



Promotion and Prevention Control of Type 2 Diabetes Mellitus at Risk Groups through Empowerment of Dalihan Na Tolu in Mandailing Tribe in Padangsidempuan City

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ABSTRACT

The Batak community has a "Dalihan Na Tolu" kinship system that regulates all Batak activities, including in Padangsidempuan. The kinship system is applied in all social movements of the Batak community as a firm social capital because it is carried out regularly and continuously. This study aimed to reduce the risk factors for type 2 diabetes mellitus by empowering the role of Dalihan Na Tolu. This was a qualitative study with a Participatory Action Research (PAR). Informants in this study consisted of high risk people as many as 16 people based on Findrisc Score. Data was collected using indepth interview and then analyzed by content analysis. The results of this study found three themes, namely (1) the public's view of Dalihan Na Tolu, (2) the role and function of Dalihan Na Tolu, and (3) the prevention efforts made by Dalihan Na Tolu in the prevention of type 2 diabetes mellitus. It was concluded that the application of Dalihan Na Tolu traditional values could motivate groups at high risk of type 2 DM to lead a healthy lifestyle. The spirit of togetherness and caring for each other in a kinship system is a great strength and has a positive impact. It is suggested that the Dalihan Na Tolu tradition can be integrated into the type 2 Diabetes Mellitus prevention program.

Keywords: *Dalihan Na Tolu, Health Promotion, Type 2 Diabetes Mellitus*

INTRODUCTION

The presence of prediabetes precedes the incidence of type 2 diabetes. In this condition, blood sugar levels are not high enough to be categorized as type 2 diabetes but are approaching the borderline. This can be used as a danger sign and a starting point for the need for prevention of type 2 DM. Efforts to return to normal and not lead to type 2 DM by controlling and managing prediabetes [1], [2]. This role will be perfect if it is not only carried out by the

individual concerned but also requires the husband or wife and kahanggi, Anak boru and mora through the application of Dalihan Na Tolu. The function of DNT is to regulate and control a person's behavior in social life [3]–[7].

Data for 2020 shows that there are 2,076 people with DM in Padangsidempuan City, with a prevalence of 0.94 percent, spread over ten health centers. The Padangmatinggi Public Health Center with the highest DM sufferers, 428 people, and the Puskesmas with the least DM

sufferers is the Pijorkoling Health Center with 42 DM sufferers, with the achievement of standard health service levels (Profile of the Padangsidimpuan City Health Office). The results of interviews with 15 people with type 2 DM concluded that their family and closest people played a role in mentoring efforts (26.67%), providing advice by reminding them of their diet (26.67%) and the physical activities they should do (13.33%). At the time of doing the exercises held by our health center, we also had problems with movement and felt tired quickly (40%).

People in Padangsidimpuan City have a local wisdom culture of the Batak community, namely Dalihan Na Tolu (DNT). Dalihan Na Tolu can be developed for its usefulness not only in

traditional events, but the value of Dalihan Na Tolu in the future is expected to be applied through the involvement of family members in preventing disease. The type of disease that requires the participation of family members in giving attention and conveying health messages is Diabetes Mellitus Type 2. The consequences of type 2 diabetes mellitus (DM) are very serious for sufferers. This chronic disease can cause complications in small blood vessels, such as retinopathy and neuropathy, and in large blood vessels, such as myocardial infarction, angina pectoris and stroke. In addition to complications related to diabetes, the occurrence of hypoglycemic conditions, fear of hypoglycemia, and fear of long-term consequences can cause a decrease in the quality of life of patients. [8].

