

ORIGINAL

## Socio-Cultural Perspective of Dalihan Na tolu in Pre-Diabetes Care In Padangsidimpuan City: A Phenomenological Study

### Perspectiva sociocultural de Dalihan Na tolu en el tratamiento de la prediabetes en la ciudad de Padangsidimpuan: un estudio fenomenológico

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#### ABSTRACT

**Introduction:** Diabetes is a health problem that continues and is increasing in incidence. The incidence of diabetes is always preceded by the incidence of prediabetes. Prediabetes that is not treated properly will cause diabetes and other complications. The purpose of this study was to explore in depth the socio-cultural perspective of dalihan na tolu in the treatment of prediabetes in the city of Padangsidimpuan.

**Method:** the research design was phenomenology. The data collection method was carried out by in-depth interviews. Participants in this study were 15 people who were selected using purposive sampling techniques. Participants in this study consisted of prediabetes sufferers, traditional leaders, community leaders, health workers and elements of dalihan na tolu in the city of Padangsidimpuan.

**Results:** the results of the transcribed interviews were analyzed using content analysis. The results of this study found 4 themes that reflected the phenomenon being studied. The themes are Prediabetes care behavior, Family support (elements of dalihan na tolu) in prediabetes care, Socio-cultural influence of the Batak Angkola tribe in prediabetes care, Government efforts in preventing the development of prediabetes into diabetes mellitus.

**Conclusions:** in the Batak Angkola socio-culture, kinship involvement (Dalihan Na tolu) is very important in efforts to increase awareness of prediabetes sufferers so that it can prevent the development of prediabetes into diabetes mellitus. It is recommended to the Padangsidimpuan City government to involve elements of dalihan na tolu, traditional leaders, community leaders, health workers in efforts to prevent the development of prediabetes into diabetes mellitus.

**Keywords:** Angkola Batak Tribe; Dalihan Na Tolu; Prediabetes Care.

**RESUMEN**

**Introducción:** la diabetes es un problema de salud persistente cuya incidencia va en aumento. La diabetes siempre está precedida por la prediabetes. La prediabetes no tratada adecuadamente puede causar diabetes y otras complicaciones. El propósito de este estudio fue explorar a profundidad la perspectiva sociocultural del dalihan na tolu en el tratamiento de la prediabetes en la ciudad de Padangsidimpuan.

**Método:** se utilizó un diseño de investigación fenomenológico. La recolección de datos se realizó mediante entrevistas en profundidad. Los participantes fueron 15 personas seleccionadas mediante muestreo intencional. Estos participantes incluían personas con prediabetes, líderes tradicionales, líderes comunitarios, trabajadores de la salud y miembros del dalihan na tolu de Padangsidimpuan.

**Resultados:** las transcripciones de las entrevistas se analizaron mediante análisis de contenido. Se identificaron cuatro temas que reflejaban el fenómeno estudiado. Los temas abordados son: el comportamiento en el cuidado de la prediabetes, el apoyo familiar (elementos del dalihan na tolu) en el cuidado de la prediabetes, la influencia sociocultural de la tribu Batak Angkola en el cuidado de la prediabetes y los esfuerzos gubernamentales para prevenir la progresión de la prediabetes a la diabetes mellitus.

**Conclusiones:** en la sociocultura Batak Angkola, la participación de los parientes (Dalihan Na tolu) es fundamental para aumentar la concientización sobre la prediabetes y prevenir su progresión a la diabetes mellitus. Se recomienda al gobierno de la ciudad de Padangsidimpuan involucrar a los líderes tradicionales, los líderes comunitarios y el personal de salud en los esfuerzos para prevenir la progresión de la prediabetes a la diabetes mellitus.

