International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

ISSN:2347-6567

IJAMSCR |Volume 10 | Issue 2 | Apr - Jun - 2022
www.ijamscr.com

Research Study *Clinical Research*

Assessment of the Implementation of the Expanded Program on Immunization (EPI) in Marawi City, Lanao del Sur, Philippines Based on the Perspectives of Program Beneficiaries

Monalinda M. Macawadib, Ashley A. Bangcola*

College of Health Sciences, Mindanao State University, Marawi City, Lanao Del Sur, 9700, Philippines

***Corresponding author: Ashley A. Bangcola**
Email: ashley.bangcola@msumain.edu.ph

ABSTRACT

Background: The Philippines implements the Expanded Program on Immunization in order to achieve universal immunization of children against preventable diseases. Basic Rural Health Units administer a variety of immunizations against Tuberculosis, Poliomylitis, Diphtheria, Pertussis, Tetanus, measles, and Hepatitis B (HB) (RHU). The EPI was assessed using public health program assessment, which is defined as a systematic way to improve and account for public health actions, to identify gaps and possible solutions for the program's enhancement.
Objective: The study aims to assess the level of implementation of the Expanded Program on Immunization (EPI) of the City Health Office (CHO) as perceived by the program beneficiaries of Marawi City.
Methods: The study is descriptive research utilizing both quantitative and qualitative approach in interpreting data. 125 respondents were chosen from among those who visited the City Health Office (CHO) during a two-week period. The respondents' perceptions on the EPI implementation were then cross-checked using their child's Immunization Schedule Card. The data was then analyzed through frequency, percentage distribution and SPSS.
Results: Majority of the respondents (91.2%) gave a high rating on the implementation of the EPI. Of the 125 respondents as sample beneficiaries of the Marawi CHO, there were 114 who rated the implementation of the EPI as high and only 11 rated moderate. Overall, then, respondents rated the implementation of EPI as high. The top six perceived problems identified by the respondents that they encountered during their visit in Marawi CHO to avail of the EPI services included the following: (1) P20 donation fee every visit, (2) lack of staff, (3) unaccommodating personnel (information area), (4) services are not organized, (5) lack of space for clients' waiting area, (6) P20 for every syringe use among others. The top six suggested solutions given by the respondents to address perceived problems included the following: (1) additional competent personnel, (2) medical supplies must be free of charge especially syringes, (3) donations must not be compulsory, (4) with no fixed amount, (5) additional space for client's waiting area with chairs, (6) personnel assigned at information area must be accommodating among others.
Conclusion: The findings revealed that respondents perceived EPI implementation to be highly effective in all five aspects. However, despite the respondents' high assessment of EPI implementation, only a small number of respondents identified problems that need to be addressed and proposed solutions.

Keywords: Public Health Programs, Program Assessment, Immunization, Vaccination, Philippines

INTRODUCTION

A "health program" is defined as a totality of an organized structure designed for the provision of discrete health-focused interventions, where the intervention is designed for a specific target audience. By comparison, "health services" are organizational structures through which providers interact with clients or patients to meet the needs or address the health problem of the clients or patients. Health programs, particularly in public health, tend to provide educational services, have a prevention focus and deliver services that are not at the direct services level of the

pyramid.[1] Meanwhile, "public health programs" are defined as sets of interventions put together to operationalize policies and standards directed towards the prevention of certain public health problems. [2]

Today, most governments recognize the importance of public health programs in reducing the incidence of disease, disability, and the effects of aging, although public health generally receives significantly less government funding compared with medicine. In recent years, public health programs providing vaccinations have made incredible strides in promoting health, including the eradication of smallpox, a disease that plagued humanity for thousands of years.

Public Health Program in the Philippines consists of the following: Nutrition Program (NP); Family Planning Program (FP); National Tuberculosis Program (NTP); Environmental Sanitation Program (ESP); Dental Program (DP); Maternal and Child Health Program (MCHP) and the Expanded Program on Immunization (EPI).

