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### RESEARCH ARTICLE

#### MALARIA CONTROL STRATEGY ON INDONESIAN ARMY IN BORDER ENDEMIC MALARIA PAPUA AND PAPUA NEW GUINEA (CASE ON BORDER SECURITY TASK FORCE INFANTRY YONIF 713/ST, YONIT 300/R DAN YONIF 509 KOSTRAD IN AUGUST 2019-APRIL 2020)

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#### Abstract

Every year, 1350 TNI personnel are sent as a Security Task Force to the north sector of RI-PNG Border which is a malaria endemic area. The nine-month assignment allowed the soldiers to become infected with malaria, despite effective control measures being implemented. The aim of control is to prevent death and reduce the incidence of malaria. There are three control strategies according to the TNI technical guidelines: i) Anopheles vector control. ii) Vector mapping in postal environment. iii) Early case management and treatment. Rapid diagnosis test (RDT), Primaquine and Dihydroartemisinin-Piperaquine (DHP) treatment were performed as the first line in case management. The research method is qualitative with observation, FGD, in-depth interviews and retrospective analysis used in the study. The results of the observation there are gaps in the implementation of control strategies by the three task force battalions in border area, namely there is no extension media, still using fogging, undisciplined using refellan and mosquito nets. Prophylaxis and Indoor Residual Spraying (IRS) have not been used. From FGDs and in-depth interviews with related parties, the sub-optimality occurred due to conflicts with local culture (Hak Ulayat) and poor environmental management. From a retrospective analysis of health data, 1350 troops, 855 were malaria positive (incidence = 63.33%), 2 died (CFR = 0.23%) and 259 (incidence = 19.19%) relapsed. From the type of plasmodium, P. Vivax = 506, P. Falciparum = 322 and Mix = 43. The conclusion is that there is a need for self-discipline from each personnel and a multidisciplinary approach with field practitioners, infectiologists, microbiologists, epidemiologists, entomologists, sociologists, anthropologists, in controlling malaria.

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#### Introduction:-

Malaria is still a health problem in the world and in Indonesia. Thus, malaria becomes one of the obstacles to achieving the ideals of quality Indonesian human resources towards the golden generation of 2045. Eliminating

