



Research Article

Implementation of the Dengue Fever Prevention Program at the Tanah Tinggi Primary Health Care in Binjai

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ABSTRACT

Dengue hemorrhagic fever is one of the public health problems in Indonesia that is currently increasing the number of patients and its spread is increasingly widespread. In Binjai, the Primary Health Care (PHC) classified as the highest DHF case is the Tanah Tinggi Primary Health care (TTPHC) from 2020 there were 4 cases, 2021 34 cases and 2022 102 cases. This study aims to investigate the implementation of the DHF prevention program. This research used Qualitative methods with a case study research design. Data obtained from in-depth interviews with 6 (six) informants. The research was conducted at TTPHC in Binjai from February to May 2023. The results showed that inputs including human resources were sufficient, facilities and infrastructure were incomplete, and funds came from the health operational assistance (BOK). There were still processes of P2DBD program activities which not carried out optimally, namely fogging. There were still some outputs/achievements of each P2DBD program activity that had not reach the target, namely fogging.

Keywords: Dengue, implementation, program, P2DBD, tanah tinggi

INTRODUCTION

One of the public health problems in Indonesia so far is dengue hemorrhagic fever (DHF), which is increasing in number and spread. Cross-sectoral involvement is important because activities will be more targeted and effective, especially in efforts to increase community participation (Kemenkes RI, 2020).

To combat DHF, the Indonesian government issued Decree No. 581/MENKES/SK/VII/1992 of the Minister of Health on the eradication of DHF. Efforts to combat DHF include preventing, finding, and reporting patients, observing the disease, and conducting epidemiological investigations and counselling to the community.

The World Health Organization (WHO) estimates that by 2021, there will be around 100-400 million DHF worldwide each year. The annual number of DHF patients in Asia accounts for 70% of the total. DHF is known to be the leading cause of morbidity and mortality in Southeast Asia with 57% of the total DHF cases in Southeast Asia occurring in Indonesia (WHO, 2021).



What can be done to prevent DHF is the importance of public awareness of environmental hygiene. However, if an area has been infected with DHF, what can be done is to cooperate with the primary health care (PHC) to carry out observation, monitoring, and treatment such as fogging, epidemiological surveillance of the disease, periodic larva inspection and focal handling so as to prevent the area from becoming a potential outbreak area.

For the past three years, the Tanah Tinggi primary health care (TTPHC) has recorded 4 cases of DHF throughout 2020. In 2021, there was a significant increase, reaching 34 cases. This figure continues to increase until the end of 2022, which is 102 cases of DHF (Puskesmas Tanah Tinggi, 2022).

Preliminary results of a survey conducted in the TTPHC working area showed that the implementation of the DHF eradication program (P2DBD) was not fully optimal. This is indicated by a significant increase in the number of DHF in the Tanah Tinggi PHC work area.

The results of a brief interview with PHC officers revealed several things that were thought to be the cause, including the lack of fogging equipment, damage to fogging equipment, counseling related to DHF which was only done when cases were found, and the lack of community participation.

Several previous studies found descriptions and factors that were proven to be related to the implementation of the P2DBD countermeasure program. Gita's research (2022) in Tanjung Morawa sub-district, Deli Serdang regency, mentioned that the number of DHF cases increased from 2018 to 2019 and became the sub-district with the highest number of DHF cases in the region. The implementation of the P2DBD program at the Tanjung Morawa PHC has also not been fully maximized. The limited medical personnel involved in the P2DBD program, the inaccuracy of the report results made after the implementation of the P2DBD program, and the lack of facilities and infrastructure needed are factors in the high number of DHF cases in the region (Dwi Gita, 2021).

In Hasibuan's research (2020), the mosquito larvae free rate of Medan City has not reached the target of $\geq 95\%$. It shows that there is still a dearth of community involvement in eradication of mosquito nests and periodic larva inspection. The lack of routine meetings of the task force DHF until now indicates the low involvement of stake holder elements and the community in controlling DHF (Hasibuan, 2020).

In research by Herdiansyah (2021) based on data showing that DHF is one of the diseases with the highest number of patients. Several behavioral factors and unhealthy lifestyles of the community are thought to be the cause of the increasing number of patients (Fadly Herdiansyah, 2021).