**Palabras clave:** Tribu Batak Angkola; Dalihan Na Tolu; Cuidado de la Prediabetes.

**INTRODUCTION**

Prediabetes is a serious health condition in which blood sugar levels are higher than normal, but not high enough to be diagnosed as type 2 diabetes.<sup>(1,2,3)</sup> Prediabetes, usually defined as blood glucose concentrations higher than normal, but lower than the diabetes threshold, is a high-risk state for the development of diabetes. The diagnostic criteria for prediabetes have changed over time and vary depending on the institution of origin.<sup>(3,4,5)</sup>

The occurrence of diabetes mellitus (DM) is always preceded by the occurrence of prediabetes. The prevalence of DM based on doctor's diagnosis and symptoms increases with age. The high number of DM indicates an increase in the incidence of prediabetes.<sup>(6,7)</sup> In 2021, the International Diabetes Federation (IDF) showed data that 541 million adults, or 10,6 % of adults worldwide, were estimated to have impaired glucose tolerance (IGT). By 2045, this number is projected to increase to 730 million adults, or 11,4 % of all adults. By 2021, there are an estimated 319 million adults, or 6,2 % of the global adult population, with impaired fasting glucose (IFG). An estimated 441 million adults or 6,9 % of the global adult population are projected to have IFG by 2045.<sup>(8)</sup>

World Health Organization (WHO) data shows that after reaching the age of 30 years, blood glucose levels will increase by 1-2 mg%/year during fasting and will increase by 5,6-13 mg%/year 2 hours after eating.<sup>(9)</sup> In 2024, an estimated 634,8 million adults, or 12 % of adults worldwide, were expected to have impaired glucose tolerance (IGT). By 2050, this figure is projected to increase to 846,5 million adults, or 12,9 % of all adults. In 2024, an estimated 487,7 million adults, or 9,2 % of the global adult population, were expected to have impaired fasting glucose (IFG). An estimated 647,5 million adults, or 9,8 % of the global adult population, were projected to have IFG by 2050.<sup>(10)</sup>

Early detection of diabetes and initiation of treatment are essential in the management of diabetes and prevention of complications. The longer a person has diabetes but remains undiagnosed, the greater the risk of complications. Lifestyle modification is a fundamental management approach that can prevent or delay the progression of prediabetes to diabetes, as well as reduce the risk of microvascular and macrovascular disease.<sup>(11,12)</sup>

Several factors influence diabetes self-care, including internal factors such as knowledge, self-efficacy, motivation, and attitudes toward the disease, as well as external factors such as family and social support, education, age, employment status, smoking status, and access to health services.<sup>(13,14)</sup> Research describes how culture can influence diabetes self-management in a variety of ways, including knowledge (prevalence of misconceptions and limited understanding of diabetes), beliefs (herbs can cure diabetes), treatment (medical pluralism in diabetes management), food (breaking and fasting during rituals), and values (family needs supersede individual needs).<sup>(15,16)</sup>

In Batak culture, there is a term dalihan na tolu which is a system that describes the hierarchy of kinship

speech (mora, kahanggi, anak boru) which are interrelated (interdependence) and various functions that must be fulfilled in carrying out common goals, maintaining patterns, and maintaining unity. All of these functional relationships must be fulfilled in order to achieve balance and harmony.<sup>(17,18)</sup> The core teachings of Dalihan Na tolu are moral rules containing teachings of mutual respect (masipasangapon) supported by moral rules: respecting and helping each other. Dalihan Na tolu is a medium that contains objective legal principles. So in Batak Angkola culture, the role of the dalihan na tolu element in decision making in daily life is very large, including in behavioral changes in health.<sup>(19,20)</sup>

The purpose of this study was to explore in depth the socio-cultural perspective of dalihan na tolu in the treatment of prediabetes in the city of Padangsidimpuan. Based on this phenomenon, researchers are interested in conducting research on the socio-cultural perspective of dalihan na tolu in prediabetes care in Padangsidimpuan City in 2024.