Immunization is the process by which vaccines are introduced into the body before infection sets in. Vaccines are administered to induce immunity thereby causing the recipient's immune system to react to the vaccine that produces antibodies to fight infection. Vaccinations promote health and protect children from disease – causing agents. Infants and newborns need to be vaccinated at an early age since they belong to vulnerable age group.[2]

The different kinds of immunization given at the Barangay Health Stations, Rural Health Units, and hospitals, are the following: (1) Tetanus Toxoid, which protects the unborn child from tetanus, and is given twice to the pregnant mother during the first pregnancy and once (a booster shot) during each succeeding pregnancy; (2) BCG, a vaccine against tuberculosis, and is given only once to the baby (0-12 months old) with a succeeding booster shot when the child reaches the age of seven years old; (3) DPT, a combined vaccine against Diphtheria, Pertussis, and Tetanus, and is given thrice to the child; (4) Oral Polio, which protects the child from polio or infantile paralysis, and is also given in three doses; and (5) Measles vaccine which is given only once, when the child is as young as nine months old. Through immunizations, the child need not suffer from these diseases.

For the EPI of the Philippines, the government seeks to achieve universal immunization of children against seven preventable diseases: Tuberculosis, Poliomylitis, Diphtheria, Pertussis, Tetanus, measles and Hepatitis B (HB). The Expanded Program on Immunization (EPI) recommends that children be given the basic vaccines, one dose of Bacillus Calmette-Guerin (BCG) at birth or at first clinical contact, vaccine against measles at nine months or after but before reaching one year of age, and three doses each of Diphtheria, Pertussis, Tetanus (DPT) vaccine, three doses of hepatitis B vaccine and three doses of oral polio vaccine (OPV) at monthly intervals starting at six weeks of age. [2]

Effective program assessment is a systematic way to improve and account for public health actions that involves procedures that are useful, feasible, ethical, and accurate. It is the process of determining whether the program is achieving its purpose, whether it should be continued or terminated, or how it could be improved or better managed.[3] In public health programs, assessment is essential to protect and enhance the health of the population and are, by definition, publicly funded. It is therefore essential that they be assessed.

One theory that relates to program design and assessment is the Health Belief Model.[4] The health belief model posits that people have various preconceived notions about the benefits that a particular intervention program will confer to them or the barrier or threats they will face in accessing the intervention and as such choose to take or not to take preventive measures based on these perceptions. These preconceived notions can be broadly categorized as perceived threats, perceived benefits, and perceived barriers. Another theory is the Effect Theory.[1] It consists of explanations of how the programmatic interventions will affect the casual factors and moderating or mediating factors of the health problem and describes the relationship between the programmatic interventions and the desired immediate and long-term outcomes for program participants.

To address this assessment need, the study conducted assessment on the level of implementation of the Expanded Program on Immunizations (EPI) such as BCG, DPT1, DPT2, DPT3, OPV1, OPV2, OPV3, Hep B1, Hep B2, Hep B3 and Measles Vaccine for children below 12 months old in the City Health Office of the Islamic City of Marawi as perceived by the program beneficiaries.

This study thus sought to assess the level of implementation of the Expanded Program on Immunization (EPI) of the City Health Office as perceived by the program beneficiaries of Marawi City.

METHODS

Research Design

The study employed a descriptive research design. Descriptive research involves collecting data in order to describe the respondents' socio-demographic profile, their perceived level of implementation of the EPI, their perceived problems and suggested solutions to improve the immunization program in their locality. The study was conducted in the Islamic City of Marawi, the capital city of the province of Lanao del Sur in southern Philippines and which is composed of 96 barangays.

Participants

The sample population of the study consisted of those who availed the EPI within the two-week span of the study. Considering that there are at least 30 to 50 beneficiaries of EPI every Wednesday and Sunday, hence, there were an estimated of 120 to 200 beneficiaries in the sampling frame. After applying the Sloven's Fomula, the possible number of respondents from the computed result of 120 to 200 was narrowed down to a total of 125 respondents within the four days of EPI administration during the two-week period.

Research Instrument

The research instrument used in collecting data was a structured questionnaire with four parts:

The first part included questions which gathered data about the respondents' socio-demographic profile. The second part gathered data on the Level of Implementation of the Expanded Program on Immunization (EPI) as perceived by the respondents, in terms of adequacy of services, timeliness, accessibility, adequacy of health supplies, and reliability of the programs. The third part included close

ended questions which sought the problems encountered by the respondents during their actual visitation in the City Health Office. The fourth and final part gathered proposed solutions from the program beneficiaries.

The respondents' Immunization Schedule cards were used to countercheck their assessment per statement against the five areas of implementation of EPI services. The questionnaire was translated into the vernacular Meranao language.