The difference between this research and previous research is that this research uses qualitative methods with a case study research design. The focus of the study examined in this research is 6 P2DBD activity programs carried out at the TTPHC in Binjai City. this research uses data triangulation with the characteristics of informants who have been infected with DHF within the last 1 year who live in the working area of the TTPHC, community leaders, and mosquito larvae monitoring cadre are special officers from the neighborhood who work voluntarily to monitor the mosquito larvae population which directly appointed by the PHC.

Based on the description that has been stated, the researcher was interested in conducting research on "Analysis of the implementation of the DHF prevention program at the TTPHC Binjai, North Sumatra Province". Therefore, this study aimed to investigate the implementation of the P2DBD at the TTPHC.

MATERIAL AND METHODS

This research was qualitative research with a case study research design. Qualitative data was collected through *in-depth* interviews using interview guidelines with open-ended questions contained questions on demographic characteristics as well as questions on input (human resources, facilities and infrastructure and funds), P2DBD program implementation (larvicides, focused fogging, health education, epidemiologic investigation, periodic larva inspection) and Output achievements in each activity. The data collected and generated are in the form of sentences and images rather than numbers. Data can also be found in the form of field notes, pictures, or videos taken as a result of research. The research was conducted at the TTPHC Binjai, which began from February until May 2023.

There were 4 resource persons selected in this study, namely the Head of PHC, P2DBD Program Coordinator, Surveillance Officer, and Environmental Health Worker. The types of data sources used in this research were primary data by in-depth interviews with resource persons and secondary data by assess documents sources.

The data validity technique in this research used the data triangulation method. Data source triangulation was conducted to compare interview findings with data obtained from various sources. Data triangulation in this study were 2 people which live in the neighborhood that had DHF outbreak in the past year of the TTPHC work area in Binjai. The data analysis technique used in this study used thematic analysis to observe the results of the data that had been obtained.

RESULTS AND DISCUSSION

Human resources

Presidential decree number 32 of 1996 on health services stipulates that health workers who manage the P2DBD program must have experience in the fields of epidemiology, entomology, microbiology, health educator, health administrator and sanitarian staff.

Based on the results of in-depth interviews with various informants regarding human resources in the P2DBD program, it was found that in the organizational structure consisted of 1 program coordinator, 1 surveillance worker and 1 environmental health worker who is in charge of the periodic larva inspection. All of these members were sufficient to cover 7 villages of the PHC working area.

Based on the results of in-depth interviews, health workers involved in the P2DBD program had received training on DHF control programs, and mosquito larvae monitoring cadre had received training in order to reduce the number of cases of DHF every year in the neighborhood.

Facilities and infrastructure

Based on the Decision of Decree No. 581/MENKES/SK/VII/1992 of the Minister of Health on the Eradication of DHF, eradication equipment and equipment procured to eradicate DHF include fogging machines (maximum 4 units per PHC, 10 units per district/city and province), ULV (ultra-low volume) machines (maximum 2 units per district, city, and province), PSN kits, mosquito eradication cadre, insecticide, larvicides, and other diagnostic and treatment aids (Kemenkes RI, 2017).

Based on the results of interviews regarding facilities and infrastructure at the TTPHC in Binjai city, it was known that the available tools and materials were fogging equipment, positive patient data, and personal protective equipment.

However, the availability of fogging equipment was very minimal, making it difficult to maximize work in P2DBD activities because there was only 1 fogging tool that can be used when going to the field and this tool was often broken so that the implementation was not optimal.

Funds

Based on the results of in-depth interviews regarding the funding of P2DBD program activities, it was known that for P2DBD activities at the Tanah Tinggi PHC in Binjai City, the source of funds was obtained from the Health Operational Assistance (BOK).

The funds were sufficient to cover all costs they incur related to the implementation of the P2DBD program, including eradication of mosquito nests operational costs, official travel costs, vehicle fuel purchases, and fogging labor wages.

But because the disbursement of budgeted funds was long, it was not uncommon for the PHC to decide to use the personal funds of the program holder, so reimbursement process happen after the fund was disbursed.

