



Expert Needs of Healthy Public Health Centre Development in the Archipelago Area of South Sulawesi

Sukri Palutturi^{1*}, Atjo Wahyu¹, Indar¹, Muhammad Syafar¹, Apik Indarty Moedjino¹, Agus Bintara Birawida¹, Healthy Hidayanti¹, Muhammad Arsyad¹, Wahiduddin¹, Muhammad Husni Thamrin², St. Rosmanelly¹, Arni Rizqiani Rusydi³, Jalaluddin Abdul Malek⁴, Eun Woo Nam⁵

¹ Faculty of Public Health, Universitas Hasanuddin, Makassar 90245, Indonesia

² Department of Health, South Sulawesi Province Health Office, Makassar 90245, Indonesia

³ Faculty of Public Health, Universitas Muslim Indonesia, Makassar 90245, Indonesia

⁴ Research Center for Development, Society, and Environment, Universitas Kebangsaan Malaysia, Bangi 43600, Malaysia

⁵ Department of Health Administration, Head of Healthy City Research Center Yonsei University, Seoul 03722, Republic of Korea

Corresponding Author Email: sukri@unhas.ac.id

<https://doi.org/10.18280/ijstdp.170129>

ABSTRACT

Received: 5 September 2021

Accepted: 16 November 2021

Keywords:

healthy public health center, indicator, island, the archipelago area

This research aimed to develop the indicators of Healthy Public Health Centers in the archipelago region of South Sulawesi. This research was conducted by applying qualitative method through a literature review approach related to the construction of indicators for the model of a Healthy Public Health Center in the archipelago region. The informants involved in this study were from Health Department, Public Health Center, Social Service, Environment Service, Tourism Office, Fisheries and Marine Service, the Head of Sub-District, Sub-Village/lurah, Healthy Regency/City Forum, Healthy Sub-District Communication Forum, Working Groups at the village level, NGOs, public figure, religious leaders, academics, and other informants. This research also applied FGD and In-depth Interview. The result of this study is the discovery of dimensions consisting of indicators that make up the model of a Healthy Public Health Center in the archipelago region. The dimensions consisted of (1) Location, (2) Access, (3) Basic service program, (4) a specific program (innovation) (5) Human Resources (HR), (6) Community Empowerment, (7) Public Health Center Working Group (Pokja PKM Sehat) and (8) Archipelago Healthy Public Health Center. This study found a number of indicators of Healthy Health Centers that can be applied specifically to archipelagic areas.

1. INTRODUCTION

People living in coastal areas and remote islands have health problems, namely low and uneven levels of public health and unhygienic community behavior, access constraints, infrastructure, public knowledge of health affecting the use of health services, environmental problems [1]. In addition, there is a tendency to use puskesmas services to be more treatment-oriented [2]. As a result, the position of the puskesmas is almost the same as the hospital, which is oriented towards providing services to the sick. In fact, the presence of the puskesmas is at the forefront of services that emphasize the promotion and prevention of health services [3].

The approach of healthy cities or regency/city as a setting is a fairly complex approach to solve health problems [4-8]. Therefore, WHO proposed to develop micro-settings, which is a setting in a smaller area or region, such as healthy schools, healthy islands, including healthy healthcare facilities such as Public Health Center.

The development of healthy cities concepts includes healthy schools [9, 10], healthy island [11], healthy market [12], and healthy hospital [13]. However, health facilities such as healthy Public Health Center are rarely paid attention, whereas

the roles and functions between Public Health Center and hospitals are different. Moreover, Public Health Center in rural areas, urban areas, or island areas is different from each other [14, 15].

The significance of this study is that researchers expect to find indicators of Healthy Health Centers that can be applied specifically to archipelagic areas by involving stakeholders and island communities. These findings can be used as the basis for policy making for the central and local governments to improve health services and programs, especially in the archipelago.

The purpose of this study was to develop indicators for Healthy Public Health Centers in the archipelago area based on the needs of experts in supporting healthy cities in South Sulawesi Province.

2. METHOD

This research was conducted by applying qualitative method through a literature review approach related to the construction of indicators for the model of a Healthy Public Health Center in the archipelago region. In addition, this

research also applied Focus Group Discussin (FGD) and In-depth Interview techniques. The informants involved in this study were from the Department of Health, Public Health Center, Department of Social Service, Department of Environment Service, Department of Tourism Office, Department of Fisheries and Marine Service, the Head of Sub-District, the Head of Sub-Village, Healthy Regency/City Forum, Healthy Sub-District Communication Forum, Working Groups at the village level, non-governmental organization, public figure, religious leaders, academics, and other informants relevant to the research objectives.

In addition to qualitative data, the researchers also collected data related to health profiles in the archipelago which were obtained from the Health Office, Public Health Centers, Districts, and Villages and maps of research locations.