Data Collection

After the City Health Officer approved the request for permission to conduct the study, the actual data gathering was conducted using the self-made questionnaire. The researcher collected data at the Marawi City Health Office (CHO) every Wednesday and Sunday for two weeks.

A survey was conducted in which program participants were asked to rate each statement regarding the implementation of EPI in the five specified areas. In addition, respondents participated in structured face-to-face interviews in which they were questioned about problems encountered during the implementation of the immunization program and proposed solutions. All respondents consented to the administration of the survey and the face-to-face interviews.

As the respondents rated each statement pertaining to the implementation of EPI in five areas, there was cross-checking with their Immunization Schedule cards.

The implementation of the Expanded Program on Immunization (EPI) implemented by the City Health Office (CHO) in Marawi City, Lanao del Sur was rated by the one hundred twenty-five (125) program beneficiaries who took part in the implementation of said programs based on the specific aspects of: adequacy of services; timeliness; accessibility; adequacy of health supplies; and reliability of the program.

During the respondents' visit to the Marawi CHO with their child or children to avail of EPI services, they were requested to rate the different programs they were able to avail of at the Center which include: single dose of BCG; three doses of DPT; three doses of OPV; three doses of Hepatitis B; and/or a single dose of measles vaccination. The respondents may choose to rate the implementation of the service as high, moderate, or low.

The data gathered from the respondents were first tallied, tabulated, and coded based on the coding manual developed. The coded raw data were then encoded and computed using the software Statistical Package for the Social Sciences (SPSS).

Data Analysis

The data gathered from the respondents were analyzed using frequency and distribution. Frequency and Percentage Distribution were utilized to determine the number of respondents for each answer category in the various Interview Schedule sections. The distribution was used to describe the socio-demographic profile, perceived level of EPI implementation at the Marawi CHO, perceived problems, and proposed solutions of respondents. On the respondents' perceptions of the level of EPI implementation at the Marawi CHO, the median was used to describe the position of the middle piece of data when plotted and ranked from highest to lowest.

Ethical Consideration

All participants were required to sign a consent form in order to comply with ethical standards when conducting research. In addition, participants were also informed that their information would be kept confidential and that the content of individual survey questions would only be shared with an unnamed consultant. In the final report, the identities of the respondents were concealed.

RESULTS

Respondents' Perceived Level of Implementation of EPI

The following table below as presented through frequency and percentage distribution describes and discusses the level of implementation of the EPI at the Marawi CHO as perceived by the respondents in terms of adequacy of services, timeliness, accessibility, adequacy of health supplies, and reliability of the program.

Table 1: Summative Frequency and Percentage Distribution, Respondents' Perceived Level of Implementation of the EPI of the Marawi CHO

Level of Implementation of EPI	High		Moderate		Low	
	f	%	f	%	f	%
Adequacy of services	93	62.0	32	25.7	2	1.6
Timeliness	108	72.0	16	12.9	7	5.6
Accessibility	98	65.3	21	16.5	6	4.8
Adequacy of health supplies	78	52.0	39	31.6	8	6.3
Reliability of the programs	104	69.3	14	11.1	7	5.6

When all of the five aspects of implementation of the EPI were taken together to see each aspect's rating in a summative form, it can be noted that almost three-fourths of the respondents (72%) rated timeliness as high. This implication is that when it comes to implementation of the different immunization services under the banner of EPI, majority of the respondents (72%) believe that the services they received under the EPI were delivered in a timely manner.

However, a minority of the respondents (5.6%) who believe that timeliness of the program is lacking as indicated by their response of 'low', have responded with 'low' with respect to the aspect of reliability. In other words, they perceive the programs to be unreliable. This implies that the

respondents believe that when such services are not delivered in a timely manner, they are considered unreliable.
It can be seen in the above table that the fewest number of respondents who answered 'low' were in the aspect of adequacy of services (1.6%). This implies that a large majority of respondents find the EPI program to be adequate or more than adequate.
In contrast, the aspect which had the most number of respondents who answered 'low' were in the aspect of adequacy of EPI supplies (6.3%). This implied that although a majority of respondents find EPI services to be adequate, the lack of supplies is a real and recurring problem which may affect the effectivity of implementation of the program.

Overall Respondents' Perceived Level of Implementation of EPI

The respondents' overall perceived level of implementation of the EPI in Marawi CHO is presented in the table below. There were five aspects of implementation being studied covering a total of eleven immunization services under the EPI. The respondents were made to rate each of the eleven immunization services according to the five aspects of implementation level as high, moderate, or low. A score of 3 was given for a high rating, 2 for a moderate rating, and 1 for a low rating.