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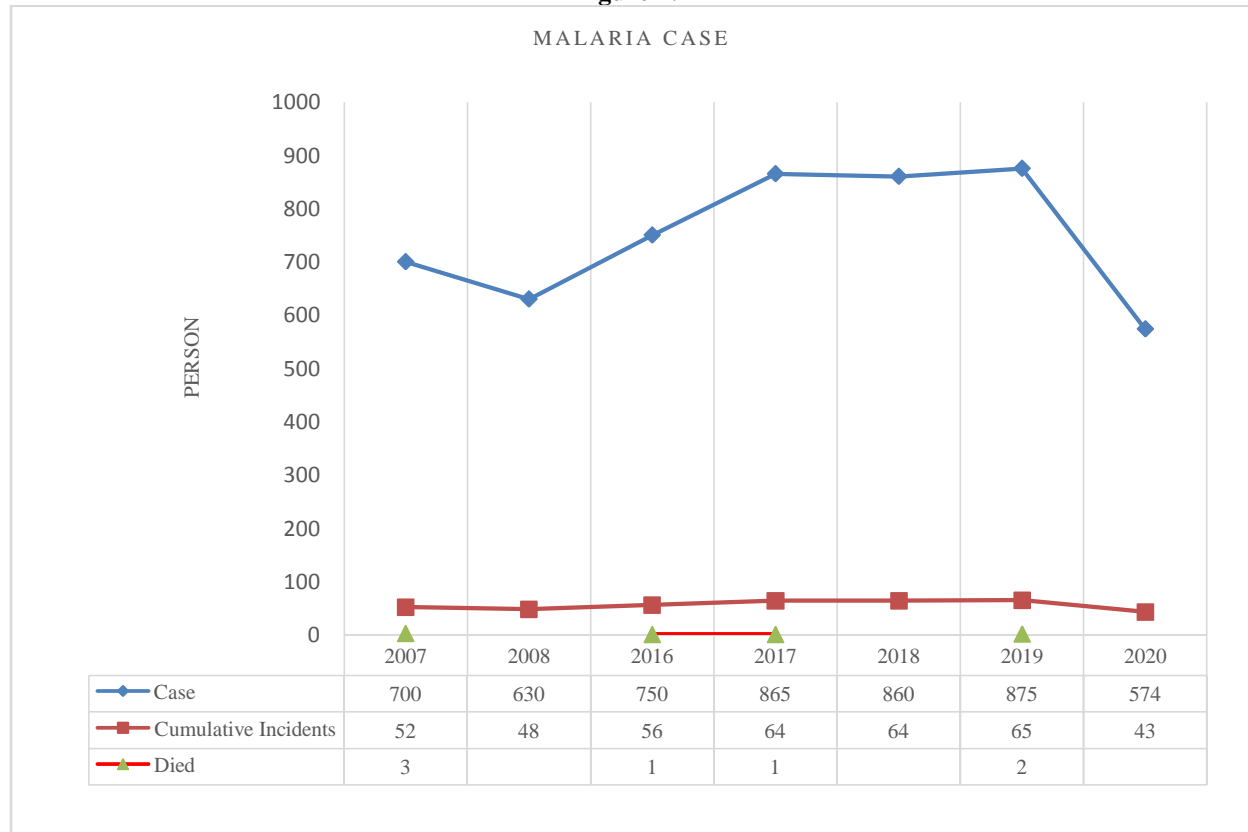
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malaria in Indonesia will improve the quality of Indonesian human resources. Nationally, malaria cases during 2005 – 2018, based on routine reports, tended to decrease, namely in 2009 by 1.85 per 1000 population to 0.84 per 1000 population in 2018, although there has been a decrease in API nationally, in areas with cases of For high malaria, the API rate is still very high compared to the national figure, while in areas with low malaria cases, outbreaks (Extraordinary Events) often occur as a result of imported cases. The elimination target in 2018 is 285 regencies/cities that have received malaria elimination certificates, the 2018 achievement is 285 regencies/cities, as of June 2019 there are 290 regencies/cities that have received malaria-free certification and are in the maintenance phase. In relation to the 2030 malaria elimination target, it is necessary to develop a malaria elimination roadmap so that the policies, strategies and resources needed to meet the challenges of achieving malaria elimination can be identified. Based on this, it is necessary to carry out a review program to see the current situation of the malaria control program, so that it can be a reference in compiling the road map document. In 2017, the malaria sub directorate in collaboration with the World Health Organization (WHO) has carried out a review program, as a renewal of these activities it is necessary to carry out a mini program review this year so that it can assess the progress of the program after the 2017 review program activities.

#### **Malaria and TNI (Indonesia Military).**

Throughout history in many parts of the world, in every war and military conflict, combat power has been drastically reduced by disease and non-combat injuries than from direct combat casualties. A large number of diseases that affect troop strength can be directly attributed to insect-borne diseases, such as malaria. Besides being able to cause significant physical, psychological, and economic pressure and threaten military missions. Mosquitoes or insects not only transmit life-threatening diseases, but insect bites can have a very disturbing impact and can cause other infections, skin diseases, or allergic reactions, and not to mention contamination of food and damage to other commodities. The above facts also do not prevent TNI from the threat of malaria and the spread of malaria parasites. This is due to migration factors (movement from home base to military operations area). Malaria is a scourge and a serious threat to every individual TNI Soldier who will or is running the Border Operations Task Force (Satgas), as well as those who live in high endemic areas. Migration from one area to a malaria endemic area will certainly pose a threat to TNI Soldiers because not all Soldiers have immunity or experience against malaria. Besides that, malaria is also a threat to families and the home-based environment when the soldier retires (Kep Pang, 2018). The main task and role of the TNI's function is to uphold sovereignty, maintain the territorial integrity of the Unitary Republic of Indonesia and protect the safety of the entire nation and the unitary state of the Republic of Indonesia which is implemented in the form of: Military operations for war (OMP) and military operations before war (OMSP).

