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The Influence of Information and Communication Technology (IEC) on Mothers' Knowledge and Attitudes in Providing Complete Basic Immunization to Infants at the Jikohay Community Health Center, West Obi District

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Abstract, *Complete basic immunization for infants is an important effort in preventing infectious diseases and improving public health. However, certain regions still have subpar vaccination rates, which may be due to parents' ignorance and attitudes. Children who do not receive all recommended vaccinations are more vulnerable to illness and, worse, may die from it. This study was conducted at the Jikohay Community Health Center in the West Obi District to examine the impact IEC on mothers' attitudes and knowledge on the provision of full basic immunizations for newborns. Maternal and child health books (KIA) and a questionnaire approach were used in this qualitative study. The purpose of this study is to ascertain how IEC affects mothers' knowledge and attitudes on giving their babies the recommended basic vaccinations at the Jikohay Health Center in the West Obi District. There were 60 individuals in the population and 40 responders in the sample. Purposive sampling was used for the sample process. The Wilcoxon test was utilized for data analysis. According to the study's findings, 20 respondents had good attitudes, 20 had sufficient attitudes, and 29 had good knowledge, 10 had sufficient knowledge, and 1 had insufficient knowledge after receiving counseling on parental attitudes and knowledge in providing full basic immunizations to infants. At the Jikohay Health Center in the West Obi District, the results of the statistical test with a p-value of 0.000 indicated that IEC had an impact on mothers' attitudes and knowledge toward giving their infants all of the recommended basic vaccinations.*

Keywords: Attitude, Complete Basic Immunization, IEC Knowledge, KIA, West Obi District.

1. INTRODUCTION

By giving a "vaccine" to develop immunity to the illness, immunization aims to avoid infectious illnesses. A vaccination is a kind of weakened or destroyed bacterium or virus that stimulates the body's immune system to produce antibodies. The body will be protected in the future by these antibodies. The method of actively or artificially producing antibodies by administering vaccinations (weakened germs and viruses) is known as immunization. By administering a vaccination that encourages the immune system to produce antibodies that offer protection against specific illnesses, a person might become immune or resistant to a disease. (Dewi Ryska, 2024)While the immunization program through vaccination aims to stimulate the immune system to make antibodies in order to combat illness by disabling weaker antigens obtained from vaccines, natural immunization refers to the process of spontaneously producing antibodies to resist antigens. A vaccine, on the other hand, is a material that is injected into the body to induce the production of antibodies, such as the BCG vaccination, hepatitis, DPT, measles, and oral vaccines like polio.(Harahap and Aswan, 2020). The agreed-

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upon vaccination schedule will be delayed if vaccines that are only administered once or those have a long-lasting protective effect, like the BCG vaccine, are not followed. This will raise the chance of getting the illness that is being prevented.Zaimy, Silvi (2023).

Immunization, according to study (Rahmi and Husna 2018), is the act of giving newborns and children protection by giving them vaccinations that cause the body to create antibodies to avoid specific diseases. A vaccine is a drug that stimulates the production of antibodies. It can be given orally, like the polio vaccine, or by injection, like the BCG, DPT, and measles vaccinations. Immunization aims to increase immunity to disease, which lowers rates of morbidity and death as well as the handicap brought on by certain illnesses.

Maternal and Child Health (KIA) book media as a way for health professionals to educate and enlighten pregnant women, with the ultimate objective being maternal and child health. comprehension of books on mother and child health The KIA book is a tool for early detection of maternal and child health disorders or problems, a communication and counseling tool with important information for mothers, families, and communities regarding maternal and child health services, including references and packages (standards) of KIA services, nutrition, immunization, and toddler growth and development, according to Republic of Indonesia Health Minister Decree 284/menkes/sk/iii/2004. explains the advantages of using the Maternal and Child Health (KIA) book as a communication, information, and education medium. The maternity and Child Health (KIA) book is the primary and first KIE medium used to improve the knowledge of mothers, husbands, families, and child caregivers in orphanages and child welfare facilities on maternity and child health care up to the age of six. The KIA book covers a wide range of topics related to maternal and child health, such as vaccination, meeting nutritional needs, promoting growth and development, and preventing violence against children.Arsyati, Sofiawaty, and Pertiwi (2023).