## METHOD

The research used was qualitative research with a phenomenological design. The study was conducted from July to August 2024 in Padangsidimpuan City. The number of informants in qualitative research is determined based on information needs, and there are no specific requirements or limits. Polit & Beck recommend that researchers interview 5-25 informants who have experienced the phenomenon under consideration, as this has reached saturation. The informants in this study were traditional leaders, community members, health workers, and prediabetes patients residing in Padangsidimpuan City. These included 4 traditional leaders, 3 community members, 4 health workers, and 4 family members (the "dalihan na tolu" element) of prediabetes patients, resulting in a total of 15 informants. The sampling technique used in this study was a nonprobability sampling (purposive sampling). Purposive sampling is a sampling technique based on specific considerations.

Qualitative data were collected using in-depth interviews with traditional leaders, community members, health workers, and families of prediabetes mellitus patients (dalihan na tolu: mora, kahanggi, and anakboru). Interviews were conducted for an average of 30 minutes for each informant. During data collection, the researcher recorded all interview processes using a recording device and field notes. This study used thematic analysis.

## RESULTS

The number of participants in this study was 15. people, with the majority of the age range of 31-40 years as many as 5 participants (33,3 %) and the age range of 41-50 years as many as 5 participants (33,3 %). The majority of participants' education is high school education as many as 7 participants (46,7 %). The majority of participants' occupations are self-employed as many as 8 participants (53,3 %). The detailed characteristics of the participants will be explained below.

| Table 1. Participant Characteristics. |                    |           |        |
|---------------------------------------|--------------------|-----------|--------|
|                                       | Characteristics    | Frequency | %      |
| Age                                   | 31 - 40 years      | 5         | 33,3 % |
|                                       | 41 - 50 years      | 5         | 33,3 % |
|                                       | 51 - 60 years      | 3         | 20 %   |
|                                       | 61 - 70 years      | 2         | 13,3 % |
| Education                             | Master             | 1         | 6,7 %  |
|                                       | Bachelor           | 5         | 33,3 % |
|                                       | Senior High School | 7         | 46,7 % |
|                                       | Elementary School  | 2         | 13,3 % |
| Work                                  | civil servant      | 5         | 33,3 % |
|                                       | Self-employed      | 8         | 53,3 % |
|                                       | Farmer             | 2         | 13,3 % |

The results of this study found 4 themes. These themes are prediabetes care behavior, family support (elements of dalihan na tolu) in prediabetes care, the socio-cultural influence of the Batak Angkola tribe in prediabetes care, government efforts in preventing the development of prediabetes into diabetes mellitus. More details can be seen in table 2 below.

**Table 2. Content Analysis Results**

| No | Theme  |
|----|--|
| 1  | <p>Theme 1: Prediabetes Care Behaviors</p> <p>Sub themes Category</p> <p>Prediabetes Treatment Actions</p> <ul style="list-style-type: none"> <li>Reduce sugar consumption</li> <li>Regular exercise</li> <li>Check blood sugar</li> <li>Avoid excessive anxiety and stress</li> <li>Drink lots of water</li> <li>Drink herbal medi</li> </ul> <p>Sources of information about prediabetes care</p> <ul style="list-style-type: none"> <li>Health workers</li> <li>Family (mora, kahanggi and anak boru)</li> <li>Surrounding community (social environment)</li> <li>Internet (social media)</li> </ul>   |
| 2  | <p>Theme 2: Family Support (Dalihan Na tolu Element) in Prediabetes Care</p> <p>Sub themes Category</p> <p>Mora</p> <ul style="list-style-type: none"> <li>Making Decisions in Care</li> <li>Giving a gift</li> <li>Giving advice and suggestions</li> <li>Providing material and moral support to the family</li> <li>Be a mediator when problems arise</li> </ul> <p>Kahanggi</p> <ul style="list-style-type: none"> <li>Accompanying sick families</li> <li>Empathize when Kahanggi feels difficult</li> <li>Acting as a substitute for a family member who is unable to attend the ceremony</li> </ul> <p>Anak Boru</p> <ul style="list-style-type: none"> <li>Help prepare the needs of a sick family</li> <li>Providing psychological support in the form of persuasion</li> <li>Taking over the household chores of a sick family member</li> </ul>   |
| 3  | <p>Theme 3: The Influence of the Social Culture of the Batak Angkola Tribe on Prediabetes Treatment</p> <p>Sub themes Category</p> <p>Positive influence</p> <ul style="list-style-type: none"> <li>the dalihan na tolu kinship system that never lets go of family members in times of joy or sorrow</li> <li>There are many traditional herbal concoctions that are thought to be able to treat diabetes.</li> <li>The existence of moral elements that must be adhered to causes sufferers to want to seek treatment at health services</li> </ul> <p>Negative influence</p> <ul style="list-style-type: none"> <li>The custom of serving sweet coffee at traditional events</li> <li>The habit of smoking and serving cigarettes during traditional ceremonies</li> <li>The custom of serving coconut milk dishes at traditional events</li> <li>The custom of serving palm wine/nira at traditional events in several areas of South Tapanuli</li> <li>The belief that illness is a punishment from ancestors</li> </ul> <p>Barriers to Prediabetes Care</p> <ul style="list-style-type: none"> <li>non-compliance of prediabetes patients in self-care management</li> <li>lack of awareness of the need for health</li> </ul> |
| 4  | <p>Theme 4: Government efforts to prevent the development of prediabetes into diabetes mellitus</p> <p>Sub themes Category</p> <p>Direct efforts</p> <ul style="list-style-type: none"> <li>Perform diabetes screening on people at high risk</li> <li>Holding prolanis gymnastics activities at health centers as an effort to increase community physical activity</li> <li>Providing free health check services at community health centers</li> <li>Reactivating Posbindu</li> </ul> <p>Indirect efforts</p> <ul style="list-style-type: none"> <li>Designing a policy brief/regulation on preventing diabetes mellitus</li> <li>Approaching traditional and community leaders for acculturation</li> </ul>  |