Implementation process of P2DBD program

Based on the results of in-depth interviews that have been conducted at the TTPHC, it was found that PHC has been conducting the activity of eradication of mosquito nests by cooperating with the community. However, this activity was only implemented if there was a case of DHF that affects the community.

Based on the results of in-depth interviews that have been conducted at TTPHC, it can be concluded that larvicide activities at TTPHC had been carried out, but the implementation was not effective because the community did not accept and want to carry out what was conveyed by the PHC.

Based on the results of in-depth interviews conducted at TTPHC in Binjai City, in terms of fogging, the PHC will only did the fogging when the epidemiological investigation found positive results for the presence of dengue mosquito larvae in the community. It was known that in fogging hygiene, there were 2 to 3 people who go down to do fogging. And it was known that fogging activities experience obstacles where people were reluctant to spray inside the house, which was why the result not optimum.

Based on the results of interviews and observations that have been conducted on the implementation of the screening at the Tanah Tinggi PHC, it can be concluded that the screening activities was not optimal as seen from the attitude of the community who were unaware of the symptoms/signs of DHF.

Based on the results of in-depth interviews regarding Epidemiological Investigation, it was found that epidemiological investigation activities happens only if there was a patient confirmed DHF positive.

But there were obstacles faced by the PHC related to this epidemiological investigation activity, namely that the community was less able to accept the presence of officers to conduct epidemiological investigations so that it was difficult to determine which patients were really positive for DHF.

Based on the results of interviews and observations carried out on the implementation of PJB in TTPHC, it can be concluded that the implementation of PJB has not been running well, but PHC officers routinely carry out examinations of residents every 3 months and the number of spots is almost reaching the national target.

Output of P2DBD activities

Based on the results of interviews and observations that have been carried out at TTPHC, the output of each program was as follows:

Activities	Achievements	Target	Description
Implementation of PSN	70%	80%	Not suitable
Larvacides	80%	80%	As per
Fogging	65%	80%	Not suitable
Health Education	70%	75-95%	Not suitable
Epidmiologic Investigation	80%	80%	As per
Periodic Larva Inspection	80%	95%	Not suitable

Based on the table above, it shows that only the achievement of eradicating mosquito nests was 70% of the 80% target, the achievement of Larvicide was 8% of the 80% target, the achievement of fogging was 65% of the 80% target, the achievement of counseling was 70% of the 75-0% target, the achievement of epidemiological investigation was 80% of the 80% target, and the achievement of periodic larva inspection was 80% of the 95% target.

DISSCUSSION

The 2020-2024 Ministry of Health Strategic Plan, DHF is included in diseases that have the potential to cause outbreaks. In the 2020-2024 national medium-term development plan, the Indonesian government is committed to controlling DHF as part of the third strategy, namely improving disease control. The improvement and control strategy includes several activities such as (1) improving the prevention and control of disease risk factors, especially improving prevention, early detection, and rapid response to disease threats; (2) strengthening healthy security, specifically improving the ability to avoid, detect, and respond quickly to disease threats, as well as bolstering the mechanism for alerting of extraordinary events and health quarantine; (3) increasing the coverage of case finding and treatment and strengthening the management of disease and injury; (4) community empowerment in disease control and strengthening community-based total sanitation (Kementrian Kesehatan Republik Indonesia, 2021)

Several regulations and guidelines have been issued by the Ministry of Health for DHF control in the 2014-2020 period, including Regulation of the Minister of Health No. 21 of 2020 on the Ministry of Health's Strategic Plan; Regulation of the Minister of Health No. 50 of 2017 on Environmental Health Quality Standards and Health Requirements for Disease Carrying Factors and Animals and their Control; Guidelines for DHF Control in 2017; Guidelines for the Use of Insecticides (Pesticides); Decree of the Minister of Health Number HK.01/07/MENKES/9845/2020 on National Guidelines for Medical Services (PNPK) for Management of DHF in Adults; Minister of Health Decree Number HK.01/07/MENKES/4632/2021 on National Guidelines for Medical Services (PNPK) for Management of DHF Infection in Children and Adolescents.