From the main tasks of its roles and functions, the TNI has carried out strengthening in Indonesia's border areas with neighbouring countries. This gives the impression that the TNI has a tough task in maintaining unity in the sovereignty of the Republic of Indonesia (Juknis Malaria, TNI 2018). According to data processing of the Army Health Directorate in 2007, from 3 battalions (1350 people) there had been malaria attacks on the RI-NPG border task force. It was recorded that 700 Army soldiers became victims of malaria and 3 people died where they served for 9 months. Since the incident, there has been monitoring of the Papua-PNG task force soldiers from year to year. In 2008 the northern sector Border Security task force troops served for 9 months, there were 630 soldiers who became victims. In 2016, the Inspectorate General of the Ministry of Defense and the Ministry of Health made a working visit to the Papua-PNG Border, there were 1350 Border Security Task Force personnel from each battalion after serving for 9 months, 750 Task Force personnel contracted malaria and 1 person died. In 2017 with the same number of troops, 1350 people served for 9 months, the troops who suffered from malaria were 865 people with 1 death. In 2018 there were 860 troops affected by malaria, in 2019 the troops suffered from malaria 875 people with 2 deaths and the last year 2020 had 574 troops affected by malaria in the Papua and PNG assignment areas. (Director General of Stronghold, 2019)

**Figure 1:-**

Seeing the phenomenon of many TNI-AD soldiers contracting malaria during border security duties, the TNI Health Center collaborated with the Indonesian Ministry of Health to issue a Malaria Control Field Manual within the TNI which refers to the RI Ministry of Health program (TNI Health Center, 2011) as an effort to prevent malaria. malaria in TNI-AD soldiers who carry out OMSP. This is in line with the Indonesian Ministry of Health.

The purpose of this study was to analyse the malaria control strategy carried out by the TNI-AD. In addition to analysing existing control strategies, this study also aims to analyse the implementation and effectiveness of malaria prevention procedures. The importance of this research is to reduce the risk of malaria incidence in TNI personnel who undergo Military Operations before the war (OMSP) in malaria endemic areas by increasing the capacity of personnel to prevent malaria. The research method is qualitative with observation, FGD, in-depth interviews and retrospective analysis in the study. Data was collected by means of in-depth interviews and field observations. The data that has been obtained is then analyzed and compared with the literature and supporting documents. The results of the study were then tested for the validity and reliability of the data through questions and answers and confirmation of the data with resource persons and TNI personnel who served in malaria endemic areas. The research location was carried out at the RI-PNG Border Security Task Force (Satgas Border Security), Infantry Battalion 713/ST, Infantry Battalion 300/R and Infantry Battalion 509 Kostrad.