Furthermore, the research was carried out in 3 island regencies/cities, those are the islands of Makassar City, Pangkajene Islands Regency and Selayar Islands Regency. The data obtained were further processed using domain analysis, which is the discovery of various domains (categories) in general as a description of the results obtained, in this study referred to as dimensions. Based on the analysis of the domain, it was then further analyzed using taxonomic analysis, in which the selected domain was further elaborated into more detail, in this study it is referred to as indicator.

3. RESULTS & DISCUSSION

The construction of the indicators began by tracing the relevant regulations or policies on the operation of Public Health Center, especially in the archipelago area. The first regulation examined is the Regulation of Minister of Health (Permenkes) Number 43 of 2019 regarding the principles of implementing Public Health Center. This regulation states that there is a principle of a healthy paradigm in organizing a Public Health Center, in which the Public Health Center encourages all stakeholders to participate in the efforts to prevent and reduce health risks encountered by individuals, families, groups, and communities through the Healthy Living Community Movement. In addition, another regulation we reviewed is the Regulation of the Minister of Health of the Republic of Indonesia No. 90 of 2015 concerning the implementation of health services in health service facilities in remote and very remote areas, especially in the approach to health service programs. Furthermore, we also reviewed the Draft Law of the Republic of Indonesia No. 4 of 2017 concerning Archipelagic Regions which explains the principles of local wisdom, community participation, integration, sustainability, and more specifically on the health aspect, in this case is regarding the management of medical personnel. The next regulation is the Regulation of the Minister of Health of the Republic of Indonesia No. 4 of 2019 concerning the Technical Standards for Fulfilling Basic Service Quality in Minimum Service Standards in the Health Sector. This regulation explains that there are 12 types of basic services in the SPM which we substituted into 6 basic Public Health Center programs, those are (1) Health Promotion; (2) Environmental health; (3) Prevention and Eradication of Disease; (4) Family and Reproductive Health; (5) Improvement of Public Nutrition; and (6) Treatment of Diseases and Health Services.

Based on the review of these regulations, the construction of the indicators for healthy Public Health Centers in the

archipelago was further improved by the results of the FGD. FGDs were carried out twice by presenting several *qualified* stakeholders in explaining the important indicators that must be included in the implementation of island-based Public Health Centers.

The first stage of FGD is conducting a domain analysis, which is the discovery of various domains (categories) in general as a description of the results obtained, which are referred to as dimensions. Based on the domain analysis results, it was then continued by using taxonomic analysis, in which the selected domain is further explained into more detail. In this study, it is referred to as an indicator.

There were several important items found during FGD I which were considered to be used as indicators in developing healthy Public Health Centers in the archipelagic area. These items were taken based on the statements of several stakeholders, among others, as explained by one of the following FGD participants.

In addition to access, the availability of Human Resources (HR) is also an important thing to be used as an indicator for the Public Health Centers of this archipelagic area. In addition to the findings of indicators, this research process also found dimensions that can support other dimensions in establishing an island-based healthy public health center. Based on the domain analysis that has been carried out, these dimensions are categorized as specific program dimensions (innovation), because these dimensions were formed based on the community initiatives in supporting the service process in the public health centers of archipelagic area. Based on this domain analysis, a taxonomic analysis was then carried out, resulting in several indicators forming the dimensions of specific program (innovation).

The second FGD was carried out with more involvement of academics who have a lot of experience in conducting research in the archipelagic area. Based on the FGD, it was obtained that aspects of health promotion need to be more emphasized. The second is that persons with disabilities must be prioritized in the provision of services. The third is the presence of additional dimension findings, which is the Working Group (Pokja) of Healthy Public Health Center.

According to the experts/stakeholders, the aspect of health promotion is crucial in designing healthy Public Health Center in the archipelagic area because it is related to the understanding and independence of the community. This was stated by one of the following FGD participants (Table 1).

Another dimension found in the second FGD was the formation of a working group at Healthy Public Health Center. This is important because it has been explained by one of the following FGD participants (Table 1).

Furthermore, relevant indicators were also found from the analysis of the second FGD in supporting the dimensions of specific services (innovation), as described in the following statement (Table 1).

Based on the existence of various dimensions and indicators in constructing the formation of Healthy Public Health Center in the archipelagic area, it can be interpreted that public health centers in the archipelagic are built based on promotive and preventive principles or are more focused on how to treat the community to better maintain their health condition compared to treatment when sick. In addition, health centers in these islands are also sought to increase community health visits compared to sick visits.

The preparation of the dimensions and indicators of island-based public health centers can be seen in detail in Table 2.

The setting approach is the most effective approach in solving health problems [8, 16]. This approach facilitates various stakeholders to be involved. Island is a setting whose quality needs to be maintained based on the aspect of the physical, social and health environment. Therefore, efforts need to be made to create a healthy island. There are many important

elements that need to be involved in realizing a healthy island, one of them is the implementation of healthy and quality health service efforts which are in accordance with the geographical conditions of the archipelagic area, including the implementation of healthy Public Health Centers.