The specific cross-cutting indicators for DHF prevention are centered on vector control. In the RPJMN and Resntra of the Ministry of Health, this indicator is included in the environmental health performance indicators. Healthy districts/cities include specific indicators of free *Aedes* larvae or the number of larvae, the implementation of the 3M PSN program in schools and public places, free of DHF outbreaks. However, in accordance with the regulations for organizing healthy cities, districts/cities will choose healthy city settings and indicators in accordance with the rules for organizing healthy cities.

To achieve the target of DHF control in Indonesia, a national strategy must be in place. This strategy can be used as a reference for continuous program development by various stakeholders in contributing to support the achievement of DHF control targets and strengthen the achievement of national development goals.

Based on the results of previous research shows that DHF is one of the diseases with the highest number of patients. Several behavioural factors and unhealthy lifestyles are thought to be the cause of the increasing number of patients (Fadly Herdiansyah, 2021).

Currently, the implementation of P2DBD at PHC Tanah Tinggi has been well implemented. However, there are always obstacles in every program implemented, namely the lack of community participation. Therefore, the way to maximize the prevention and control of DHF is by providing education related to the importance of maintaining environmental hygiene, closing water reservoirs, providing medicines and monitoring the environment that is indicated by DHF.

It is run by five people, namely the Head of PHC, Program Coordinator, Surveillance Officer, and Sanitarian. The coordinator is responsible for managing the implementation of the program. Finding DHF victims or suspects and checking the victim's residence is the responsibility of the surveillance officer. Environmental responsibility lies with the sanitarian. And the health promotion officer is in charge of delivering messages on what to do to reduce the spread of DHF cases.

In line with Law No. 36 of 2014 concerning Health Workers, the government is responsible for the design, provision, and application of health workers as well as the distribution, utilization and improvement of medical personnel. However, the number and type of medical personnel employed at PHC is calculated based on workload by considering population, area, and availability of health service facilities (Anis Faizah, 2018)

Based on the findings of observations and interviews, the facilities and infrastructure of the Tanah Tinggi Public Health Center have not met the standards in accordance with the Decree of the Indonesian Minister of Health No. 581/MENKES/SK/VII/1992. PHC Tanah Tinggi Kota Binjai only has 1 fogging device, larvicide powder, and insecticide. To diagnose DHF, laboratory tests are conducted to identify platelets and hematocrit.

The available facilities and infrastructure are utilized for socialization. If DHF cases are found, ufogging will be carried out in the targeted areas. To achieve policy objectives, appropriate facilities and infrastructure must be available. Without facilities and infrastructure, certain activities cannot be carried out effectively. Implementation will be difficult due to inadequate infrastructure and facilities (Saragih et al., 2019)

Based on interviews conducted, funding for the P2DBD program at PHC Tanah Tinggi only comes from BOK (Health Operational Assistance) funds. The funds received by PHC Tanah Tinggi are sufficient to cover all costs they incur related to the implementation of the P2DBD program, including PSN operational costs, official travel costs, purchase of vehicle fuel, and wages for fogging personnel.

Rahim's research (2013) defines budgeting as all actions and efforts taken to arrange specifically in determining needs at a certain level, especially the scale of money and the amount of costs, while still observing the rules and restrictions that apply.

Implementation Process of P2DBD Program

Based on interview findings and observations regarding the implementation of Mosquito Nest Eradication at the Tanah Tinggi Public Health Center, what the Public Health Center does is

to collaborate with cadres and the community in eradicating mosquito nests, namely doing mutual cooperation, closing and eradicating the breeding of *Aedes aegypti* mosquito in open water reservoirs.

In Priesley's (2018) research, the percentage of Flick Free Rate in Indonesia until 2019 was 78% which is far below the government's target of $\geq 95\%$. The fact that there is no known treatment or vaccination for DHF disease makes the condition worse, therefore PSN behavior is considered very important in preventing the spread of DHF (Priesley et al., 2018).

In line with Meirista's research (2020) in an effort to eradicate DHF, the community is educated through counseling and distribution of larvicide powder. This effort is part of the 3M Plus movement that encourages people to dispose of used items that can hold water, drain water reservoirs, and close water reservoirs. The Plus movement refers to not hanging clothes, staying away from mosquito bites, using larvicides, and keeping larvae-eating fish (Indri Meirista et al., 2020).