Table 2: Overall Frequency and Percentage Distribution of Respondents' Perceived Level of Implementation of EPI

Level of Implementation of EPIs	Scale	Frequency	Percentage
High Level of Implementation of EPIs	127-162	114	91.2%
Moderate Level of Implementation of EPIs	91-126	11	8.8%
Low Level of Implementation of EPIs	54-90	0	0
Total		125	100%

On a collective scale, majority of the respondents (91.2%) gave a high rating on the implementation of the EPI. Of the 125 respondents as sample beneficiaries of the Marawi CHO, there were 114 who rated the implementation of the EPI as high and only eleven (8.8%) who rated as moderate. On the whole, respondents rated the implementation of EPI as high. There were no respondents who gave a low rating.

Respondents' Perceived Problems Encountered in the Implementation of the EPI's during their Visit in Marawi CHO

Respondents were made to enumerate problems they experienced as they availed of the EPI program during their visits to the Marawi CHO. As can be seen from the table, the highest ranked problem as perceived by the beneficiaries include the following: 'P20 donation fee every visit' and 'lack of staff'.
This is followed by 'unaccommodating personnel' and 'services are not organized', which is followed by 'lack of space for clients' waiting area', which is followed by payment of 'P20 for every syringe use'. This is followed by 'overcrowding', which is followed by 'incompetent staff', followed by the CHO having a 'dirty area', followed by the 'palakasan system' and 'lack of vaccine supplies', followed by lack of a 'comfort room' and 'lack of other health supplies'.

Table 3: Frequency Distribution and Ranking of Respondents' Perceived Problems Encountered during Their Visit in Marawi CHO for EPI

Problems Encountered	Frequency	Ranking
P20 donation fee every visit	14	1
Lack of staff	14	
Unaccommodating Personnel (information area)	12	2
Services are not organized	12	
Lack of space for clients' waiting area	11	3
P20 for every syringe use	10	4
Overcrowded every Wednesday	9	5
Incompetent staff (mabagal)	7	6
Dirty Area	6	7
"Palakasan" System (friends and relatives)	4	8
Lack of needed supplies (vaccines)	4	
No comfort room for client's	3	9
Inadequate health supplies such as syringes, cotton balls, alcohol and Hep Vaccine	3	
P45 Registration fee for first time	2	
No free foods for the babies	2	10
Lack of training competencies of health workers	2	

Some of the health workers are incompetent	1	
Lack of staff or personnel	1	
No proper dissemination of the importance of EPI on human health	1	
Lack of health education which result to incomplete FIC	1	11
Turnover of personnel due to some personnel are coterminous	1	
Inadequate services in terms of resources especially the manpower	1	
Lack of cold chain management of the vaccines	1	

Suggested Solutions to the Problems by the Respondents in the Implementation of the EPI as Basis for Proposed Program Enhancement.

The table below show the solutions suggested by the program beneficiaries. The table reveals that the most popular solutions as suggested by the respondents in order of rank include: 'addition of competent personnel', 'free service charge', 'non-compulsory donations', 'additional space', 'personnel should be accommodating', 'services should be organized', and the 'construction of a restroom'.

Table 4: Frequency Distribution and Ranking of Respondents' Suggested Solutions to Problems Encountered during Their Visit at Marawi CHO

Suggested Solutions	Frequency	Ranking
Additional competent personnel	23	1
Medical supplies must be free of charge especially syringes	18	2
Donation must not be compulsory, with no fixed amount	15	3
Additional space for client's waiting area with chairs	14	4
Personnel assigned at information area must be accommodating	8	5
Organized services	6	6
Constructions of Client's CR	3	7
Sending health worker for training competencies	3	8
Stop *Palakasan* (first come first serve basis must be observed)	2	
Schedule the client's when to return	2	
Hire utility staff to maintain cleanliness	2	
Provide time for health teachings especially to first time mother	2	
Provide adequate vaccines by the CHO	2	9
Financial support for health workers' training & for the Program itself.	2	
More appointment of qualified nurses and midwives	2	
The 20% health fund from the Local Government must be all utilize for the purpose	2	
Monthly inventory of vaccines and other EPI supplies	1	
Promotion public awareness re the importance of EPI	1	10
Provision of modern equipment for the use of EPI	1	

DISCUSSION

Most of the respondents believe that one of the most pressing problems with the Marawi City Health Office's Expanded Immunization Program include the "P20 requested donation for services". Although P20 may seem a comparable small amount, as Lanao del Sur is among the poorest regions in the Philippines, this amount may already seem to be a lot for the program beneficiaries.