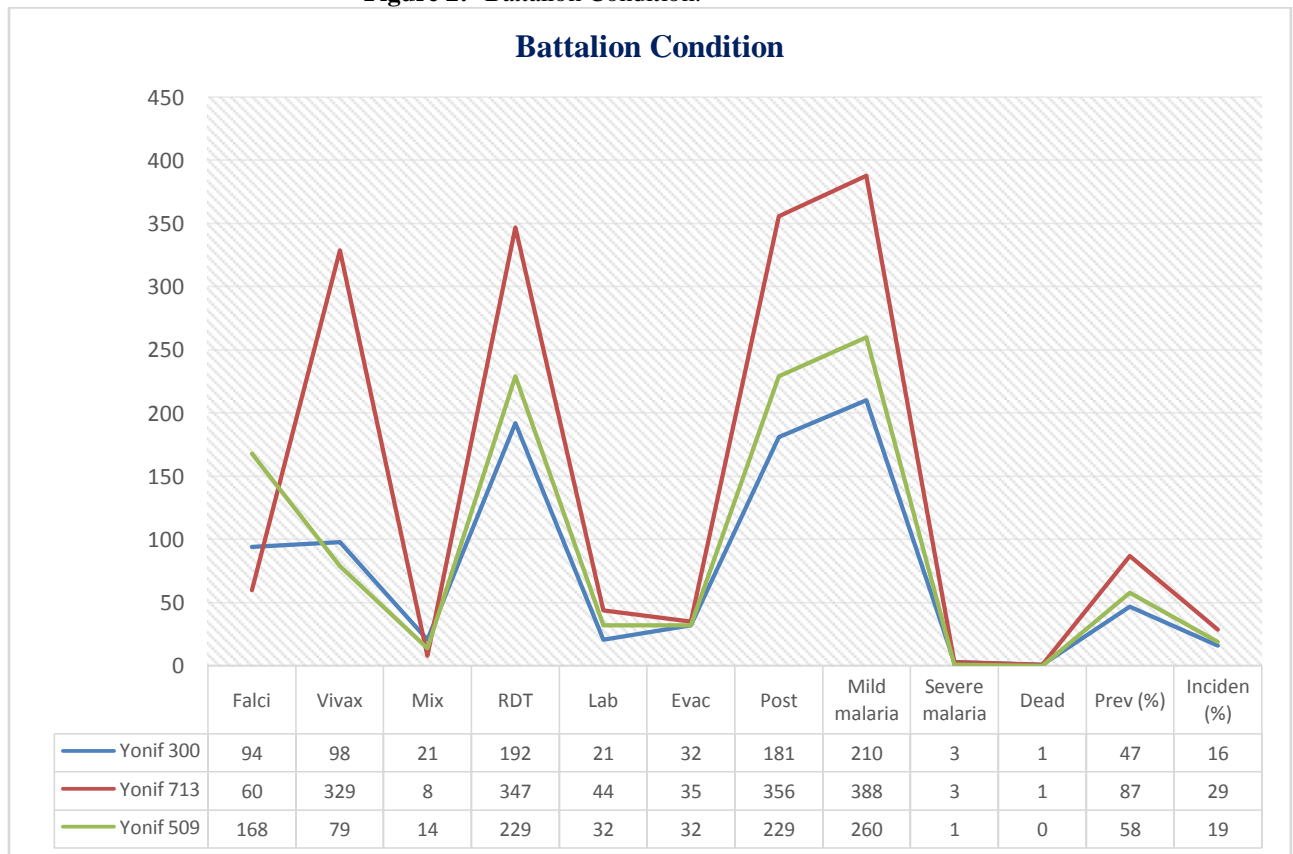
The location for the observation is the northern sector of Jayapura to the border of the Republic of Indonesia PNG. Researchers made observations at the main posts of the Border Security Task Force, namely the Kotis Infantry Battalion 713/ST, Yonit 300/R and Battalion 509 Kostrad and other posts in their respective ranks. The observation posts at the Border Security Task Force are spread out in the northern sector of Jayapura Regency to the Keerom Regency area. So researchers cannot make observations on all security posts. Research Subjects and Objects Research subjects consist of the Indonesian Ministry of Health, TNI health elements at the central and regional levels, task force commanders, health workers while at home base and in the area of operation, and members of the Border Security Task Force. As the object of research is malaria prevention policy, prevention efforts focus on promotive and preventive efforts, as well as prophylactic efforts. Data Analysis Techniques Data analysis was carried out from the time of data collection in the field, and after the field observations were completed. Data

analysis was carried out interactively including data collecting, data reduction, data display, and conclusion drawing/verification (Miles & Huberman, 1984).

### Results and Discussion:-

The implementation of malaria prevention in malaria endemic areas starts from the pre-duty period at the home base and continues in the operating area. During pre-task, personnel carry out health checks in accordance with the Health Examination Guidebook / Candidate Body Test / TNI-AD Members (TNI Headquarters, 2012). Task Force personnel receive equipment from the TNI Health Centre in collaboration with the Indonesian Ministry of Health. The support provided for malaria prevention includes insecticide-treated mosquito nets, 3 sets of PDL with permethrin, a mini fogging device and mosquito repellent lotion in carrying out tasks in border areas. Three stage of the result, First, From a retrospective analysis of Health data from 2019 to 2020 there were 1350 troops from three battalions, 855 were found positive for malaria (incidence = 63.33%), 2 people died (CFR = 0.23%) and 259 (incidence = 19.19%) relapsed. From the type of plasmodium, *P. Vivax*= 506, *P. Falciparum*= 322 and Mix= 43. Malaria control in the Armed Forces of the Republic of Indonesia is stated in the Minister of Defence 2020 and the 2018 Military Guidelines for Malaria. Malaria prevention is to increase awareness of the risk of malaria, prevent mosquito bites, and control vectors. Prevention of mosquito bites can be done by using anti-mosquito clothes, mosquito nets, head nets, repellents, mosquito netting, electric rackets, mosquito repellent spray, mosquito coils and others.

**Figure 2:- Battalion Condition.**



### Observation stage, we find some issue in the field such as :

Malaria prevention within the TNI is carried out through the following efforts:

Promotive Efforts are carried out through the following activities:

Counselling on malaria and its prevention as an effort to provide knowledge for TNI personnel who will be on duty or while on duty in malaria endemic areas with the following methods:

(1) One way (one way traffic). This is done through brochures, posters and pamphlets, mass media (radio, TV, magazines and others).