Table 1. Statement, informant and key message

No	Statement	Informant	Key Message
1	"The Public Health Centers in the Archipelagic area are different from those on the mainland, including the transportation. For example, how to mobilize the patients or how to educate patients or communities in the islands"	(SM).	Diversity of health care needs, innovation and facility
2	"...proportion is certainly needed in the condition of these islands which need human resources because we have a border. This is not an asphalt road, but water, thus access makes them different from the public health centers on the mainland"	(RU).	The need for human resources, and sea transportation to access services
3	"...So the indicator is also the availability of nurses, midwives, and public health workers. In addition, doctor and pharmacists are also necessary. Such approach is suitable on the island. So, there must be indicators of meeting the needs of Public Health Workers at such a level in archipelagic areas"	(KP).	Fulfillment of health workers such as nurses, midwives, doctors, pharmacists, and public health workers.
4	"...The real problem encountered by our friends in the archipelagic areas is the issue of access to personnel and equipment because the problems between the mainland and the islands are certainly different"	(MY).	Human Resources and Equipment Needs
5	"...that is what is called the Perahu Sehat Pulau Bahagia (Healthy Ship Happy Island), one of the innovations from the Regency. The main point of this innovation is that how the Public Health Center provides services to the community from the neighboring island and how this Puskesmas carry out its integrative role to sail around the existing islands to provide services"	(MY).	service innovation by local governments to reach people on and or small islands
6	"...I think Public Health Center of Bagus Kapang should concern to conduct a healthy adolescent post, where adolescent is examined and educated regarding the reproduction, because, to be honest, the adolescents need to be educated about adolescent health"	(KH).	The need for healthy youth posyandu
7	"Regarding the Archipelagic Area, the main thing is... underdevelopment and low knowledge. So, I think the first important thing is health promotion and then preventive health promotion. We have to think about how to invite our community to be able to be independent for a healthy life. The reason why the community should be independent is to make them understand what to do to not get sick and where to go if they are sick..."	(HT)	Underdevelopment, lack of knowledge, and independence to be healthy
8	"We have an experience when we were in Thailand. There was therapy, spa and others, so there was a health promotion activity"	(MS).	Service innovation and comparative needs
9	"Regarding the Healthy Public Health Center which is planned to be in the archipelagic areas, Public Health Center should be friendly to people with disabilities because now one of the government programs is related to disability"	(AH).	Health centers are friendly to people with disabilities
10	"...disability friendly, I think it has been summarized that the Public Health Center must be accredited which is related to disability. It should have been included in the service standard"	(NI).	Friendly to disability, and disability indicators are included as indicators for the accreditation assessment of Puskesmas
11	"...the group should pay attention to those who have disability. Therefore, Public Health Center established a UKK post. In this post, there was a complaint of being paralyzed..."	(FA).	Caring for people with disabilities, Puskesmas has a post for them
12	"...we suggest that there is no relevant data yet regarding the social welfare institutions in the City/Regency, thus it could be one of the programs"	(AH).	Completeness of data on social welfare institutions in the City/Regency
13	"...yes, it will be possible if, for example, the access service is the Public Health Center of Makassar, so there is a mobile health service, from the Puskesmas to two islands"	(AB).	Mobile health service needs
14	"...I think the most important thing is anticipating delays in the first phase in which there are delays in decision making and delays in being served. The most important thing is that there should be a provision of proper education at the family level"	(AP).	Anticipating delays in decision making and delays in being served

Table 2. Matrix of indicators of healthy public health center in archipelagic area

NO	DIMENSION	INDICATOR	SUB INDICATOR (INSTRUMENT)
1	LOCATION	a. Regional responsibility	1) Public Health Center always makes a movement in health development in its working area
			2) Public Health Center always responsible on the health development in its working area
		b. Cleanliness	3) Public Health Center of the archipelagic area always clean
			4) Public Health Center of the archipelagic area always neat