More than half of the respondents do not have work (57.6%) and are still students (5.6%). Hence, a mere donation of P20 would be perceived as a problem for them. For non-earning individuals, P20 could already buy them a simple meal or afford them to pay for a public vehicle for them to go to certain areas within the city. Giving this amount even in a form of a donation, and not a fee, to what they considered to be a government social service for free would certainly put a strain to their pockets since their minds were already conditioned that what is from the government must be free. As one of the suggested solutions was the dispensing of the donation, this implies that the program beneficiaries may feel pressured with the requests for donation. It may also be seen as problematic that donations are being asked for on the occasion of the delivery of a government service, and not a private service. This may also be correlated with the proposed solution that "donations must not be compulsory, and with no fixed amount". While it is widely practiced in different health centers in the Philippines to place a donation

box in a visible area in front of the client during a consultation, it is not meant to be compulsory, else it would be perceived as a service charge.

The above findings are consistent with global studies which find that the provision of vaccines is more challenging in many low- and middle- income countries (LMIC), as evidenced by the failure to make the EPI vaccines available to every child irrespective of setting.[5]

Other pressing problems include "unaccommodating personnel at the information area" and "services not being organized". These two problems ranked second amongst those enumerated by the respondents. The information area is the first area which is seen by the program beneficiaries. The implication is that the program beneficiaries believe that they were not accommodated in a way that they expected. In other words, there is much room to improve with respect to the approachability of staff in the information and waiting area. This is consistent with the study of Singh et.al.[6] Which found that one of the main concerns which affect immunization programs centered around the communication and behavior of staff towards beneficiaries such as providing inadequate information or making beneficiaries wait for long hours. Effective communication is one of the most important factors which affect the effectiveness of immunization programs.[7]

"Services are not organized" was yet another problem identified by the respondents. Most courses teach students the systematic ways of accomplishing tasks in the form of assignments, experiments, and research. Hence, it can be assumed that an ordinary person would be able to gauge an organized and therefore effective program, versus a disorganized and therefore ineffective program. Services not being organized may relate to the problem of lack of personnel. This is consistent with the study of Derico (2009)[8] which found that problems encountered by the beneficiaries in the implementation of Maternal and Child Health programs revealed a lack of personnel in the Health Center. This was explained as being due to the fact that most health workers are not residing in their place of assignment. Inadequate facilities, equipment and supplies, or inadequate information dissemination, were all factors that were found to have affected the delivery of health services in the Rural Health Unit (RHU).

The most popular solution suggested by the respondents is the "increase in competent personnel". This statement emphasizes an increase of 'competent' personnel, and not just increase of personnel. This may be related to when the respondents identified "lack of staff and personnel", as well as "unaccommodating personnel" as among the most prevalent problems in the implementation of EPI in Marawi City. This is consistent with the findings of Abuseirich (1998) which showed that there were inadequate health services given to the people in the community in Lanao del Sur because of the inadequacy of facilities, materials, and supplies.

The next most popular solution is ensuring that "medical supplies be free of charge". This directly responds to the problem of "P20 fee for every syringe used". This is understandable as the standard retail price for a syringe at the local pharmacy is less than ten pesos (P10), which is cheaper than what program beneficiaries are made to pay at the CHO.

Another solution proposed is for there to be "additional space for client's waiting area with chairs". This would also lessen "overcrowding" which was identified as a problem by respondents. This measure would also entail additional budget from the local government. This is consistent with findings that would should that "long waiting time" and "poor service arrangements" are among the problems negatively affecting the implementation of immunization programs.[9,10]

The most commonly cited barrier is limited financial resources, but other barriers also affect the smooth implementation of immunization programs such as under appreciation of the value of vaccines locally/regionally though insufficient relevant data on disease burden, vaccine efficacy, or cost-effectiveness; inadequate healthcare infrastructure for vaccine handling, storage, programmatic management, and disease surveillance; and lack of global, regional or local policy-making and leadership.[11,12]