- (2) Two-way (two-way traffic). Conducted through lectures, demonstrations, film/slide shows at headquarters, educational institutions, dormitories, etc. as well as pre-service debriefing
- (3) Executor. Counseling is carried out by: Unit commanders, officers/officers from the Health unit and other officials including women from the TNI wife union as mediators.
- (4) Material. The counseling materials include knowledge about malaria and its prevention efforts

The command role of the unit commander is quite important and strategic by giving instructions or orders, regulations, monitoring, and controlling in the assignment unit to influence the attitudes and behavior of soldiers in order to prevent malaria.

Fulfilment of nutrition with balanced nutrition, regular exercise and adequate rest to increase endurance, fitness, and the ability of soldiers.

Visits of health workers at TNI soldiers' homes

Preventive Efforts. Efforts to control malaria vectors in the assigned area are carried out by means of physical, biological, chemical and environmental management.

Physical (mechanical) control is carried out with the following activities:

- (1) Installing bed nets in the right way by using bed nets containing permethrine insecticide with a concentration of approximately 2%.
- (2) Install mosquito netting/netting on ventilation holes, latticed windows and doors as well as perforated wooden walls and floors. When using a team or platoon tent, try to minimize gaps around the tent and not open the door often in the late afternoon until early morning.
- (3) Close the doors and windows in the late afternoon around 17:00.
- (4) Use a mosquito racket if it is felt that there are still mosquitoes in the room.
- (5) Wearing head nets/nets properly, gloves, long sleeves, undershirts, long pants and socks and shoes if you have to be outside for guarding the porch, guarding the post and so on.

Biological vector control is carried out through:

- (1) sowing seeds of predatory fish of anopheles larvae such as tilapia fish, betik, tin-head fish, tilapia, and others in waters that are breeding grounds for anopheles mosquitoes; and
- (2) sowing biological agents *Bacillus thuringiensis* H-14 (BTI H-14) This type of bacteria has spores that are toxic to mosquito larvae.

Chemical vector control is carried out through:

- (1) Spraying house walls with insecticides (Indoor Residual Spraying/IRS). The purpose of spraying is to break the chain of transmission because the mosquito lifespan becomes shorter so that it does not have time to produce sporozoites in its salivary glands.
- (2) Giving Larvicide (Larviciding), then the larvae will die when they become cocoons or if they hatch into mosquitoes, but it is not normal because they cannot fly.

Environmental management in malaria control includes:

- (1) Environmental Modification. This activity is a permanent physical modification of soil, water and plants with the aim of preventing, eliminating or reducing mosquito breeding sites. These activities include: stockpiling in puddles with soil, sand or coral, drying by digging or draining water from the broodstock.
- (2) Environmental Manipulation. Manipulation of the activity environment aims to produce a temporary condition that is unfavorable for vectors to breed in their breeding places. (for example: cleaning floating aquatic plants (algae and moss). Environmental manipulation activities include, among others, making a connecting channel between brackish water and the sea so that the brackish water is changed to a bit salty so that the mosquitoes will not be able to breed properly, irrigation arrangements and planting/preventing the felling of mangrove trees in breeding places. (TNI Technical Guidelines).

The Role of TNI Health Elements during pre-task. The TNI Health Centre with the assistance of the Ditkesad and each Kesdam provided various supports to the personnel of the Border Security Task Force Battalion 713/ST, Infantry Battalion 300/R and Infantry Battalion 509 Kostrad, through personnel health checks and counseling on

malaria prevention. Personnel who will carry out assignments to malaria endemic areas should report a history of malaria to health personnel so that it can be considered when placing personnel in security posts. People who have been infected with malaria before will usually form immunity so that they will be more resistant to malaria infection (Kemenkes RI, 2014). Task force personnel also received counseling on malaria control but there was no media for counseling. Preventive counseling using repellents containing 30-35% DEET, and spraying with Indoor Residual Spray (IRS). Meanwhile, the medical support provided did not include malaria prophylactic drugs for personnel. This is not in accordance with the management of malaria prevention recommended by the Indonesian Ministry of Health.

