (vehicles)	< 10 minutes	58.1

Table 2. Summary of respondents' predominant knowledge towards immunization

Variable	Proportion with correct response (%)	Predominant	Answers Percentage (%)	Classification
Information heard about vaccination	99.1	Yes	99.1	Right
Informed of the importance of vaccination	88.6	Yes	88.6	Right
Infants should start vaccination	69.2	Just after birth	69.2	Right
Awareness of more than 1 visit to the health center	94.3	Yes	94.3	Right
Sessions needed to complete vaccination	79.2	More than 4 or 5	79.2	Right
Age of infant to complete its vaccination program	53.6	Greater than or equal to 1 year	53.6	Right
Number of vaccine preventable diseases mentioned by respondents	85.3	More than one disease	85.3	Right
Alternative mechanism to prevent infants from vaccine preventable disease	41.2	Yes	58.8	Wrong
Free vaccination in health centers	96.2	Yes	96.2	Right
Vaccination requirement for every child	91.5	Yes	91.5	Right
Is fever up to 38.5ºC and malnutrition a contraindication to vaccine?	9.9	True	90.1	Wrong
What vaccine is given to prevent tuberculosis?	66.8	BCG	45.5	Right
What is a common side effect after getting measles vaccine?	72.0	Fever and rashes	72.0	Right
What vaccine keeps the Philippines polio-free?	41.7	OPV	41.7	Right
What vaccine or vaccines is/are given to the child after birth?	77.2	BCG and Hepatitis B	77.2	Right
What vaccine-preventable disease was NOT initially included in the EPI?	37.9	Chicken Pox	37.9	Right

depending on the vaccine the child was receiving. These respondents were also aware that vaccines were free when given at health centers and vaccines were required for every child. Furthermore, 60% to 80% of the participants correctly answered when the vaccination should start, how many sessions are needed to complete the program, what the side effects of a measles vaccine are, and what vaccine(s) is/are given to child after birth.

Attitude Majority of the participants had a positive attitude. Total scores of the mothers and caregivers were above the MPL of 88.65 (Table 3). Almost all mothers (97.2%) had a favorable opinion towards immunization. For positive statements such as "I am motivated to continue and finish the child's vaccination", "immunization prevents diseases", "immunization is important for infants" and "I have positive attitude towards professionals", more than 95% had positive responses. Around 80 to 88% of the respondents also correctly disagreed with some statements in negative format such as "vaccination side effects are dangerous", "vaccination will not work or have no use", "vaccination makes infants sick", and "vaccination can cause death in infants." However, only 60% of mothers and caregivers correctly disagreed with a few negative statements, such as "infants took usually too many vaccines", "immunization is important only for non-serious diseases", and "vaccinators do experiments on infants."

Practices Fewer than half of mothers and caregivers (45.02%) scored above the MPL of 89.08. In relation to the total scores, there was an almost equal proportion of good and poor overall vaccination practices (Table 4). At least 90% of the respondents had an EPI card and were using it. They also made sure that their child got vaccinated as soon as possible after a missed dose and that child would continue the vaccination program even if they transferred residence. There were 83.4% respondents who brought their child for vaccination on the first week of life. However, only a little over half (59.7%) of the caregivers confirmed that their ward received BCG vaccine by searching for the scar.

Total Scores For the knowledge section of the questionnaire, all the respondents scored below the MPL. For the attitude part, all respondents scored above the MPL. For the third component, 56% of the mothers and 51% of the caregivers were classified as having poor practices, since their scores were below the MPL. For the combined mothers' and caregivers' scores, only 45% scored above the MPL (Table 5).

Discussion

Knowledge Despite the total scores equating to poor knowledge in majority of the respondents were aware of general information on vaccination. More than 95% of participants knew about the vaccination program in the health center. Health professionals were the

Table 3. Summary of respondents' predominant attitude towards immunization

Variable	Proportion with correct response (%)	Predominant	Answers Percentage (%)	Classification
I have favorable opinion on immunization	97.2	Agree	97.2	Positive
I am motivated to continue and finish the child's vaccination	96.7	Agree	96.7	Positive
Infants usually took too many vaccines	68.2	Disagree	68.2	Positive
Immunization prevents diseases	96.7	Agree	96.7	Positive
Immunization is important for infants	94.8	Agree	94.8	Positive
Immunization is important only for non-serious diseases	65.9	Disagree	65.9	Positive
Vaccination side effects are dangerous	84.4	Disagree	84.4	Positive
Vaccination will not work or have no use	88.2	Disagree	88.2	Positive
Vaccination makes infants sick	88.2	Disagree	88.2	Positive
Vaccination can cause death in infants	82.9	Disagree	82.9	Positive
I have positive attitude towards professionals	94.3	Agree	94.3	Positive
Vaccinators do experiments on infants	66.8	Disagree	66.8	Positive