### 1. Theme Prediabetes Care Behaviors

In this theme there are two sub-themes, namely prediabetes care actions and sources of information about prediabetes care.

Participant statements regarding prediabetes care actions obtained from participants were:

- “To prevent diabetes, you should reduce eating and drinking sweet things. You should also drink lots of water.”
- “People who have high blood sugar, those who have diabetes, should check their blood sugar often

at the health center. Usually, so that their blood sugar doesn't keep going up, don't worry too much and stress."

- "Usually, those who are addicted to sugar rarely move, so try to exercise every day, if you can't do it every day, at least once a week, the main thing is that it has to be done routinely."
- "Since my blood sugar has been going up, I have started drinking boiled mangosteen skin, especially since it is fish season, I dry it first, then when it is dry I boil it. I drink the boiled water."

Participant statements about sources of information about prediabetes care were obtained from health workers, family (mora, kahanggi and anak boru), and the surrounding community (social environment), and from the internet (social media) as stated by participants below:

- "I found out from the nurse at the health center, she said that if you start to show signs of diabetes, you have to check your sugar regularly."
- "From our Kahanggi, there are people with diabetes. Apparently, I've started to get it too. So let's tell each other if we get information about this diabetes medicine."
- "The neighbors at the Koran study here often tell stories."
- "Sometimes when I open my cellphone, news about preventing diabetes and its cure also appears. Sometimes I search on Google."

## 2. Family Support Theme (Dalihan Na tolu Element) in Prediabetes Care

The elements of Dalihan Na tolu consist of Mora, kahanggi and Anak Boru. Each of these elements has a connection and cannot be separated.

Participant statements regarding family support (elements of dalihan na tolu) in prediabetes care obtained from participants are :

- "If the mora is indeed the highest throne in this dalihan na tolu, then the decision maker in all problems is the mora. If the kahanggi is because he is the dongan tubu, if our kahanggi is sick or has problems, then we as kahanggi can replace his role in community activities."
- "Usually if there is a family member who is sick, especially a child, the mora will come to pray for their body and soul so that they will be more enthusiastic to be healthy. In addition, usually the mora will not hesitate to provide assistance, both material and support, for their sick child."
- "Mora always gives advice and suggestions to anak boru because she is the most respected person in the tradition. If there is a problem, usually the mora is the mediator. Conversely, usually the anak boru will prepare everything the mora needs if she is sick. For example, cleaning the house, cooking, and so on."
- "kahanggi or dongan tubu is the same as ourselves. So if he is sick, we feel what he feels. Usually we, the kahanggi, will continue to accompany the kahanggi treatment process if someone is sick."
- "anak boru in ikan are usually very much loved by their mora. So if the mora can command, then anak boru usually like to persuade and be persuaded by their mora."
- "If Mora is sick, it will be sad. As anak boru, we will definitely take on the role of taking care of the house of Mora who is sick."