While in the operating area, Border Security Task Force personnel do not receive support for permethrin insecticide liquid for daily clothing. The personnel only received assistance for physical control, namely 3 sets of PDL PF, sebo, and mosquito repellent lotion containing 30-35% DEET. The personnel did not receive antimalarial prophylactic drugs in the first 6 months in the operating area even though the recommendation from the Indonesian Ministry of Health was to use 100 mg/day of doxycycline prophylaxis for a maximum of 6 months and then replace it with other prophylaxis. The Ditkesad carried out the identification of *Anopheles* sp. located in the security post area which will then be used for mapping malaria vectors in the territory of Indonesia. This is the first step for controlling the source of malaria in accordance with the theory environmental health by reducing disease sources. (Achmadi U.F., 2011). This study aims to determine the location of mosquito breeding places and the way of life of the *Anopheles* sp. so that it can be overcome by analysing his way of life (bionomics). If it is known that the *Anopheles* sp. which are around the security post attack animals more than humans, so it can be anticipated by having an animal cage between the breeding place and the security post. This is intended as a cattle barrier to reduce the risk of mosquito bites for Satgas Pamta personnel

**The Role of the Task Force Commander.** The area of operation of the Border Security Task Force is endemic for malaria which can be regarded as a non-military threat. Dansatgas stated that the health condition of the personnel greatly affected the strength of the troops. Malaria cases in the Border Security Task Force can be a threat to national security because in accordance with Lee & Collin's (2010) theory, which has an impact on cross-country borders between Indonesia and PNG, poses an acute threat in a relatively short period of time, and poses a risk to groups of people. Strategic in this case the Border Security Task Force personnel. At the time of pre-task When at homebase, the commander has had a special time for the delivery of tasks and others at the time of the commander. The briefing during commander's hours is more emphasized on carrying out duties so that there are no violations and other undesirable things. The main strategy used for malaria prevention is the malaria control doctrine which is delivered during commander's hours repeatedly. The strategy used by the commander is the application of Ivan Pavlov's theory of behaviorism through planning personnel discipline conditions for malaria prevention with stimulus-response associative. This classic conditioning theory needs to be done gradually and repeatedly to get the desired results (Malone, 1991). At the time in the operational area, the Commander through Dantonkes collaborated with the health authorities to provide understanding about malaria to its members. The task force commander of course has limitations for direct monitoring, for that the strategy taken to ensure the implementation of prevention is carried out through the command line.

**The Role of The Task Force Health Workers.** At the time of pre-assignment, the health personnel did not have basic medical competence, so they were briefed on medical treatment and provided basic health care for 2 months at the Lange Health Centre. This is an increase in the capacity of health personnel. In accordance with Kep. Minister of Health of the Republic of Indonesia Number 043/Menkes/SK/I/2007 concerning Malaria Training Guidelines, health personnel should have the knowledge, skills, and attitude changes to support the implementation of malaria control. At the time of operation in the area of operation, the health personnel provided refreshment to the Task Force personnel regarding malaria prevention. Meanwhile, efforts to recall malaria prevention can only be done verbally without the support of educational media. According to the malaria management guidelines from the Ministry of Health of the Republic of Indonesia in 2014, effective spraying is two months before the peak of malaria incidence. The absence of supporting data on malaria incidence from the previous Task Force made fogging Indoor Residual Spray (IRS). carried out every 2 weeks. The effectiveness of the spray can be questioned both from the method of spraying and the timing of spraying. It is often feared that the implementation of frequent fogging will cause insecticide resistance. Health personnel also check the installation of mosquito netting at each security post so that the risk of the entry of transmission vectors can be prevented. Another thing that has been done is a partnership with the local health office. There is a security post opposite the Muara Tami health center, namely the Ramil Tami Post. For this reason, partnerships can be carried out as an embodiment of malaria control. The post sometimes receives

assistance in the form of intravenous fluids and medicines for malaria. The RamilMuaratami Post has also collaborated to check blood supplies on personnel suspected of malaria so that there is an increase in the capacity of postal health personnel.