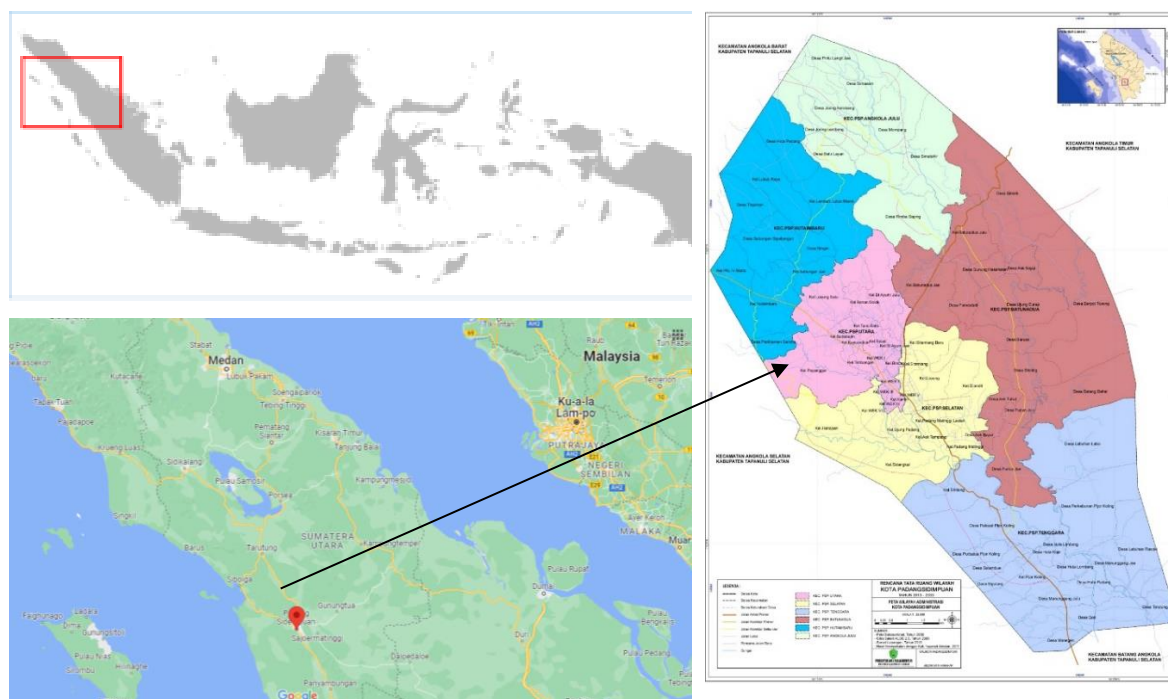


FIGURE 1: Padangsidimpuan City Map

The study in Northern Ireland was conducted on 309 people at risk of DM and 309 patients with type 2 DM. The results of this study showed that many of the complications were significantly the same. Ischemic heart disease 55 people (17.8%), chronic kidney 17 people (5.5%), cerebrovascular 16 people (5.2%), peripheral vascular disease 40 people (12.9%), eye disease 20 people (6.5 %), peripheral neuropathy 27

people (8.7%) and autonomic neuropathy 11 people (3.6 %). While the prevalence of comorbidities in people at risk of diabetes mellitus is ischemic heart disease 64 people (20.6%), chronic kidney disease 12 people (3.9%), cerebrovascular disease 11 people (3.5%), peripheral vascular disease 24 people (7.7%), eye disease in 1 person (0.3%), peripheral neuropathy 8 people (2.6%) and

autonomic neuropathy 17 people (5.5%) [9]. Regarding type 2 diabetes, the IDF reported that type 2 diabetes reached 11.3 percent in the 20-79 year age group and the mortality rate from type 2 diabetes generally occurred in women [10].

Before type 2 diabetes occurs, prediabetes is preceded, namely the condition of blood sugar levels that are not high enough to be categorized as type 2 diabetes but are close to the borderline number. This can be the basis for preventing type 2 DM by controlling and managing prediabetes so that it can return to normal and not lead to type 2 DM [1]. Controlling and managing prediabetes is a role that is not only carried out by the individual himself but the husband or wife, kahanggi, Anak boru and mora through the application of Dalihan Na Tolu.