NO	DIMENSION	INDICATOR	SUB INDICATOR (INSTRUMENT)		
		c. Comfort	5) The toilet of Public Health Center should maintain their cleanliness		
			6) Public Health Center of the archipelagic area is comfortable to be visited		
			7) Public Health Center of the archipelagic area is enjoyed to be visited		
			8) Friendly service from the Public Health Center		
		d. Security	9) Public Health Center of the archipelagic area is safe from criminal threat		
			10) Public Health Center of the archipelagic area is safe from fire hazards		
			11) Public Health Center of the archipelagic area provides health insurance		
			12) Public Health Center of the archipelagic area is providing security and protection to the patients and their family		
		2	ACCESS	a. Accessibility	1) Health Public Health Center of the archipelagic area is easily reached by all of the residents of the islands
					2) Public Health Center of the archipelagic area implements referential service
3) The communities are covered with Health Insurance service					
4) Accident and life insurance for health workers					
5) Communities obtained service in referential system					
6) The availability of health service for people with disabilities					
b. Accommodation	7) The health service system at the Public Health Center in the archipelagic area has ease of service, both in terms of the opening hours and the waiting time for services				
	8) Public Health Centers utilize technology according to service needs				
c. Affordability	9) Public Health Centers services can be accessed by the island's community financially.				
	10) Public Health Center services are easily accessible to the island's community in terms of means of transportation				
	11) Public Health Center services are easy to reach for the island's community				
d. Acceptability	12) Public Health Centers organize health services fairly for the entire community regardless their social status				
	13) Public Health Centers provide health services fairly by the whole community regardless of economic status				
	14) Public Health Centers organize health services fairly for the entire community regardless of religious status				
	15) Public Health Centers provide health services fairly for the entire community regardless of cultural status				
3	BASIC SERVICE PROGRAM			a. Health Promotion	1) Health services for toddlers
		2) Health services for pregnant women			
		3) No Smoking Area Program			
		4) Clean and Healthy Behavior Program			
		5) Education on health services at the family level			
		b. Environmental Health	6) Public Health Center of Archipelagic Area has adequate Wastewater Disposal Installation (IPAL)		
			7) Public Health Center of Archipelagic Area has adequate Wastewater Disposal Channel (SPAL)		
			8) Waste management is carried out properly at Public Health Center of Archipelagic Area		
			9) Monitoring the quality of clean water and drinking water		
			10) Sanitation Hygiene Campaign		
			11) Monitoring of the triggers of BABS stop		
			12) Provision of Drinking Water		
		c. Prevention and Eradication of Disease	13) Tuberculosis health services		
			14) Health services for ARI (Acute Respiratory Infections)		
			15) Health services for skin diseases (Dermatitis)		
			16) Health services for diarrhea		
			17) Health services for fever (febrile)		
			18) Use and Training of PPE for Traditional Divers/Fishermen		
			19) Eye disorders service,		
			20) Hypertension services		
			21) Diabetes Mellitus Service		
			22) Paralysis services		
			23) Planning and provision of equipment based on risk		
		d. Family and Reproduction Health	24) Health services for pregnant women		
			25) Maternal health services		
			26) Newborn Health Services		
			27) Early Marriage		
			28) Widows Empowerment Program		
			29) Children's Education Program for school-age in island communities		
			30) Maternity services based on local community values		
			31) Service of 1000 HPK (First Day of Birth)		

NO	DIMENSION	INDICATOR	SUB INDICATOR (INSTRUMENT)
		e. Improvement of Community Nutrition	32) Health services at the age of primary education
			33) Health services for the elderly
			34) Service of the Management of Protein Energy Deficiency
			35) Service for Iron Nutrition Anemia
			36) Service for Vitamin A Deficiency
			37) Service for Excessive Nutrition Condition
			38) Fish-eating Movement Program
			39) Movement Program of eating Kelor Vegetable
		f. Healing of Disease and Health Service	40) Healing of patients with tuberculosis
			41) Healing of patients with ARI (Acute Respiratory Infection)
			42) Healing of people with skin diseases (Dermatitis)
			43) Healing of people with diarrhea
			44) Healing of patients with fever (febrile)
			45) Healing of patients with eye disorders,
			46) Healing of patients with hypertension
			47) Healing of people with Diabetes Mellitus
48) Healing of paralyzed patients			
4	SPECIFIC PROGRAM (INNOVATION)	a. Cultural Values (Local Wisdom)	1) Floating ambulance program
			2) Pustu Plus Movement (Pustu officers visit to houses)
			3) Innovation of Anak Cumi Island (Services for children and breastfeeding vents)
			4) Innovation of Healthy Boat Happy Island
			5) RTK (Birth Waiting House)
		b. Counselling	6) Public Health Center of Archipelagic Area has a community nutrition improvement counseling unit
			7) Public Health Center of Archipelagic Area has a smoking cessation counseling unit
			8) Public Health Center of Archipelagic Area has a Family Planning (KB) and Reproductive Health counseling unit
			9) Public Health Center of Archipelagic Area has a smoking-free counseling unit
			10) Public Health Center of Archipelagic Area has a youth health post
		c. Development of Health Service Pattern	11) Mobile health services (Public Health Service do not only wait for patients but they also pick up patients)
			12) Health service of Island cluster (there are health workers on the smallest islands to provide health services)
			13) Birth waiting house (Public Health Service develops innovation of birth waiting house in the working area of Public Health Service)
			14) Telemedicine-based health services (Public Health Service develop online health consultation methods)
			15) Health services at the Public Health Service maximize services outside the building
			16) Availability of Cooperative Unit for divers
5	HUMAN RESOURCES	a. Availability of Health Workers/ Fulfillment of Health Workers in archipelagic area	1) General Practitioner
			2) Dentist
			3) Nurse
			4) Midwife
			5) Public relations personnel
			6) Pharmacists
			7) Environmental Health Graduate
			8) Nutrition Graduate
			9) Laboratory staff/health analyst
			10) Formation of a quick response action team at the Public Health Service (Special Officer)
			11) and others please specify.....
		b. Management of Health Workers	12) Planning of health workers according to the needs of the island community
			13) Placement of health workers according to the conditions of the island community
			14) Health workers carry out their duties according to their qualifications
			15) Health workers get special incentives for archipelagic areas
			16) Health workers in archipelagic areas have the opportunity to develop their capacity
6	COMMUNITY EMPOWERMENT	a. Community Independence	1) Public Health Service encourages independent healthy living for individuals
			2) Public Health Service encourages independent healthy living for the community
			3) Public Health Service develops Community-Based Health Efforts (UKBM) program
		b. Community activeness	4) The community takes part and actively checks their health
			5) Public Health Service implements community empowerment in an integrated manner
		c. Integration	6) Increased engagement for all interested parties
			7) The implementation of community empowerment by the Public Health Service always has sustainability