## 3. The Theme of the Socio-Cultural Influence of the Batak Angkola Tribe in Diabetes Care

The Socio-Cultural Influence of the Batak Angkola Tribe in Diabetes Care consists of positive and negative influences, as well as barriers to Prediabetes care. The participant statements are as follows:

- "This custom has many positive values, for example because of the dalihan na tolu, so life is balanced, not lopsided. Because it is impossible to let each other be in a condition of siraon or siluluton"
- "We in the Angkola area actually have many traditional herbs that can treat diabetes, there are snake fruit skins, mangosteen skins, there are many."
- "Mora is like a person we have to obey, so even if we don't want to go to the health center for treatment, if Mora has intervened, we are obliged to go for treatment."
- "Our traditional event is indeed a legacy from our ancestors, every traditional makkobar must serve dishes to quench hunger and thirst. Here, it is usually chicken or beef curry, and to drink, they give us sweet black coffee."
- "If it's mangupa, it's usually served with chicken curry and goat's head"
- "Usually the host also prepares cigarettes, placed in small glasses. Sometimes in the old mountain areas, there is also palm wine/nira that is prepared."
- "This illness, whether we believe it or not, could be because of targora (warning) from the spirits of our ancestors. So sometimes we don't need to go to the doctor, just clean the grave, then do marontang malim (an event to ask for prayers), hopefully it will heal us."
- "We who are sick, this is our destiny. If we really want to get better, then we will get better. Especially for diabetes. There's no way we can't eat so that our sugar goes down."

- “Actually, prediabetes sufferers can be treated, but they do not want to comply with the treatment given. Finally, it cannot be prevented, it develops from prediabetes to diabetes, that is because the sufferer is not compliant.”

#### 4. Theme of Government Efforts in Preventing the Development of Prediabetes into Diabetes Mellitus

Based on the results of the participant interviews, it was revealed that the government has created several programs to address the development of non-communicable diseases such as diabetes mellitus and hypertension, with direct efforts to the community, and indirect efforts. The participant statements are:

- “The government, especially the Health Department, already has programs including diabetes screening for people at high risk, holding prolanis gymnastics activities at the Community Health Center as an effort to increase physical activity in the community.”
- “providing free health check services at community health centers, and reactivating integrated health posts”
  - “If it is not directly to the community, the government has also designed regulations on preventing diabetes mellitus so that it does not continue to increase.”
  - “The government should also approach traditional leaders and the community so that traditional activities are adjusted to things that do not violate health.”

### DISCUSSION

#### Prediabetes Care Behavior Theme

Prediabetes care actions taken by prediabetes sufferers include reducing sugar consumption, exercising regularly, checking blood sugar, avoiding excessive anxiety and stress, drinking lots of water, and taking herbal medicine.

This is in line with the results of a study which stated that Prediabetes care consists of 5 aspects, namely: general diet, special diet, exercise, pharmacological treatment and checking blood glucose. More recent research states that Prediabetes care also includes items on foot care and smoking.<sup>(18)</sup>

self care is a program or action that must be carried out throughout the client's life and is the full responsibility of every diabetes client. Activities included in diabetes self care include regulating diet, physical exercise , blood sugar monitoring, medication and foot care.<sup>(19)</sup>

Prediabetes treatment in individuals with prediabetes should focus on returning to normoglycemia rather than simply maintaining prediabetes. A previous study in the Middle East found that diabetes progression was significantly lower in individuals who returned to normoglycemia than in those who consistently maintained prediabetes. This was due to improvements in insulin sensitivity and pancreatic B-cell function during the intervention. The study also showed that the proportion of individuals who became normoglycemic was significantly higher in the intervention group than in the control group. Assuming that this reversal is temporary, the risk of prediabetes developing Type 2 Diabetes Mellitus should be reduced.<sup>(20)</sup>

Sources of information about prediabetes care are obtained from health workers, family (mora, kahanggi, anak boru), from the surrounding community (social environment), and from the internet (social media).