Dalihan Na Tolu (DNT) as a kinship system that is used as the life principle of Batak culture that controls individual bonds through lineage and the marriage system [11]. Dalihan Na Tolu includes clans, genealogies and speeches that teach a strong tribal primordial basis [12]. Knowledge about culture is important to know by health service providers to facilitate the approach to providing excellent service because culture has both positive and negative impacts on health. Therefore it takes a planned effort in its use [13], [14].

Based on interviews on December 4th, 2020, with ten community health center responsible for non communicable disease, Prolanis and Health Promotion in ten community health Center work Areas of Padangsidempuan City, they said they had never involved traditional leaders in efforts to implement health programs, especially in preventing type 2 DM disease. Indigenous people who live around the Padangmatinggi community Health Center, Padangsidempuan City, also said that there had never been any puskesmas health workers to involve traditional leaders in Padangsidempuan City to prevent type 2 DM disease; usually, health workers directly provided counseling to people who had been diagnosed with diabetes, affected by diabetes mellitus.

Based on the phenomena found in the preliminary survey and literature study above, the researcher is interested in researching the

traditional role of Dalihan Na Tolu in the prevention of type 2 Diabetes Mellitus in the population of high-risk groups in Padangsidempuan City. This culture has long been the local wisdom of the Batak people, even very thick in applying part of the customs of the Batak Tribe. Actually, through this culture, people can develop healthy behaviors.

METHODS

This study was conducted in the working area of Padangsidempuan City in 2022. This study used a qualitative with Participatory Action Research (PAR). The sample was 16 high risk people for type 2 diabetes mellitus based on Findrisc score. FGD guidelines and anthropometric measurements, blood pressure using a digital sphygmomanometer. Data collection using in-depth interview and then data analysis using qualitative content analysis. Collecting data through interviews was carried out using a voice recorder. The recording is done with the consent of the subject. The results of the interviews were in the form of voice recordings and then converted into written form (transcripts).

The transcripts that have been made were analyzed using qualitative content analysis. Qualitative content analysis is done by classifying or filtering text or words into several categories that represent certain contents. The result of content analysis is a method to analyze the text's content flexibly. The qualitative results of the content analysis can be used to evaluate the findings generated by the analysis itself.

RESULTS

Description of Research Site

The city of Padangsidempuan is located in the province of North Sumatra. The distance from the capital city of North Sumatra Province to the city of Padangsidempuan is \pm 432 KM. Astronomically, Padangsidempuan City is 01°18'07"-01°28'19" north latitude and 99°18'53"-99°20'35" east longitude 260-1100 meters above sea level. The area of Padangsidempuan City is 159.28 KM² or 15,930.28 Ha and is equivalent to 0.2 percent of the total area of North Sumatra Province.

Padangsidimpuan City has 6 sub-districts, 42 villages and 37 sub-districts. The sub-districts are North Padangsidimpuan District, South Padangsidimpuan District, Southeast Padangsidimpuan District, Padangsidimpuan Hutaimbaru District, Padangsidimpuan Batunadua District, and Padangsidimpuan Angkola Julu.

The study was conducted in two working areas of Padangsidimpuan City Health Center Padangmatinggi Health Center, located in Padangmatinggi Village, South Padangsidimpuan District. The Pijorkoling Health Center is in Pal IV, Pijorkoling Village, Padangsidimpuan District Southeast Padangsidimpuan

TABLE 1: Description of informant characteristics at risk group

Characteristics	Description	Frequency	Percentage
Sex	Male	5 person	31,25
	Female	11 person	68,75
Age	Minimum	19 year	
	Maximum	70 year	
Education	Senior high school	11 person	68,75
	Bachelor	5 person	31,25
Marital status	Marry	14 person	87,5
	Single	2 person	12,5
Job	Doesn't work/retired	2 person	12,5
	Housewife	8 person	50,0
	Student	2 person	12,5
	Entrepreneur	4 person	25,0

From the table above, the average age of the informants is 40, the sexes are more female and have more high school education and work more as housewives.