Based on the findings from the interviews and observations conducted regarding the implementation of larvicides at the Tanah Tinggi Public Health Center, it shows that larvicide powder has been given to the community, but it is given only after there is a report that someone has contracted the dengue virus.

Based on the results of interviews and observations, it has been done but not maximized. Fogging will be carried out when there are reports of people affected by DHF. The implementation of fogging has not been maximized due to several things, namely the lack of fogging equipment, damaged equipment, and residents who are not willing to have their homes fumigated.

Inadequate fogging will result in *Aedes aegypti* mosquitoes developing resistance to pesticides as a result of unsuccessful fogging. For example, mosquitoes were found to be resistant to meleton and lambda-cyhalotrin in Bontang City, East Kalimantan with a mortality rate of less than 70%. If this problem is not resolved soon, *Aedes Aegypti* mosquito resistance will increase throughout East Kalimantan, especially in the working area of Makroman Public Health Center, Samarinda (Syamsir & Andi Daramusseng, 2018).

Based on the results of interviews and observations regarding the implementation of counseling at the Tanah Tingi Public Health Center, it can be concluded that counseling activities have been carried out optimally as seen from the attitude of the community who already know the symptoms/signs of DHF patients.

In Suryani's research (2020) in Jelok Village, Cepogo District, Boyolali Regency, there is a positive relationship between knowledge and preventive behavior to prevent DHF. The calculation results show the Spearman Rank value of 0.346 with a significant level of 0.048, where the significant level is smaller than 0.05, it can be concluded that there is a positive relationship between knowledge and preventive behavior of DHF in Jelok Village, Cepogo District, Boyolali Regency

A very effective effort to prevent DHF cases is to educate the community about local environmental conditions. Knowledge-based behavior will be more beneficial, and vice versa. Humans dare to act because they know what they are doing, and it does not happen by chance, but absolutely. Thus, humans no longer have doubts in acting (Nasution et al., 2018).

Tracing or epidemiological investigation is the activity of searching for victims or suspects of DHF and checking every place where the victim or suspect lives within a radius of 100 m for larvae of dengue mosquitoes. Determining the presence or absence of further DHF cases, the level of transmission and the possibility of further spread of DHF in the area are the objectives of epidemiological investigation operations conducted by PHC officers (Purnawinadi et al., 2020)

Based on the findings from the interviews and observations that have been made regarding epidemiological investigations, it shows that the implementation of PE has been carried out by PHC officials when cases are found, when the health officer inspects the homes of DHF patients.

Jumantik cadres, who are appointed as the person in charge of implementing the PJB in the community, are on duty every week with the aim of inspecting each house in accordance with the results of the agreement in their neighborhood. In addition, once every 3 months 100 households from each village or kelurahan will be randomly selected for inspection by the health worker or PHC officer on duty (Ni Made Hegard Sukmawati et al., 2022).

According to the outcomes of interviews and observations conducted regarding the implementation of PJB at the TTPHC, it can be concluded that the implementation of PJB has fully run well as seen from the routine of officers who check residents' homes every 3 months and the larva-free rate which almost reaches the national target.

The outputs obtained in the 6 activities of implementing the P2DBD program at the TTPHC in Binjai City have not yet reached the target, namely fogging focus and implementation of PSN.

CONCLUSION AND SUGGESTION

Considering the findings of the conducted research, inputs to the implementation of P2DBD include human resources totaling 5 people and are sufficient to cover 7 villages, available facilities and infrastructure have not met the standards and funds are obtained from the Health Operational Assistance. There are 6 processes carried out in the implementation of the P2DBD program and one of the activities that is still far below the target is the implementation of fogging because the equipment is often damaged. Outputs obtained in 6 P2DBD activities still have not reached the target, namely fogging focus and implementation of PSN. For health officer it is expected to complete the availability of facilities and infrastructure as needed to run the P2DBD program. Conduct a lot of direct observations to the field to improve effective inspection, handling, and assessment mechanisms at every stage of program implementation to ensure that any errors in staff can be corrected immediately.

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