The benefits of immunization for infants and children far outweigh the risks of side effects. It protects the infant/child's body from attacks and threats of certain bacteria/viruses, prevents children from contracting diseases caused by bacteria/viruses, and increases immunity against certain diseases and improves the health status of infants/children, which impacts the quality of growth and development and productivity of human resources in the future. Immunization also reduces and eliminates children's anxiety about contracting dangerous diseases, so they feel more confident that they will undergo their growth and development process healthily and safely, and is proven to provide fast, safe, and very effective protection (relatively cheap or cost-effective). Every infant/child is given a vaccine according to a predetermined schedule so that the vaccine can provide optimal protection and immunity. The

schedule is made according to the type of disease to be prevented. Some types of diseases that can be prevented through immunization are: Hepatitis B, Tuberculosis, Tetanus, Diphtheria, Pertussis, Poliomyelitis, Meningitis, Pneumonia, Measles, and Rubella.(Ryska Dewi 2024).

Every kid is entitled to basic vaccines in compliance with current standards, as stated in Health Law Number 36 of 2009. Immunization is used to prevent illnesses that may be avoided. All newborns and children must receive full vaccinations from the government. Minister of Health Regulation Number 12 of 2017, which was issued on April 11, 2017, specifies how this vaccination is to be administered.(Astrid Novita, Yulia Fauzi, 2024).

According to data from UNICEF (2018), the number of children who are under- or unvaccinated in the African continent ranks first with 11.3 million out of 19.4 million children. In Asia, 6.5 million children are under- or unvaccinated. Of the 194 WHO member countries, 65 of them have DPT immunization coverage below the global target of 90%, one of which is Indonesia. Indonesia leads the globe in diphtheria infections each year in Southeast Asia, according to WHO data. Indonesia had 3,203 cases of diphtheria between 2011 and 2019, second only to India, which had 18,350 cases overall (WHO, 2018). In 2018, 116.3 million newborns, or around 86% of all babies globally, received three doses of the diphtheria-tetanus-pertussis (DTP3) vaccination, shielding them against potentially deadly effects as well as severe sickness and impairment.(Astrid Novita, Yulia Fauzi, 2024).

Smallpox, polio, tuberculosis, hepatitis B, which can cause liver cancer, diphtheria, measles, rubella, and congenital rubella syndrome (CRS), tetanus in pregnant women and newborns, pneumonia (inflammation of the lining of the lungs), meningitis (inflammation of the lining of the brain), and even cervical cancer caused by human papillomavirus infection are just a few of the world's population.(Arsyati, Sofiawaty, and Pertiwi 2023).

The purpose of vaccination is to provide newborns protection against common infectious illnesses, which can cause sickness and even death in young children. While achieving full basic vaccination coverage is the program's explicit goal, its overall objective is to lower morbidity, disability, and newborn death caused by PD3I.(Appi and Syukri, 2021).

Lawrence Green's thesis states that predisposing factors—which can take the form of knowledge, attitudes, beliefs, values, traditions, and other elements—are what influence health-related behavior. Knowledge is the comprehension of various facts and the objective identification of things or objects. Additionally, knowledge may be obtained through formal and informal learning as well as through one's experiences (Toruntju, 2013). A person's behaviors are greatly influenced by their knowledge. Conversely, attitude is a person's closed response to a stimuli that already involves opinion and feeling. A person's attitude and

knowledge have an impact on how they utilize health services, which may subsequently assist them in selecting and deciding on those services (Syukri and Appi 2021).

In order for children to obtain vaccinations in accordance with the prescribed schedule, health professionals can play a role in health promotion by offering counseling and reminding parents and families about the schedule for children's visits to the Community Health Center or Integrated Health Post.(Ensia 2025).

The study project "The Influence of IEC on Mothers' Knowledge and Attitudes in Providing Complete Basic Immunization to Infants at the Jikohay Community Health Center, West Obi District" is of interest to the author because of this background.

2. RESEARCH METHOD

This study used a one-group pretest-posttest pre-experimental design and quantitative research methodology. The one group pretest-posttest design is a research activity that offers a preliminary test (pre-test) in the form of a questionnaire and KIA Book, followed by a final test that is retested using a questionnaire. Up to 60 moms who screened and vaccinated their infants at the Jikohay Health Center in the West Obi District made up the population. Purposive sampling was the sample strategy employed in this investigation. Up to 40 respondents made up the research sample. The Wilcoxon SPSS 25 test will be used for both univariate and bivariate analysis of the research data.