TABLE 2: Characteristics Anthropometric at risk group

	Age	BMI		Waist size	
		Before	After	Before	After
Mean	51,94	27,19	22,38	246,31	84,00
Std, Error of Mean	2,069	0,430	0,315	82,413	1,021
Median	47,50	28,00	22,50	94,50	82,50
Mode	47	28	21	90	79
Std, Deviation	8,274	1,721	1,258	329,651	4,082
Variance	68,463	2,963	1,583	108669,963	16,667
Range	28	6	3	855	13
Minimum	38	23	21	88	79
Maximum	66	29	24	943	92
Sum	831	435	358	3941	1344

TABLE 3: Results of findrisk before-after prevention efforts

Total Score	Information	Frequency	Before	After	
			Percentage	Frequency	Percentage
<7	Very low	0	0,00%	0	0,00%
7-11	Low	0	0,00%	11	68,75%
12-14	Medium	3	18,75%	5	31,25%

15-20	High	10	62,50%	0	0,00%
>20	Very High	3	18,75%	0	0,00%

Based on table 3, the results after 90 days of monitoring are as follows: A total of 11 people or 68.75 percent were categorized as low risk, five people or 31.25 percent were categorized as moderate risk.

The meaning of DNT is a rock firmly planted in the ground for a fireplace with an equilateral triangle position, a symbol associated with the Batak social system with the pillars: kahanggi, Anak boru and mora. Kahanggi is a clan, relative; Anak boru is the recipient of the wife; Mora is the giver of the wife. Cultural personality is born from various patterns of thought and behavior and forms the local wisdom of the Batak community. The personalities of kahanggi, Anak boru and mora that all Batak people own are local wisdom, resulting from kinship relations due to marriages between clans. The involvement of the traditional leader of Dalihan Na Tolu in the city of Padangsidempuan in conducting health promotions to prevent type 2 diabetes mellitus is still very rare. If observed from the existing resources, Dalihan Na Tolu has great potential to be involved in health promotions to prevent type 2 diabetes mellitus. As a first step, the researcher conducted interviews with 2 Dalihan Na Tolu leaders, two health workers in charge of non-communicable disease, and 16 risk groups. The interviews with informants can describe the problems faced in involving Dalihan Na Tolu in health promotion matters in preventing type 2 diabetes mellitus.

The intervention that the researcher will carry out is based on the results of interviews that have been conducted with the informants. Informants told various things about Dalihan Na Tolu, type 2 diabetes mellitus, and Dalihan Na Tolu's involvement in health promotion to prevent type 2 diabetes mellitus from risking groups. Information obtained by researchers from informants found three themes related to the prevention of type 2 diabetes mellitus involving Dalihan Na Tolu. The themes found are: The public's view of Dalihan Na Tolu, the role and function of Dalihan Na Tolu, and the prevention

efforts made by Dalihan Na Tolu in the prevention of type 2 diabetes mellitus.

The Role and Function of Dalihan Na Tolu

The role and function of Dalihan Na Tolu are the local wisdom culture of the Batak community, namely Dalihan Na Tolu (DNT). This culture has long been the local wisdom of the Batak people, even very thick in applying part of the customs of the Batak Tribe.