Knowledge about prediabetes care can be obtained through health education activities. Nurses act as educators to help clients increase their knowledge about their disease and even the actions given can change client behavior after being given health education. Education about diabetes mellitus not only helps to understand the disease, possible complications, but also provides guidance and motivation for patients to be actively involved in reducing health risks optimally. Health education activities can be carried out through leaflets and audiovisual media. These media are often used to deliver health education with lecture or discussion methods. Providing education through leaflets will make it easier for sufferers to regulate dietary compliance because the leaflets contain detailed and clear images and explanations. Audiovisual is a media used by presenters to deliver health messages through visual and auditory aids, such as videos. The more senses involved in capturing the message, the easier the message is received by the target.<sup>(21)</sup>

In addition, the increasing use of social media for diabetes management provides many opportunities to develop eHealth solutions that support diabetes patients. These solutions will benefit from the integration of data from wearable devices and other types of technology. The consequence of this trend is the increasing risk of privacy issues as well as the need to develop more sophisticated data analysis.<sup>(22)</sup>

#### Theme (Dalihan Na tolu Element) in Prediabetes Care

Prediabetes care cannot be done by sufferers alone, but also requires help and support from others. The relationship between suffering and prediabetes is bidirectional, involving both physical and psychological burdens. Prediabetes can lead to suffering through physical symptoms, psychological distress, increased risk of complications, and impact on quality of life.<sup>(14,23,24)</sup> As found by previous studies which stated that prediabetes sufferers often need encouragement to discuss the responsibilities, choices, and behaviors they

follow to support self-care to improve their health and well-being.<sup>(25,26,27)</sup>

The quality of life of people with prediabetes is also influenced by their daily activities. Studies have shown that people with prediabetes who achieve prediabetes physical activity guidelines have higher levels of physical and mental quality of life than those who are inactive. Furthermore, these results support the rationale for developing strategically designed physical activity programs for individuals with prediabetes.<sup>(28)</sup>

In this case, according to the results of interviews with participants, prediabetes sufferers need help and support from their families, especially from the dalihan na tolu kinship system. The elements of Dalihan Na tolu consist of Mora, kahanggi and Anak Boru. Each of these elements has a connection and cannot be separated. The term Dalihan Na tolu is known as a three-legged cooking stove, which is used as a symbol of the social order of the Batang Angkola Tapanuli Selatan community, namely everyone has a share, feels the same, and has their respective responsibilities in the social community of the Batak Angkola Tapanuli Selatan. Dalihan Na tolu is known for the elements of hula-hula, mora and anak boru.<sup>(17,24)</sup>

Mora in Dalihan Na Tolu is the extended family of the man who gives the woman (wife or daughter). In this kinship system, the mora holds a high status because they are considered "parents" to the recipient of the daughter (anak boru).<sup>(29,30)</sup> Mora is identified/symbolized as the sunlight sent by God to provide protection to every anak boru. a source of supernatural power, a source of life, a source of blessings, happiness and a place to ask for advice<sup>(25,26)</sup> the support given by mora includes making decisions in care, giving upa-upa tondi dohot badan , giving advice and counsel, giving material and moral support to the family, and being a mediator when problems occur. If someone knows the customary position when interacting with the person he is talking to, he has actually gained many benefits from it. These benefits do not only include privileges in custom alone, but also in economic matters and even in matters of love. For example, when someone is in the position of anak boru, any request he makes to the tulang will be very bad if rejected, this is what is called elek marboru. For example, when a young man asks his tulang to be given the opportunity to work, then the person he calls tulang is obliged to fulfill his bere's request. If the request cannot be fulfilled, the bone will replace it with something else that is considered to be of equal value.<sup>(27)</sup>