3. RESULTS AND DISCUSSION

Subsection 1

This study was conducted on 40 respondents, consisting of mothers with toddlers who frequently received checkups or immunizations at the Jikohay Community Health Center in West Obi District. Data are presented in univariate and bivariate formats to describe the respondents' characteristics.

Respondent Characteristics

Table 1. Respondent Characteristics (N = 40).

Characteristics	Frequency	%
Respondent Age		
20-25 years	19	47.5%
26-30 years old	11	27.5%
>31 years	10	25%

Education		
Elementary School	7	17.5%
JUNIOR HIGH SCHOOL	17	42.5%
High School/Vocational School	10	25%
PT	6	15%
Work		
Housewife	15	37.5%
Employee	4	10%
Trader	21	52.5%
Total	40	100%

Table 1 shows that 19 respondents (47.5%) out of 40 respondents were between the ages of 20 and 25. Additionally, 11 respondents (27.5%) were between the ages of 26 and 30, while 10 respondents (25%) were older than 31. Seven respondents (17.5%) had completed elementary school; seventeen respondents (42.5%) had completed junior high school; ten respondents (25%) had completed high school or technical school; and six respondents (15%) had completed university. There were 15 respondents (37.5%) who were employed, 4 respondents (10%), and 21 respondents (52.5%) who were merchants..

Frequency Distribution of Respondents' Attitudes

Table 2 Frequency Distribution of Respondents' Attitudes (N = 40).

Respondents' Attitudes	**f**	**%**
Pre-Test		
Good	5	12.5%
Enough	11	27.5%
Not enough	24	60%
Post Test		
Good	20	50%
Enough	20	50%

Based on table 2, it can be seen that of the 40 respondents who experienced attitudes before being given the intervention, 5 respondents (12.5%) had good attitudes, 11 respondents (27.5%) had sufficient attitudes, and 24 respondents (60%) had poor attitudes. After being given the intervention, 20 respondents (50%) had good attitudes and 20 respondents (50%) had sufficient attitudes.

Knowledge Frequency Distribution

Table 3 Frequency Distribution of Respondents' Knowledge (N = 40).

Respondent Knowledge	f	%
Pre-Test		
Good	5	12.5%
Enough	14	35%
Not enough	21	52.5%
Post Test		
Good	29	72.5%
Enough	10	25%
Not enough	1	2.5%

Table 3 shows that, among the forty respondents who had knowledge prior to receiving the intervention, five (12.5%) had strong knowledge, fourteen (35%) had sufficient knowledge, and twenty-one (52.5%) had poor knowledge. Ten respondents (25%) had sufficient knowledge, one respondent (2.5%) had poor knowledge, and 29 respondents (72.5%) had good knowledge following the intervention.

Differences in Attitude Before and After Giving Complete Basic Immunization

Table 4 Influence of Attitude before and Attitude after in providing Complete Basic Immunization.

	Attitude_After - Attitude_Before
Z	-5.380b
Asymp. Sig. (2-tailed)	.000

The influence of attitudes both before and after the intervention is seen in Table 4. The statistical analysis study's Wilcoxon test produced a ρ value of 0.000. Ha can be accepted because the ρ value is less than the α value of 0.05. This result suggests that mothers' attitudes and knowledge about receiving full basic vaccinations at the Jikohay Community Health Center in the West Obi District are influenced by IEC..

Differences in Knowledge Before and After in Providing Complete Basic Immunization

Table 5 Effect of Knowledge before and Knowledge after in providing Complete Basic Immunization.

	Knowledge – After - Knowledge – Before
Z	-5.121b
Asymp. Sig. (2-tailed)	.000

The influence of knowledge both before and after the intervention is shown in Table 5. The statistical analysis study's Wilcoxon test produced a ρ value of 0.000. Ha can be accepted because the ρ value is less than the α value of 0.05. This result suggests that mothers' attitudes and knowledge regarding administering full basic vaccines at the Jikohay Community Health Center in the West Obi District are influenced by IEC.

Discussion

A p value of 0.000 was discovered based on study on the impact of educational information communication (KIE) on mothers' attitudes and knowledge on comprehensive basic immunization utilizing a single group pretest-posttest using the Wilcoxon test. This indicates that mothers' knowledge and attitudes on full basic immunization at the Jikohay Community Health Center in the West Obi District are significantly influenced by IEC.