"DNT is the concept of a furnace, wherein the furnace all three must function. So if one stove is lame, the other two work. That is so that there is complete unity in the Mandailing traditional kinship, where the furnace serves all three (Informant 3)"

Efforts to prevent type 2 Diabetes Mellitus involving Dalihan Na Tolu have not yet been seen. This is because the community still considers Dalihan Na Tolu as only a hereditary culture, which appears when traditional activities exist. This can be seen based on the following narrative:

"If what I understand is the problem of Dalihan Na Tolu...is a container that has been passed down from generation to generation in the souls of the earth community of Dalihan Na Tolu, from the past it has existed...until now the custom is still there, but that is it, it is just parties. You can see which ones are called mora, kahanggi, and anakboru. If there are no events, it does not exist (Informant 10)"

The role of Dalihan Na Tolu so far has not been seen in the health sector, and this is because people still use Dalihan Na Tolu for things that are ethnocentrism, so the role of Dalihan Na Tolu seems static in its use. Evidenced by the narrative, which is described as follows:

"Dalihan Na Tolu can only be seen when there are traditional events such as weddings or deliberations related to community cultures (Informant 12)"

Based on the results of the interview, Informant

R expressed his opinion and experience regarding the role of Hula-Hula in maintaining the health of Boru/his daughter so that the form of bonds of unity, affection and the role of Dalihan Na Tolu in health can be seen in the following statement:

"There was one experience my naboru had the urge to visit his hula until he was sick and paralyzed. It is my parents and my naboru who tell the story. No one knows what the disease is. The amangboru came "aha do na i bagas roha mu", but was not told either. However, as a hula-hula, there must be a feeling about why naboru/eda hurts. Then mamak immediately prepared food without being told by this naboru that he missed being visited. Mamak goes to the traditional market to prepare food and duties as a hula-hula, come and give it. This is "eda boatik adong na ponjok in bagasan roham". After eating, the next day, I immediately recover and can work. If we think about it, this is logically

impossible, but that is what happened (Informant 1)"

Health efforts made by the community for sick families are to provide support in the form of visits and suggestions to achieve healing. We can see this from the following narrative:

"if for example, I am sick, usually it is mora, kahanggi, my son to visit with souvenirs, sometimes even when the illness is complicated, this person usually gives advice, for example, right like yesterday, mamak was treated for a long time, It was suggested that this person eat bitter foods like men, he said, don't eat rice, he said...that's how it is, sir (Informant 1)"

"but indeed... so far, it's customary if someone is sick, usually support is given so that the spirit of the sick is right, this support is like advice, right, sir, basically... the point is that sick people get excited, sir (Informant 2)"

TABLE 4: Matrix of Type 2 DM Prevention Efforts Themes

Thema	
People's View of Dalihan Na Tolu	Hereditary Culture Customary Equipment
The role and function of Dalihan Na Tolu in society	Uniting Communities Mobilizing the Community Agree on a deliberation
Efforts made by Dalihan Na Tolu	Provide support by visiting Giving suggestions for healing

DISCUSSION

The Batak community has a kinship system as local wisdom and a highly respected social capital, namely Dalihan Na Tolu. The results show that Dalihan Na Tolu has a decisive role so that the social system will effectively influence the behavior of the Batak community. Na Tolu Dalihan can function as a diffusion channel, a diffusion vessel, and a diffusion activator in various activities in Batak. The role of Na Tolu Dalihan in the process of behavior change can accelerate the Batak community to arrive at a behavioral adoption decision. The high respect of the Batak community for the Dalihan Na Tolu social system makes it easier for people to accept behavioral adoption, including changes in healthy behavior. However, Dalihan Na Tolu

empowerment in the health sector has not been widely carried out in Indonesia. This study aims to empower Dalihan Na Tolu to prevent and control type 2 diabetes mellitus in Padangsidempuan.

The involvement of Dalihan Na Tolu in the prevention of type 2 diabetes mellitus can be done by referring to the following three themes: 1) Dalihan Na Tolu in the community, 2) Groups at risk of developing type 2 diabetes mellitus, 3) Efforts to prevent type 2 diabetes mellitus. The three themes become a value that can be measured in the effort to prevent type 2 diabetes mellitus, these themes are also a synergy of internal factors, namely risk groups, and external factors, namely the Dalihan Na Tolu traditional instrument.