Kahanggi (dongan sabutuha) are considered close relatives because they are descended from the same ancestor and the same clan, even though they no longer know each other, especially for the generations below them. Kahanggi implies togetherness in bearing sorrow and suffering, light things are carried together, heavy things are carried together<sup>(25,26)</sup> the support given by kahanggi is by accompanying sick families, empathizing when kahanggi are having difficulties, and acting as a substitute for family members who are unable to be with fellow kahanggi.

Anak boru are those who are willing to sacrifice for their morals. Anak Boru are the backbone of every traditional ceremony. The Boru group is willing to give and do anything for their hula-hula because the hula-hula is their source of life<sup>(25,26)</sup> the support given by anak boru is by helping to prepare the needs of sick family members, providing psychological support and persuasion, and taking over the household chores of sick family members. At traditional events, the anak boru clan group is in the lowest position in the kinship structure. They act as the work implementers and get the last turn in distributing the food that is taken home. During the event, they are assisted by naposo bulung who must be ready when everyone needs something. For example, when the anak boru clan group is tasked with serving food to their hula-hula clan group, the naposo bulung is tasked with preparing and delivering the food to the anak boru clan group.<sup>(31,32,33)</sup>

Another study also stated that prevention of Type 2 Diabetes Mellitus must involve family members to achieve goals and social realities and analysis of social life perspectives, in the concept of dalihan na tolu. The role of dalihan na tolu is related to the culture of sharing roles, helping each other, positive and negative habits, the use of fruit, food, and 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 souvenirs, the culture of helping with materials, the culture of responsibility.<sup>(28)</sup> The Dalihan Na tolu kinship system is still held by the South Tapanuli community, although there has been a shift.<sup>(29)</sup>

### **The Theme of the Socio-Cultural Influence of the Batak Angkola Tribe in Diabetes Care**

The Socio-Cultural Influence of the Angkola Batak Tribe in Diabetes Care consists of positive and negative influences, as well as barriers to Prediabetes care.

Positive influence in the form of the existence of a dalihan na tolu kinship system that never lets go of family members in times of joy or sorrow, besides that according to the beliefs of the Batak Angkola community, there are many traditional herbal concoctions that are considered to be able to cure diabetes, and the existence of mora elements that must usually be obeyed makes Prediabetes sufferers willing to seek treatment at health services . Bamar diabetes sufferers in this study used various medicinal plants and traditional medicines because of their availability at affordable prices.<sup>(34,35,36)</sup>

The negative influences obtained from the Batak Angkola social culture include: the habit of serving sweet coffee during traditional events, the habit of smoking and serving cigarettes during traditional makkobar, the

habit of serving coconut milk dishes during traditional events, the habit of serving palm wine/nira at traditional events in several areas of South Tapanuli.

Participants believed that illness was a punishment from their ancestors. This is in line with research related to culture and diabetes care found that Bamar diabetics in this study were highly influenced by cultural beliefs and practices about treatment options and dietary control. They believed that diabetes was a curable disease, and its cause was due to cultural factors such as karma from previous or current lives. Bamar diabetics had several misconceptions about the causes and management of diabetes that were influenced by their cultural beliefs and practices. Although some cultural beliefs and practices were beneficial to patients' health, such as the use of proven medicinal plants, other practices used were harmful to their health. For example, hot fomentation had harmful effects on patients with diabetic neuropathy. It is essential for health care professionals, including nurses, to understand the cultural beliefs and practices of diabetics. If they can provide culturally tailored interventions for diabetics, patient compliance with diet, medication, and exercise can be improved.<sup>(30)</sup>