NO	DIMENSION	INDICATOR	SUB INDICATOR (INSTRUMENT)
			8) Public Health Service prioritizes services for persons with disabilities
7	WORKING GROUP OF HEALTH PKM	a. Organizational structure	1) Public Health Center of Archipelagic Area has a Working Group of Healthy Public Health Center
			2) The Working Group of Healthy Public Health Center has clear Main Duties and Functions
			3) The Working Group of Healthy Public Health Center includes the Social Welfare Program
		b. Membership	4) The Working Group of Healthy Public Health Center has sufficient number of memberships
			5) Working Group of Healthy Public Health Center has membership from all elements
		c. Work plan	6) Working Group of Healthy Public Health Center has a structured and clear work plan
			7) Working Group of Healthy Public Health Center has a clear monitoring and evaluation plan
		d. Budget	8) Working Group of Healthy Public Health Center has a clear budget
			9) Working Group of Healthy Public Health Center has clear budget sources
		8	HEALTH PKM OF ISLANDS
b. Comfortable	2) Public Health Centers of the Archipelagic Area is convenient to visit		
c. Safe	3) Public Health Centers of the Archipelagic Area is safe from criminal threat		
d. Health services	4) Increased visits to health services for disease prevention programs for the community		
	5) Increased visits to health services for health maintenance programs (promotive) for the community		
e. Easy to access	6) It is easy for the community to visit the Public Health Center in terms of location and affordability		
	7) The community is actively involved in realizing a healthy Public Health Center		
f. Community Engagement	8) The community supports each other in realizing a healthy Public Health Center		
	9) The community maximizes their potential in realizing a healthy Public Health Center		
	10) The existence of collaborative activities between the community and the government		

The health problems in the archipelagic area are certainly different from urban areas, remote areas, and mountainous areas. These health problems can be in the form of nutritional problems and stunting [6, 17, 18], and disease or health services or public trust [19]. The dominant health problems that exist are certainly related to the problems due to the archipelagic environment with all of its communities' characteristics. The constructing of indicators for healthy Public Health Center in the archipelagic area is actually part of our efforts to create healthy islands or healthy cities, which is the agenda of the central government, in this case is the Ministry of Health.

There are eight important aspects in realizing a healthy Public Health Center in the archipelagic area, those are (1) Location; (2) Access; (3) Basic service program; (4) specific program (innovation); (5) Human Resources (HR); (6) Community Empowerment; (7) Working Group of Health Center (Pokja PKM Sehat); and (8) Healthy Public Health Center of Archipelagic Area.

3.1 Location

Based on the Regulation of the Minister of Health of the Republic of Indonesia No. 75 of 2014 concerning Public Health Centers, Public Health Center is a health service facility which implements public health efforts and first-level individual health efforts, by prioritizing promotive and preventive activities, to achieve the highest degree of public health in its working area. The location of the Public Health Centers is an important part in analyzing the establishment of the Public Health Centers. The location requirements have been regulated in the Regulation of the Minister of Health Number 75 of 2014 concerning Public Health Centers.

In this study, the location is focused on regional responsibility, cleanliness, comfort, and security. Regulation can be considered healthy when these four aspects are fulfilled.

Particularly in the archipelagic area, the location of the Public Health Center still pays attention to the rules of comfort when visited, maintaining its cleanliness of the waiting room, toilets, and examination room. In addition, the comfort for the people who visit the Public Health Center must also be considered. Even though it is located in an archipelagic area which is very different from other areas, the convenience of visiting the Public Health Center does not have to be different from the condition of the Public Health Center in urban areas. In addition, the security aspect is equally important. This includes of how to create safe conditions for the people who visit whether safety from criminal threats, fire hazards, and security in obtaining health care insurance so that the communities of the archipelagic area have become members of the social health insurance which is part of the security aspects in terms of health service delivery.