**Role of Task Force Soldiers During pre-assignment.**Border Security Task Force personnel received counseling about malaria from either the battalion doctor or Kesdam III/Siliwangi during pre-duty. The personnel understand that there is no vaccine for malaria and it takes self-awareness of each personnel for prevention. In accordance with the direction and experience of several company commanders, the personnel independently have also brought additional supplies of vitamins for health maintenance. Counseling on insecticide liquids for clothing also influenced the awareness of some personnel to carry the liquid independently because they were not supported by the battalion or the TNI Health Center. In addition, the personnel also brought additional anti-mosquito lotion because the number of support supplies was very limited. While in the operating area, The provision of PDL PF and anti-mosquito lotion has indeed been supported by the TNI Health Center but personnel do not always use these clothes in daily activities while there is no support for insecticide liquids for daily clothing. This is in stark contrast to the Virginia navy supplies that received permethrin-coated PDL and daily clothing soaked in 40% permethrin (Navy and Marine Corps Public Health Center, 2011). The use of permethrin-coated PDL in Thai soldiers serving on the Cambodian and Laotian borders has shown a reduction in mosquito bites by up to 84% (Eamsila, Frances, & D., 1994). The use of permethrin should not only be provided with the provision of mosquito nets because personnel activities are certainly more carried out outdoors than resting. The role of health personnel and commanders is indispensable for monitoring individual discipline. Strategy through emphasis given every hour commander should be able to become awareness for personnel for malaria prevention. Health personnel also carry out maintenance of body fitness by exercising in the afternoon but what personnel do not realize is the habit of being shirtless while exercising. The personnel finish exercising before sunset and usually do not immediately clean themselves. The personnel rested for a while in a bare-chested and damp state. This time is the main time the vector mosquito for transmitting malaria leaves the breeding place. In accordance with the theory of health promotion, which is very influential is environmental management. The environment in the Border Security operation area is mostly dry swamp or wild forest. The Border Security Task Force personnel have difficulty implementing this in connection with the problem that the area around the Border Security location does not belong to the Border Security Task Force.

This is also not necessarily successful because most of the area is considered customary land (HakUlayat) and at that location there should be no treatment except with a certain amount of payment. Changes in environmental temperature and humidity will certainly affect the binomials of mosquito vectors. Increased temperature and humidity will increase the activity of mosquitoes to mate, the life cycle is shorter so that the density of mosquitoes will increase and the reach of the operating area is wider so that it has an impact on the level of mosquito infectivity in the community (Hadisaputro, 2009). The recommended malaria prophylaxis at this time is Doxycycline 100 mg but it is not included in the drug program (Kemenkes RI, 2014). The TNI Health Centre no longer provides prophylactic support to Border Security Task Force personnel due to the absence of prophylactic drugs in the program even though the operating area is known to be a malaria endemic area. The use of doxycycline is only allowed for up to 6 months while the task force of the Task Force is 9 months. Every personnel who will travel to malaria endemic areas should receive antimalarial prophylaxis. This is included in the pre-duty requirements for health insurance for the military who will carry out assignments to endemic areas (Magill, 2015). The use of prophylaxis is also recommended in sending troops abroad with malaria risk areas in accordance with the Medical Support Manual for United Peacekeeping Operations, namely using Doxycycline 100 mg per day for the first line and Mefloquine 250 mg per week (Lariam) as the second line for personnel with Glucose deficiency 6 Phosphate. The absence of prophylactic drugs made the personnel adopt local customs for malaria prevention by using a decoction of yellow roots and papaya leaves. In addition, personnel also smear the body with crushed lemongrass leaves in the hope of avoiding mosquito bites

The technical manual on Malaria Control Policy cannot be distributed to personnel who will carry out the operation. The collaboration between the TNI and the Indonesian Ministry of Health was proven by the existence of PKS/08/IX/2017 dated 11 September 2017 concerning Malaria Control in the TNI. This was further realized through the establishment of the Malaria Control Field Manual within the TNI in accordance with TNI Commander Regulation No. Perpang/10/I/2018 dated 03 January 2018. This Field Manual is intended to provide guidance to soldiers carrying out operations in malaria endemic areas, including introduction to the malaria cycle, malaria prevention, and malaria management. It is also clearly explained about the role of TNI personnel in controlling

malaria. Field manuals cannot be distributed to personnel who will carry out operations due to limited funds. For this reason, health personnel from the Border Security Task Force Battalion 713/ST, Battalion 300/R and Infantry Battalion 509 Kostrad, provided prevention efforts only at a glance by delivering information on malaria prevention. Even then, the time and frequency are uncertain. So that the personal knowledge of the task force regarding malaria prevention is only general so that malaria cases from year to year are still a problem.