Based on the ancient beliefs of the Batak tribe, this world is divided into three levels of the world (banua), namely banua ginjang (upper world), banua tonga (middle world) and banua toru (lower world). Banua ginjang (upper) is the glorious realm of Mula Jadi Na Bolon which is inhabited by the inhabitants of banua ginjang and tondi, holy people. Banua tonga (middle) is the universe which is called the mortal realm created by Mula Jadi Na Bolon as a place for his creatures to live with a mortal life called portibi namanggilas. While the last realm called banua toru (lower) is the underworld filled with suffering and torture which is a place inhabited by evil spirits. Described as a place that is blazing with fire that never goes out called narokko fire. Based on this belief, it can be said that nature has been divided into the spiritual realm and the mortal (material) realm. The spiritual realm is a place for the spirits of saints and sinners, while the material realm is the mortal world inhabited by humans and other created beings.<sup>(27)</sup>

Barriers to prediabetes care include non-compliance of prediabetes patients in self-care management, and lack of awareness of the need for health. Leininger stated that there is a need for research and translation for evidence-based nursing practice, developing nursing courses and curricula to prepare culturally competent nurses so that people from any culture can accept the paradigm shift from traditional to modern in health care practices, especially prediabetes.<sup>(37,38)</sup>

Anthropological research on diabetes and culture reflects anxieties among anthropologists about prevailing theories and practices in relation to change. However, the changing perspectives found in this anthropological research continue to confront persistent themes in the public sphere and in research on the relationship between diabetes and culture. Culture is often cited as a difference maker, either as an etiologic factor in the development of diabetes worldwide or as an explanation for the diversity in representations, relationships, and activities associated with diabetes.<sup>(32,39)</sup>

### **Theme of Government Efforts in Preventing the Development of Prediabetes into Diabetes Mellitus**

Based on the results of participant interviews, it was revealed that the government has created several programs to address the development of non-communicable diseases such as diabetes mellitus and hypertension, through direct efforts to the community, and indirect efforts.

Direct efforts to the community include conducting diabetes screening for people at high risk, holding prolans exercise activities at community health centers as an effort to increase community physical activity, providing free health check services at community health centers, and reactivating integrated health posts.

Meanwhile, indirect efforts towards the community include: designing a policy brief/regulations on preventing diabetes mellitus, and approaching traditional and community leaders to work together in preventing the development of diabetes by adjusting traditional events with actions that do not violate health aspects.

Studies show that diabetes mellitus is a disease that has undergone changes in both epidemiological transition, health, and now nutritional transition.<sup>(32)</sup> Many things have to shift from their place. Leininger's Theory of Culture Care and the Sunrise Model implement an innovative, patient-centered focus that recognizes and incorporates the patient's cultural background into their health care plan. Combining Leininger's Theory of Culture Care with the current family medical history process will modernize a somewhat archaic aspect of modern health care, benefiting both patients and health care professionals.<sup>(33)</sup>

### **CONCLUSIONS**

Prediabetes care consists of five aspects: general diet, special diet, exercise, pharmacological treatment, blood glucose monitoring, foot care, and smoking cessation. In the Batak Angkola sociocultural context, kinship involvement (Dalihan Na tolu) is crucial in raising awareness among prediabetes sufferers and preventing the progression of prediabetes to diabetes mellitus. When a prediabetes sufferer experiences health problems, the mora (family caregiver) provides advice, motivation, and encouragement. At the same time, the kahanggi (family caregiver) assists with the prediabetes sufferer, and the anakboru (family caregiver) assists with their needs.

## **SUGGESTION**

The advice given to the Padangsidempuan City Health Office is to coordinate with the Padangsidempuan City Regional Government to create policies, namely regional regulations related to rules for preventing the development of Prediabetes into diabetes mellitus, for example by implementing a Smoke-Free Area (KTR) and other policy briefs. Also working together with various cross-sectoral efforts to prevent diabetes mellitus in Padangsidempuan City.

## **ETHICAL CLEARANCE**

This research has obtained Ethical clearance from the research ethics commission of the Faculty of Public Health, Hasanuddin University, Makassar with no. 1796/UN4.14.1/TP.01.02/2024 dated July 29, 2024 to July 29, 2025.

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## CONFLICT OF INTEREST

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