3.2 Access

According to the Big Indonesian Dictionary (Kamus Besar Bahasa Indonesia/KBBI) akses in the Network is an absorption word from English of access, which means entrance. Therefore, the general meaning of access to health services can be interpreted as a form of health services with various types of services that can be reached by the community. In the current research, access is categorized into several aspects, those are accessibility, accommodation, affordability, and acceptability. In this case, accessibility is about how the Public Health Centers in archipelagic areas can be reached by the community as a whole, whether in terms of referrals, overall health insurance, and health services for persons with disabilities. Meanwhile, affordability means how people can feel the ease of transportation when they want to visit the Public Health Centers, in addition to financial affordability which is also an important thing. Therefore, there will be no barrier for those who want to get health services at the Public

Health Centers. Meanwhile, in terms of acceptability, the services provided at public health centers is expected to be fair without discriminating against economic status, religious status, or cultural status.

3.3 Basic service program

The type of health service is adjusted to the ability of the Public Health Centers. However, there are mandatory health efforts that must be carried out by the Public Health Centers with development health efforts that are adapted to the problems that exist in the islands and the capabilities of the Public Health Centers.

3.3.1 Health promotion

Public health counseling is an effort to provide learning experiences or create conditions for individuals, groups, and communities in various settings by opening lines of communication, providing information, and conducting education to improve the knowledge, attitudes, and behavior of islands communities through advocating, fostering the condition and community empowerment movements. This aims to recognize, maintain, improve and protect their health. The goal is to achieve changes in the behavior of individuals, families, and communities of islands in fostering and maintaining healthy behavior, as well as playing a role in efforts to realize optimal health degrees.

3.3.2 Environmental health

Based on Blum's theory, the environment is one of the factors that majorly affect the health status of a community in addition to the factors of health care, genetics, and behavior. Such potential health hazards can be caused by the environment with a physical, chemical, and biological nature. This is in line with the policy of 'Healthy Paradigm' which prioritizes promotive, preventive, and protective efforts. Therefore, environmental health efforts are very important. All environmental health activities carried out by Public Health Center worker will be successful if the community participates in its implementation. On the other hand, Public Health Center must also involve the community from the planning to maintenance process.

3.3.3 Prevention and eradication of disease

Treatment can be done by providing assistance to patients as well as building health posts at the scene with the assistance of personnel and adequate medical facilities including referrals. Preventive Program is a program to prevent infectious diseases from spreading in the community by providing immunity to the host through health education and immunization activities.

3.3.4 Family and reproductive health

In this aspect, the independence awareness of women and their families in regulating family biology including their reproductive functions needs to be improved. In addition, they also should play an active role in preventing and solving family health problems and improving the quality of family life. The goal is to create quality services with the full involvement from the service users and their families in realizing that every mother has the best opportunity in terms of timing and spacing of pregnancy, giving birth to healthy babies who are safe in a conducive and healthy environment, with adequate antenatal care, nutrition, and preparation for

breastfeeding.

3.3.5 Improvement of community nutrition

The improvement of community nutrition is an activity to improve the nutritional status of the community with coordinated management from various health professions and support for active community participation. With this activity, it is expected that it can increase the ability and participation of the people living in the islands, their families, and all their members to know the good and proper nutritional behavior in accordance with balanced nutrition.

3.3.6 Healing of disease and health service

The medical services carried out by the Public Health Center, either independently or in coordination with fellow professionals and other healthcare service support implementers, are in accordance with their authority to resolve health problems and cure diseases of the users of health care services regardless of the age and gender. With this program, it is expected that it can create a participatory, healthy, and prosperous society and family, physically, mentally, and socially that allows every member of the family to live productively, socially and economically, even though they are in an archipelagic area.

3.4 Specific program (innovation)

The condition of the archipelagic area requires its community or health service providers to have innovation in providing services. This is manifested by several ideas from the local community regarding how they are able to cover up the weaknesses they experience in the islands, especially in obtaining health services.

Based on the results of this study, there were several innovations that have been developed by the community or the Public Health Center in providing solutions to health service problems encountered in the islands. These innovation programs include the floating Public Health Center program and the *Pustu* plus movement, where the Public Health Center visits people's house proactively to check public health. In addition, there is also an RTK (birth waiting house) program, which is the existence of service posts intended for pregnant women who are about to give birth. There are also innovations in counseling services and the development of service patterns such as *telemedicine* and cooperative services for divers.

3.5 Human resources

Fulfillment of human resources in the public health centers in archipelagic area focuses on the availability of health workers and the management of these health workers. The availability of health workers referred to in this study is how all elements of the profession and health workers in the public health centers of archipelagic area can be fulfilled. This includes the formation of a quick response action team at the Public Health Center (Special Officers).