Dalihan Na Tolu and the community must work together to prevent type 2 diabetes mellitus through systematic, analytical, and reflective identification. This is in accordance with the opinion [15], [16]. Health promotion involving Dalihan Na Tolu is also able to improve health education for at-risk groups regarding the prevention of type 2 diabetes mellitus, this is in line with the opinion of Mubarak et al, 2007, Health promotion is a revitalization of health education in the past, where in the concept of health promotion not only is a process of public awareness in terms of providing and increasing knowledge in the health sector, but also as an effort that is able to bridge behavior change, both within the community as well as in organizations and their environment.

Knowledge about culture is important for health service providers, health workers to create excellent service with full care and love, because with Dalihan Na Tolu it has a positive impact on health. Therefore, it requires a planned effort, and a joint role in its application and optimization [13], [14]. Dalihan Na Tolu as a kinship system that is used as a living principle of Batak culture [11]. A symbol of caring and togetherness in independence through assistance, in this case to those who are at risk of developing type 2 diabetes mellitus, so that kinship is well maintained[17]. Changes in behavior by maintaining a healthy lifestyle have shown results that require changes in the patient's lifestyle[18], which of course is inseparable from the role of the family in the application of Dalihan Na Tolu culture by always functioning as a companion by providing advice.

Cultural acculturation can be eschadistic (behavior of avoiding new cultures and trying to return to the original culture) because there is a longing for the old culture. Meanwhile, those who are willing to accept are called adaptive futurists but go through a transitional stage [19]–[21]. Dalihan Na Tolu culture is part of family support that functions as a support system for its members and family members view that people

who are supportive are always ready to provide help with assistance if needed [22].

Dalihan Na Tolu's position in customary interaction can be understood through the structural-functional theory proposed by Talcott Parsons [23], based on motivational orientation and value orientation. The adoption of an innovation is influenced by the characteristics of the individual itself and also the social system in which the individual is located[24], [25].

Prevention of type 2 Diabetes Mellitus involving family members and residents in ideals and social realities and analysis of social life perspectives, in the DNT concept. The role of DNT is related to the culture of sharing roles, helping each other, positive and negative habits, the use of fruit, food, drinks that are traditionally used as medicine, the culture of caring for relatives, the culture of respecting relatives, the culture of advising relatives, the culture of visiting relatives, the culture of bringing food, the culture of helping material, culture of responsibility.

The government has made various prevention efforts but has not shown significant results. Taking into account this matter, a concerted effort is needed to change behavior to become health sensitive that includes the community, regardless of age, gender, occupation, socioeconomic status and location of residence [26].

Therefore, there is a need for synergy between the government and the community in preventing type 2 diabetes mellitus by utilizing the potential of human resources by taking into account the values of existing local wisdom.

The role of the traditional leader Dalihan Na Tolu in health promotion with the Dalihan Na Tolu approach for the prevention of type 2 diabetes mellitus at risk groups illustrates a structured pattern and interrelationships between the agents involved. This structure serves to provide assistance to groups at risk of developing type 2 diabetes mellitus so that they comply with the prevention program until it becomes a habit.