The promotive and preventive efforts have not been optimally implemented by the task force (Yonif 713/ST, Battalion 300/R and Battalion 509 Kostrad). For promotion, they only applied two-way giving with lectures and counselling from unit commanders at the time of pre-task briefing and at the place of duty of the TNI Border Security task force, and even then the frequency was irregular. The implementation of preventive prevention is only carried out physically, such as stockpiling puddles, fogging around the environment. No biological, chemical and environmental management controls were found at the Border Security Task Force security post. This non-optimality occurs because the environment around the post is mostly dry swamp. The size of the land does not allow environmental management to be carried out in a short time. Personnel get into conflict with local culture in carrying out environmental modifications and manipulations. Land which is customary land is not allowed to get treatment. If it still has to be done, there needs to be compensation from the Task Force to the party whose land is being treated. Several other factors that caused the non-optimal promotive and preventive activities at the assignment site were the geographical location of the TNI's operational area which was difficult to reach and the limited availability of malaria control facilities and infrastructure. In terms of coordination with related agencies, there is no screening of soldiers who will carry out assignments to endemic areas and post-tasks from malaria endemic areas so that the risk of malaria transmission to the task force and the environment around the origin of the task force is still high. difficult to achieve. (Ministry of Defence 2020). From the results of observations of daily behaviour, the task force used the lotion that was distributed not optimally for several reasons. Some don't match the smell, some feel hot, some are allergic. The use of mosquito nets has also not lived up to expectations where there are some task forces that don't install it even though it has been given for several reasons such as heat, allergies and uncomfortable sleep. In the area of operation they still use fogging as a preventive measure to repel mosquitoes, even though this method is not in accordance with current developments. They should have used Indoor Residual Spraying (IRS) to prevent malaria where this method has been recommended by the WHO, the Ministry of Health and the Technical Guidelines for the TNI.

#### **Focus Group Discussion (FGD) Stage.**

There are three Stage of FGD, First Group of battalion commander mention that knowledge of malaria is good starting from the causes, where it can be affected and the symptoms. For varied prevention, some of them use traditional herbs such as sambiloto, multivitamins, mangos teen peel tablets, etc. As prevent for malaria diseases. Fogging is still use for protect them from malaria, so the way is opposite with standard that use Indoor Residual Spraying (IRS) for handle it. Second, Under officer group are the same as officer group, but the use of military equipment not optimal, so they have risk for getting malaria. Lastly, effected malaria group, knowledge about malaria is bad starting from the causes, where it can be affected and symptoms. Prevention is varied and refuse to use lotion and long last insecticide net because there are not comfortable for it.

#### **Conclusions and suggestions:-**

##### **Conclusion:-**

The strategy carried out by the TNI AD for malaria prevention is through the doctrine of the implementation of malaria prevention which is always given during commander's hours and health monitoring through the command line. There are some gaps between the guidelines and implementation of malaria prevention at home and in the area of operation. The TNI Health Centre's policy through the Malaria Control Field Manual is not channelled to the Task Force personnel. Personnel discipline for malaria prevention, such as the use of mosquito nets and anti-mosquito lotion, is still far from being achieved due to the absence of outreach media. Preventive prevention is also far from optimal due to the lack of support for insecticide fluids and the ineffectiveness of Indoor Residual Spray (IRS). The main gap encountered in the area of operation is that environmental management is difficult to implement because it conflicts with customary law (rights ulayat). In addition, the personnel also did not receive anti-malarial prophylaxis during pre-service or in the operating area.

##### **Suggestion:-**

1. It is necessary to increase the support of anti-mosquito liquid for personnel clothing.



2. There is a need for media for consultation, information, and education in visual form such as posters and leaflets.
3. It is necessary to create an integrated reporting system to the top party from the Border Security Task Force so that a track record of malaria incidence is obtained from every change of the Border Security Task Force.
4. With a track record of events, collaboration with local health authorities can be carried out. Cooperation with the Directorate of Army Topography for the manufacture of Malaria Endemicity Area Maps.
5. There needs to be support for the improvement of the housing system at each post
6. There needs to be assistance from the Indonesian Ministry of Health to increase partnerships from the Border Security Task Force.
7. There is a need for training for TNI health workers in the form of training for mosquito monitors and qualifications for microscopic examination.

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