This is similar to the management of health workers which is based on meeting the human resources needs in the public health centers. It is important to pay attention to both in terms of quantity and quality of the human resources. The availability of human resources at the Public Health Center are expected to provide services according to their scientific qualifications in an adequate number.

3.6 Community empowerment

Community empowerment cannot be separated from the function of health services as community facilitators in health development. Community empowerment is an effort made so that people are independent and able to overcome their health problems and are able to increase initiatives related to improving and maintaining their health.

In this research, the community empowerment focused on how Public Health Centers create independence and community activity in archipelagic areas to stay healthy by actively checking their health conditions on an ongoing basis. In addition, the Public Health Centers is also constantly trying to develop community-based health efforts (UKBM).

3.7 Working group of healthy public health center (*Pokja Puskesmas Sehat*)

In order to accommodate the aspects that must be fulfilled in realizing a healthy Public Health Centers in the archipelagic area, it is also important to form a working group for the healthy public health centers which are representatives of each element considered capable of playing a role in realizing healthy Public Health Center in archipelagic area. Furthermore, the working group in realizing healthy public health centers in the archipelagic area is expected to be able to carry out community empowerment activities for the communities and carry out regular internal supervision. Internal supervision is carried out through periodic monitoring to assess the condition of the island's public health centers as well as the behavior of its communities.

Therefore, based on the research results, in the formation of Public Health Centers, it must have an organizational structure that includes clear tasks, functions, and programs, a structured work plan, clear monitoring, and evaluation plan, as well as clear amount and budget source. The existence of this working group for health centers is expected to support the dimensions and other indicators that make up the island-based model of healthy public health centers.

3.8 Healthy public health center of the archipelagic area

World Health Organization claimed that primary health care in archipelagic areas refers to an approach that can ensure the access to essential public health services. These services include clean water and good sanitation, preventable measures, such as promotion of lifestyle health, immunization, and antenatal care, and appropriate clinical services.

The concept of a healthy public health center can refer to a healthy hospital, but it is adjusted to the function, purpose, and position between them. The concept of a healthy Public Health Center in the archipelago area can be developed by referring to the concept of the overall setting and the concept of the Public Health Center as primary health care provider.

Public health centers in the archipelagic area, particularly in this study, can be defined as clean, comfortable, safe, and healthy public health centers (decreased mortality), community involvement, community and government integrated activities, health centers that always create and improve the physical and social environment and develop human resources which allows the community to support each other and carry out the functions of life and develop their potential to the fullest.

4. CONCLUSIONS

Based on the results of the study, it can be concluded that 8 dimensions construct the model of a healthy Public Health Center in the archipelagic area. The dimensions consist of (1) Location, which consists of four indicators, those are regional responsibility, cleanliness, comfort and security; (2) Access, which consists of four indicators, those are accessibility, accommodation, affordability and acceptability; (3) Basic service program, which consists of six indicators, those are health promotion, environmental health, disease prevention and eradication, family and reproductive health, improvement of community nutrition as well as disease eradication and health services; (4) a specific program (innovation) consisting of three indicators, those are cultural values (local wisdom), counseling and development of health service patterns; (5) Human Resources (HR) which consists of two indicators, those are the availability of health workers and the management of health workers; (6) Community Empowerment which consists of four indicators, those are community independence, community activity, integration and sustainability; (7) Working Group of Public Health Center (*Pokja PKM Sehat*) which consists of four indicators, those are organizational structure, membership, work plan and budget; and (8) Public Health Center of Archipelagic Area which consists of six indicators, those are clean, comfortable, safe, health services, easy access and community involvement.

These eight dimensions can be the main elements in developing healthy health centers in the archipelago. Each element/dimension has sub-indicators to facilitate the achievement and measurement of healthy puskesmas. The results of this study are expected can be input for the Ministry of Health, Health Offices, Provincial and District/City Governments, and also for the community as a whole in realizing Healthy Public Health Centers.

ACKNOWLEDGMENT

Funding: This research received from Kemenristekdikti.

REFERENCES

- [1] Handayani, S.L., Kristian, L. (2012). Factors influence accessibility of health services at a remote and border health service in Sambas district. *Buletin Penelitian Sistem Kesehatan*, 15(3): 223-231.
- [2] Mahendradhata, Y., Trisnantoro, L., Listyadewi, S., et al. (2017). The Republic of Indonesia health system review. *Health Systems in Transition*, 7(1): 1-328.
- [3] Ali, P.B., Sardjoko, S., Gani, A., et al. (2018). *Penguatan Pelayanan Kesehatan Dasar Di Puskesmas*. Jakarta: Direktorat Kesehatan dan Gizi Masyarakat, Kedepuitan Pembangunan Manusia, Masyarakat dan Kebudayaan, Kementerian PPN/Bappenas.
- [4] Fitry, I.N., Palutturi, S., Thaha, R.M., Syam, A. (2020). Impact evaluation of healthy city implementation in Makassar city. *Open Access Maced J Med Sci.*, 8(T2): 12-15. <https://doi.org/10.3889/oamjms.2020.5175>
- [5] Palutturi, S., Saleh, L.M., Rachmat, M., Malek, J.A. (2021). Mapping healthy aisles in Makassar city, Indonesia: Implications for community empowerment. *Gaceta Sanitaria*, 35: S42-S45.