The identified solutions as suggested by the respondents can be classified into two: 1.) the no-budget and 2.) the need-budget solutions. This classification may help facilitate appropriate improvements in specific areas of implementation of the Expanded Immunization Program. The resulting classification of the respondents suggested solutions are the following:

NEED-BUDGET SOLUTIONS	NO-BUDGET SOLUTIONS
1) Additional competent personnel	1) Donation must not be compulsory, with no fixed amount
2) Medical supplies must be free of charge especially syringes	
3) Additional space for client's waiting area with chairs	2) Organized services
4) Personnel assigned at information area must be accommodating	3) Stop "*Palakasan"* (first come first serve basis must be observed)
5) Constructions of Client's CR	
6) Sending health worker for training competencies	4) Schedule the client's when to return (sun or wed
7) Hire utility staff to maintain cleanliness	5) Provide time for health teachings especially to first time mother
8) Provide adequate vaccines by the CHO	
9) Financial support for health workers' training & for the Program itself	
10) More appointment of qualified nurses and midwives	6) Monthly inventory of vaccines and other EPI supplies
11) The 20% health fund from the Local Government must be all utilize for the purpose	7) Promotion public awareness re the importance of EPI
12) Provision of modern equipment for the use of EPI	8) Organized services

CONCLUSION

The main problem of the study was to assess the level of implementation of the Expanded Program on Immunization (EPI) of the City Health Office as perceived by the program beneficiaries of Marawi City. Respondents' perceived level of EPI implementation in all of the five aspects is high. Despite the high level of EPI implementation, there were still a few respondents who identified problems they encountered which needed to be addressed. Following such results, solutions were also recommended by the respondents, which could be classified as either "no-budget" solutions or "need-budget" solutions.

REFERENCES

1. Issel LM. Health program planning and assessment: A practical, systematic approach for community health. 2nd ed. Sudbury, MA: Jones and Barlett Publishers; 2009.
2. Cuevas F, Prescilla L. Public health nursing in the Philippines. 10th ed. Manila: Publication Committee. National League of the Philippine Government Nurses, Inc; 2007.
3. Maurer FA, Smith CM. Community public health nursing practice: health for families and populations. St. Louis: Elsevier Saunders; 2005.
4. Rosenstock IM. The Health Belief Model and Preventive Health Behavior. Health Educ Monogr. 1974;2(4):354-86. doi: 10.1177/109019817400200405.
5. Keja K, Chan C, Hayden G, Henderson RH. Expanded programme on immunization. World Health Stat Q. 1988;41(2):59-63. PMID 3176515.
6. Singh S, Sahu D, Agrawal A, Vashi MD. Barriers and opportunities for improving childhood immunization coverage in slums: A qualitative study. Prev Med Rep. 2019;14:100858. doi: 10.1016/j.pmedr.2019.100858, PMID 30997325.
7. Smith LE, Amlôt R, Weinman J, Yiend J, Rubin GJ. A systematic review of factors affecting vaccine uptake in young children. Vaccine. 2017;35(45):6059-69. doi: 10.1016/j.vaccine.2017.09.046, PMID 28974409.
8. Derico NH. Status and Problems of the Maternal and Child Health Program implementation in Lanao del Sur: its Implication to Educational Planning and Health Program, [[doctoral dissertation]. Marawi City: Mindanao State University]; 2009.
9. Abdulraheem IS, Onajole AT, Jimoh AAG, Oladipo AR. Reasons for incomplete vaccination and factors missed opportunities among rural Nigeria children. J Public Health Epidemiol. 2011;3:194-203.
10. Negussie A, Kassahun W, Assegid S, Hagan AK. Factors associated with incomplete childhood immunization in Arbegona district, southern Ethiopia: a case--control study. BMC Public Health. 2016;16:27. doi: 10.1186/s12889-015-2678-1, PMID 26757893.
11. Munira SL, Fritzen SA. What influences government adoption of vaccines in developing countries? A policy process analysis. Soc Sci Med. 2007;65(8):1751-64. doi: 10.1016/j.socscimed.2007.05.054, PMID 17644230.
12. Hajjeh R. Accelerating introduction of new vaccines: barriers to introduction and lessons learned from the recent Haemophilus influenzae type B vaccine experience. Philos Trans R Soc Lond B Biol Sci. 2011;366(1579):2827-32. doi: 10.1098/rstb.2011.0046, PMID 21893547.