Nineteen respondents were between the ages of twenty and twenty-five. Mothers in this age range are seen to be productively responsive, which means they can take in and comprehend knowledge with ease. The findings of this study are consistent with Handayani's

research in (Meigustin Ulandary Siregar 2021) that the mother's age affects knowledge and decision-making capacity, meaning that an individual's knowledge and experience are more likely to rise with age.

The majority of moms had poor levels of education, with only 17 having completed junior high school. This implies that moms who have little knowledge are more likely to not receive all recommended basic vaccinations. These results are consistent with study by Wibowo et al. (2020), which discovered that cognitive abilities and how people react to information around them may be influenced by educational attainment.

The majority of respondents (21 respondents) were merchants, according to the study's findings. Working women with hectic schedules typically spend more time at work than at home with their family. Consequently, the researchers came to the conclusion that working moms spend less time on their kids and more time with their family on their vacation.

The results of the table above show that attitudes before the birth were mostly lacking, according to researchers because many mothers are working and are relatively young, so mothers' attitudes are less good and less focused on their children's health without considering the impact on the future. Also, in terms of knowledge before the birth, the majority of knowledge was lacking. This is because, in terms of educational characteristics, mothers who are mostly junior high school educated will lack knowledge about child health, such as complete basic immunizations. They actually only know the basic immunizations. From the KIA book, the majority of mothers cannot read when their children should be immunized. Therefore, to improve attitudes, IEC activities such as counseling are needed.

A variety of mediums, such as pamphlets and movies, can be used to spread IEC. Additionally, social media—including WhatsApp, Facebook, Twitter, Instagram, Line, and mailing lists—can be used as an IEC tool to spread knowledge and educational messages about basic immunizations.(Silvi Zaimy, 2023)This outreach effort takes the form of disseminating information on the significance of immunization, beginning with the definition, kinds, and advantages of each vaccination—namely, reducing pain brought on by illness and the potential for disability or death.

Side effects of immunization given to infants: vaccines as biological products can cause side effects that cannot be predicted beforehand and reactions are not always the same between one recipient and another. Side effects of immunization, known as post-immunization adverse events (KIPI), are illnesses that occur after receiving immunizations that are suspected to be related to immunization. Program/vaccination implementation approaches, vaccine induction, coincidental variables, and unknown reasons are the four categories of mistakes that contribute

to immunization events. There are two types of clinical symptoms: systemic and local. Pain, redness, swelling, and induration at the injection site are examples of local symptoms. Fever, stomach issues, weakness, fussiness, and weeping are examples of systemic symptoms.(Harahap and Aswan, 2020).

Knowledge is the outcome of knowing, which happens when someone acts on a certain item. The human senses—sight, hearing, taste, and touch—are used for sensing. The eyes and hearing are the primary sources of human information. A mother's understanding of the significance and intent of the Hepatitis-B0, Polio, and Measles vaccinations is a reliable indicator of the completion of basic vaccines for newborns. Experience is also an event that a person has encountered, both from their surroundings and from within themselves. Subjectively, experience will eventually turn into knowledge, therefore the more experience one has, the more information they acquire. In terms of information, the ease of obtaining information from various sources through health promotion media or the internet can also increase knowledge. A mother's knowledge is influenced by the amount of information received and the mother's ability to understand the information provided, including information on providing basic immunizations for infants. Naturally, a mother's understanding might be impacted by what she hears and sees, including material from health counseling or the media.(Harahap and Aswan, 2020)The spontaneous act of knowing or comprehending something without fully grasping its complexities is known as knowledge. According to Walgito, knowledge is the outcome of knowing. This happens when an item is sensed. The person is motivated to comprehend, and knowledge is gained from experience.

A person's attitude is influenced by their thinking; if knowledge is positive, it will lead to a positive attitude, and vice versa. Lack of maternal knowledge as a result of mothers not getting adequate explanations or information (counseling) regarding the significance of immunization; as a result, many mothers mistakenly believe that immunization will cause fever, scarring, or swelling, leading them to decide not to vaccinate their infants. In contrast, moms who are well-informed provide their infants with all recommended vaccinations. Mothers who have low knowledge and are far from information will experience difficulties in accepting immunizations. This is due to the mother's ignorance about the meaning, purpose, benefits, time of administration, frequency of administration, interval of administration, form of vaccine, method of administration, place of administration, impact if not given, service location and side effects of immunization.(Witi Herlayati 2018).