- <https://doi.org/10.1016/j.gaceta.2020.12.012>
- [6] Palutturi, S., Syam, A., Asnawi, A., Hamzah. (2020). Stunting in a political context: A systematic review. *Enferm Clin*, 30(Supplement 4): 95-98. <https://doi.org/10.1016/j.enfcli.2019.10.049>
- [7] Palutturi, S., Chu, C., Moon, J.Y., Nam, E.W. (2015). A comparative study on healthy city capacity mapping: Indonesia and Korea. *The Social Sciences*, 10(6): 848-854. <https://doi.org/10.36478/sscience.2015.848.854>
- [8] Palutturi, S., Rutherford, S., Davey, P., Chu, C. (2013). Comparison between healthy cities and Adipura in Indonesia. *Malaysian Journal of Medicine and Health Sciences*, 9(1): 35-43.
- [9] Jones, E., Young A., Clevenger, K., Salimifard, P. (2020). Healthy schools: Risk reduction strategies for reopening schools. Thesis, Harvard T.H. Chan School of Public Health Healthy Buildings program, Cambridge. <https://doi.org/10.13140/RG.2.2.22333.49127>
- [10] Lee, A., Lo, A., Li, Q., Keung, V., Kwong, A. (2020). Health promoting schools: An update. *Appl Health Econ Health Policy*, 18(5): 605-623. <https://doi.org/10.1007/s40258-020-00575-8>
- [11] Gómez-Maqueo, A., Antunes-Ricardo, M., Welti-Chanes, J., Cano, M.P. (2020). Digestive stability and bioaccessibility of antioxidants in prickly pear fruits from the Canary Islands: Healthy foods and ingredients. *Antioxidants*, 9(2): 164. <https://doi.org/10.3390/antiox9020164>
- [12] Putra, H.W.S., Oktarini, M.F., Primadella. (2021). Community Adaptation to traditional markets during the pandemic period in Palembang city. *The 4th Forum in Research, Science, and Technology (FIRST-T1-T2-2020)*, Palembang, Indonesia. <https://doi.org/10.2991/ahe.k.210205.062>
- [13] Wang, Q.Q., Deng, Y.C., Li, G.Z., Meng, C., Xie, L.N., Liu, M.L., Zeng, L.Y. (2020). The current situation and trends of healthy building development in China. *Chin. Sci. Bull.*, 65(4): 246-255. <https://doi.org/10.1360/TB-2019-0629>
- [14] Syamsir, Birawida, A.B., Faisal, A. (2019). Development of water quality index of island wells in Makassar city. *J. Phys.: Conf. Ser.*, 1155: 012106. <https://doi.org/10.1088/1742-6596/1155/1/012106>
- [15] Birawida, A.B., Selomo, M., Ismita, U.W., Suriah. (2019). Environmental health hazards against bacterial contamination of cutlery on the small island of Makassar. *IOP Conf. Ser.: Earth Environ. Sci.*, 235: 012023. <https://doi.org/10.1088/1755-1315/235/1/012023>
- [16] Palutturi, S., Rutherford, S., Davey, P., Chu, C. (2015). Professional challenges to strengthen partnerships in the implementation of healthy cities in Indonesia: A case study of Makassar. *Research Journal of Medical Sciences*, 9(3): 147-153. <https://doi.org/10.36478/rjmsci.2015.147.153>
- [17] Banudi, L., Santoso, B., Leksono, P., Rantesalu, M., Palutturi, S. (2020). The development of early detection tool for stunting prediction. *Medico Legal Update*, 20(4): 1285-1291. <https://doi.org/10.37506/mlu.v20i4.2006>
- [18] Gani, A.A., Widasari, L., Otoluwa, A.S., Hadju, V., Palutturi, S., Thaha, A.R., B, S.M. (2020). Risk factors for stunting among children in Banggai Regency, Indonesia. *Enferm Clin*, 30: 149-152. <https://doi.org/10.1016/j.enfcli.2019.10.058>
- [19] Dalviyani, Thaha, R.M., Palutturi, S. (2019). The Behaviour of consuming alcohol of adolescents in South Bolaang Mongondow Regency of North Sulawesi Province. *Indian Journal of Public Health Research and Development*, 10(4): 980-983.