Table 4. Summary of respondents' predominant practice towards immunization

Variable	Proportion with correct response (%)	Predominant	Answers Percentage (%)	Classification
Confirming BCG vaccination	59.7	Checking scar	59.7	Good
Availability of EPI card during vaccination	94.3	Yes	94.3	Good
Infant immunization practice always by use of EPI card	95.7	Yes	95.7	Good
Immunization status of infants: Took vaccines appropriate at 1st year of age	83.4	Yes	83.4	Good
Getting child vaccinated soon after a missed dose	91.5	Yes	91.5	Good
Still get child vaccinated, even if transferred to another barangay	97.2	Yes	97.2	Good

Table 5. Scores of respondents in relation with MPL

Section	Response percentage (%)	Scores relative to MPL	Conclusion
Knowledge	100%	Below	Poor
Attitude	100%	Above	Positive
Practices	56.0% mothers and 51.1% caregivers	Below	Poor
	45.0% combined mothers and caregivers	Above	

most common source of information, followed by friends and their child's school. This is congruent with previous researches where information regarding infant immunization came from barangay health workers and professionals.[6,9,10] Regardless of the source of information, majority of the participants were aware of the importance of vaccination.[9] The significance of this result was also highlighted in a study which showed that there is a significant probability of having an unvaccinated child among mothers who did not see the importance of immunization.[11] Studies showed that the main reason for partial and non-immunization was lack of information and knowledge.[12,13]

A high percentage of participants correctly identified that vaccination begins just after the birth of an infant, comparable with results of another study.[6] A quarter of the respondents reported that the vaccination should begin after the baby turned one month old, while the rest had no knowledge. The significance of not knowing when the first dose of vaccine should be given is that the child loses the opportunity to be protected at the earliest time, when it is most needed and most effective.

The proportion of participants who responded that there were more than 4 or 5 sessions needed to complete the vaccination of an infant is higher than a study done abroad where less than half knew this frequency.[6] Majority of the respondents correctly answered that the infant should be completely vaccinated by the time it turns one year old, in contrast with another study where majority of the participants stated that vaccinations should be completed before the infant turns one year old.[6]

A greater number of respondents believed that more than one disease can be prevented through vaccination. While 16 participants indicated that they did not know the answer, this data showed that lack of knowledge about vaccination is a huge challenge in the Philippines, as previously stated in a study.[5] Though a majority of the participants reported that there was an alternative to prevent infants from developing vaccine-preventable diseases, 41% thought otherwise and is a significant percentage. Majority of the mothers and/or caregivers are aware that vaccines are free when given at health centers and are required for every child.

On their knowledge about general contraindications to vaccination, it was reflected that a significant percentage were misinformed that fever of up to 38.5°C and malnutrition were contraindications to vaccination. More than half of the respondents

were aware that fever and rashes are common side effects of administering the measles vaccine.[14] Less than half of the respondents knew that OPV is the vaccine responsible for eradicating polio. Twenty-five percent of the respondents believed that the vaccine for diphtheria, pertussis and tetanus was DPT. Only a few were aware that chicken pox was not initially included in the Expanded Program of Immunization (EPI). Despite that, most of the mothers and/or caregivers were aware that BCG and Hepatitis B are vaccines that must be given to the child after birth. However, only 45.5% knew that BCG was the vaccine given to prevent tuberculosis.

This showed that respondents did not place much attention to the history and/or components of EPI program, as well as the diseases they prevent/eradicate. This could lead to blind compliance to the program, which could easily be shaken when controversies arise. The risk of this is a possible decrease in rate of vaccination of children because of inadequate/misinformed knowledge of mothers and caregivers.

Attitude Almost all mothers had a favorable opinion about immunization, accounting for their motivation for their children to complete the vaccination. This was similar to the result of the study which reported that the probability of having an unvaccinated child is more significant in women who are not able to point out the importance of immunization.[11] Since the results of the study showed that majority of the mothers knew the importance of vaccination, majority were also willing to complete their children's vaccination.

Practices Though there was an almost equal distribution of good and poor overall vaccination practices, the total scores of majority of the respondents leaned towards the negative side. Despite mothers and caregivers being aware that vaccines are free in health centers, this did not translate into practice. However, most of them claimed that their infant's immunization was appropriate for their age. If a child missed a dose, 9 of 10 mothers and caregivers would get them vaccinated as soon as possible. Moreover, 97% of respondents said that they would still have their child vaccinated even if they transferred to another barangay. This would decrease the incidence of unvaccinated children, even if their families moved to another place.

More than 90% of the respondents brought and used their EPI cards during their infants' vaccination. The important contents of the EPI card include mother and infant identification, vaccines appropriate for the age of the infant, together with their schedule and important notes written by the health care professional conducting the vaccination. If the mother/caregiver knew and used the EPI card, it would ensure the timeliness of vaccination and would guide other health care providers on what vaccine the infant would need in the future.[1]

The only vaccine confirmation asked in the questionnaire was about BCG vaccine. Majority reported that their way to confirm BCG vaccination was through the scar. Literature underscored that improvement in knowledge and attitudes of mothers/caregivers regarding immunization resulted to better practices and higher vaccination rates.[15,16] This same trend was also seen in the results of this research.

In conclusion, despite poor knowledge, mothers and caregivers displayed good attitude towards immunization, however this did not translate into them bringing their children for vaccination. Thus, improving their understanding of vaccination may be needed, in order to translate this generally positive attitude into practice.

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