In terms of experience, it also refers to events that an individual has experienced, both within themselves and in their environment. Experiences that become embedded in the

individual's subjective knowledge, so the more experience they have, the more knowledge they gain. In terms of information, the ease of accessing information from various sources through health promotion media or the internet can also contribute to knowledge.(Mulyani et al. nd).

High dropout rates and restricted access to services are the primary reasons for the low attainment of full basic immunization. Among other reasons, this happens because vaccination service locations are far away and challenging to get to. Immunization cards (KMS/KIA Books) are unavailable, service dates are erratic and do not coincide with community events, and the general population is not well-informed about the advantages, timing, and side effects of vaccinations. vaccination status will be impacted by a lack of vaccination knowledge and expertise.. If a person has limited knowledge, such as knowledge about the benefits of providing complete basic immunizations to infants, it will affect their attitude towards providing complete immunizations to their babies. Knowledge is one factor that influences the formation of a person's attitude. Mothers' knowledge is very influential.(Yulia Fauzi, Astrid Novita 2024).

Rahmi (2018) found that knowledge is one of the characteristics associated with toddlers' completion of basic vaccines. Mothers who are well-informed will give their toddlers all recommended basic vaccinations because they are aware of the advantages of vaccinations, whereas mothers who are ignorant of vaccinations and their advantages will cause their toddlers to receive incomplete basic vaccinations (Nugrawati, 2019). There was a correlation between the degree of maternal knowledge and the completeness of basic immunizations in infants at the Simpang Tiga Inpatient Health Center in Pekanbaru City, according to Istawati's (2019) research on factors related to the completeness of basic immunizations at the facility.(Astrid Novita, Yulia Fauzi, 2024).

Theoretically, imparting knowledge through education and training will boost awareness, which will eventually result in someone practicing in accordance with their understanding, even if it takes a while. 4 An attitude is a desire to respond to something and a propensity to behave in a way that is consistent with that object. A person's closed response to a stimulus that already involves elements of opinion and emotion is known as their attitude. Attitudes cannot be immediately observed; they can only be understood through closed conduct. The entirety of a person's inclinations, emotions, presumptions, thoughts, and beliefs toward a certain subject is their attitude. Attitudes are influenced by group ideals in addition to an individual's inherent characteristics. Even if attitude might be a viewpoint, it is nevertheless distinct from knowledge. An attitude toward a thing is not the same as knowledge of it. Unlike attitudes, knowledge is not a motivating factor on its own. Only when information about an

item is combined with a willingness to behave in line with that knowledge can it become an attitude toward that thing. In essence, face-to-face communication is more effective. Research indicates that a successful communication strategy is to directly convey the communication conclusion to the person whose attitude has to be altered by repeating the reasons in favor of the desired attitude. Three message repetitions is the ideal number. The mother's attitude makes sense when viewed from a number of perspectives that affect attitudes, including personal experience, the influence of other significant individuals, the influence of culture, the media, educational and religious institutions, and emotional factors.(Appi and Syukri, 2021).

4. CONCLUSION

Mothers at the Jikohay Health Center in the West Obi District were asked about their attitudes and level of knowledge regarding complete basic immunization prior to counseling. The results showed that 21 respondents (52.5%) had poor attitudes and 24 respondents (60%) had poor knowledge. This is because moms pay less attention to their children's health and are ignorant of the fundamental vaccinations. After receiving KIE counseling on vaccinations, 29 respondents (72.5%) had good knowledge, and 20 respondents (50%) had positive attitudes. This is the knowledge of mothers after receiving counseling about complete basic immunization which has an influence on understanding and updating the knowledge they already have. However, there are mothers whose knowledge is lacking because the mother actually thinks that basic immunization is sufficient for her child.

The study's findings show that IEC has a major impact on mothers' attitudes and understanding about receiving full basic vaccinations at the Jikohay Community Health Center in the West Obi District. The Wilcoxon SPSS 25 test, which had a p-value of 0.000, demonstrates this.

Suggestions for health facilities include providing monthly health services, conducting child health counseling, and conducting door-to-door visits to children who have not been immunized. Respondents are encouraged to pay more attention to children's health, especially immunization, as it helps prevent illness as they grow older. Further research is recommended to develop research on complete basic immunization and to include more samples or variables.

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