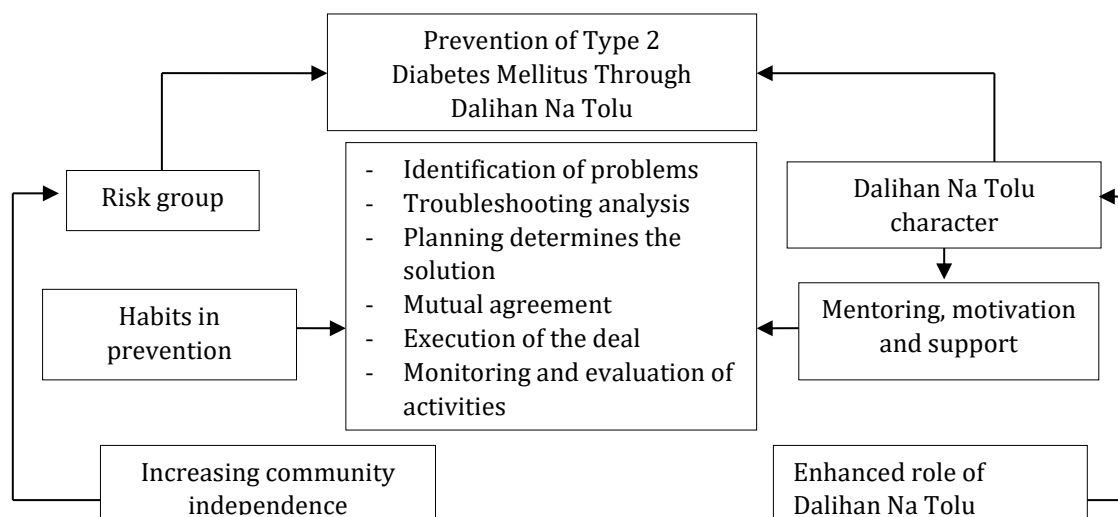


FIGURE 2: Prevention of type 2 diabetes mellitus with dalihan na tolu

The prevention program for type 2 diabetes mellitus with the Dalihan Na Tolu approach is an applicable program at the smallest community level, namely in the village or sub-district for at-risk groups, both individually and as a community. So far, the prevention aspect has only been carried out by health workers and educational institutions.

The feasibility of the model can be met based on aspects of transferability, dependability, credibility, and confirmability. The transferability aspect of this model relates to the existence of clear procedures or steps in the implementation of empowering traditional leaders, starting with the exploration of qualitative problems that produce the theme Dalihan Na Tolu in the midst of society, risk groups, and prevention efforts. Followed by action to at-risk groups to test the suitability of the theme with the methods used starting from problem identification, problem solving analysis, solution planning, agreement with the traditional leaders of Dalihan Na Tolu, implementation of the agreement, monitoring and evaluation of activities.

Aspects of dependability regarding the process of implementing the research is carried out step by step. Starting from meeting and determining informants, collecting data on prevention of type 2 diabetes mellitus from various data sources,

analyzing data on problems of risk groups before and after the action was carried out. The results show that several problems can be overcome, medication adherence increases, as well as better patient behavior after the action is carried out, until the conclusion that the empowerment of DNT in the prevention of type 2 diabetes mellitus can be implemented. The dependability aspect is in line with the confirmability aspect.

Aspects of credibility from the model of empowerment of traditional leaders Dalihan Na Tolu in the prevention of type 2 diabetes mellitus can be fulfilled by observing and being together with informants, and triangulation in collecting data. The researcher together with the traditional leaders of Dalihan Na Tolu, Health Officers, built a good relationship so that the groups at risk accepted the researchers and traditional leaders of Dalihan Na Tolu in carrying out mentoring, monitoring and providing education. Triangulation of problem data starts from interviews with health workers, traditional leaders of Dalihan Na Tolu and risk groups, combined with direct observation of the condition of risk groups by conducting home visits which have shown changes for the better, and documentation of the implementation of actions.

The presence of this model is an alternative program to increase efforts to prevent type 2

diabetes mellitus so that later it can reduce the incidence of type 2 Diabetes Mellitus. The application of this model in Padangsidempuan City can provide positive values that can be accepted, felt, and accustomed to by the group. At-risk groups feel the presence of the traditional leaders of Dalihan Na Tolu in providing support for the prevention of type 2 diabetes mellitus. How to prevent type 2 diabetes mellitus.

CONCLUSION

It was concluded that the application of Dalihan Na Tolu traditional values could motivate groups at high risk of type 2 DM to lead a healthy lifestyle. The spirit of togetherness and caring for each other in a kinship system is a great strength and has a positive impact. It is suggested that the Dalihan Na Tolu tradition can be integrated into the type 2 Diabetes Mellitus prevention program.

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