# Culture, Ethnic, Lifestyle, and Diabetes

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## Abstract

Diabetes is a social health problem that is large with special attention in the community and among individuals. Nevertheless, the efforts to spread paradigm of health society to inputsocial determinant of health including analysis and contextual of social factors that are considered out of the scope of the health research is seldom conducted. As a result, the conceptualization of dynamic health inequality of diabetes is superficial. By using a holistic anthropologist lens has the potency to offer insight intothe character of socialdeterminer which is wider. The individual factor that is traditionally focused on the health of society and qualitative exploration structural, deeply local context, social environment, and culture, and their interaction and intersexuality, as the key factors, while considering how to reach alterations. The systematic study aims to describe that culture, ethnicity, and lifestyle have much impacton the patients of diabetes mellitus. The method of the systematic study is the article's investigations which are listed by PubMed with the keywords "culture, ethnic, lifestyle, and diabetes". Twenty-nine articles are got from the result of an investigation and after a selection has been done and got five articles to be analyzed furthermore. The result of the review of the literature study shows that culture, ethnicity, and lifestyle are able to influence the case of diabetes illness to the individual or group. On a certain ethnic group besides economic problem, the characteristic ofcertain body starts from size and shape of the body make someone can suffer from diabetes, in addition,the motoric activity of the body and physical activity can influence the case of diabetes.

***Keywords:*** *Culture, Ethnic, Life Style, and Diabetes.*

## Introduction

Health paradigm as a national movement in the context of health development toward Indonesia Sehat 2015 is an effort to increase national health which is pro-active. Thegoal of the effort is to push society to be independent to keep in their health and realize how important health service that is promotive and preventive without ignoring curative and rehabilitative efforts is.[1] The lifestyle change which affects the change of the eat behavior pattern can cause degenerative illness. Diabetes Mellitus is one of the degenerative illness. It is a group of metabolic illness which is marked by increasing of blood sugar levels. The increase can occur because of the abnormality of the secretion of insulin, insulin work, or both of them.[2,3]

Based on the data of the World Health Organization (WHO) Indonesia is the fourth-biggestin Diabetes Mellitus patient number in the world.In 2006, the total of Diabetes Mellitus in Indonesia reaches 14 million people. From those numbers, just 50% of patients realize that they suffer from diabetes and around 30%

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among them undergo routine treatments. Environment factors and unhealthy lifestyles, such as eating too much, overweight, lack of activities, and stress have an enormous role as the cause of Diabetes Mellitus. Besides that, Diabetes Mellitus can occur because of genetic factors (Mahendra, et al, 2008).

Around 60% of the number of diabetes patients are in Asia.(4) Indonesia is in the fourth position and has the most cases of Diabetes Mellitus in the world.(5) In 2000 in Indonesia there are 8,4 million Diabetes Mellitus Patients and it is estimated to get 21,3 million in 2030. (6)In diabetes map InternationalDiabetes Federation list Indonesian over 20 years old is 125 million and by the assumption of Diabetes Mellitus prevalence 4,6%. Based on the pattern of current population growth, it is estimated that in 2020 there will be 178 million of the population over twenty-year-old within assumption prevalence of Diabetes Mellitus 4,6% will be 8,2 million Diabetes Mellitus patients.(7)

Diabetes Mellitus become the highest cause of death in a certain age group. It makes Indonesia is on the fourth world position as a country that has the most diabetes Mellitus cases. In Jawa Timur, is got that the highest prevalence is in Surabaya where is 6,2 %.(8) The result is predicted that it will increase in 2030 and become 21,3 million people. Diabetes Mellitus is on top five of the biggest illness that spreads in PuskesmasPutat Jaya with 3.555 cases (6,37%).

In ancient times, Diabetes Mellitus is considered an "old illness" because more cases are found over forty-year-old, but now there has been a shift in disease. The illness transitions show that Diabetes Mellitus does not only attack elderly age but also attacks children and adolescents. The research conducted by the Child Endocrinology Coordination Work Unitthroughout Indonesia in 2012 showed that the number of patientswith diabetesin children and adolescents under 20 years-old was 731people. Diabetes Mellitus in children and adolescents can be caused by some factors, one of them is the genetic factor in which children and adolescents with Diabetes Mellitus parents are at risk of developing Diabetes Mellitus

The effort of preventions can be done to adolescents, especially those who are at risk in order tofor them to not suffer from Diabetes Mellitusin the future, so the prevalence of Diabetes Mellituscases can be brought down. Nutritional needs during adolescence are relatively bigger than other periods because adolescence is aperiod ofgrowth and development. Nutritional needs in adolescence need attention because changes in lifestyle and eating habits at this time have an impact on the need for and intake of nutrients.(9)

Diabetes Mellitus (DM) is a disease, in which the condition of glucose levels in the blood exceeds normal limits.This is because the body is unable to release or use insulin adequately.Insulin is a hormone released by the pancreas and is the main substance responsible for maintaining blood sugar levels in the body to keep it in balance.Insulin functions as a tool that helps sugar move into cells so that it can produce energy or be stored as an energy reserve.(10)

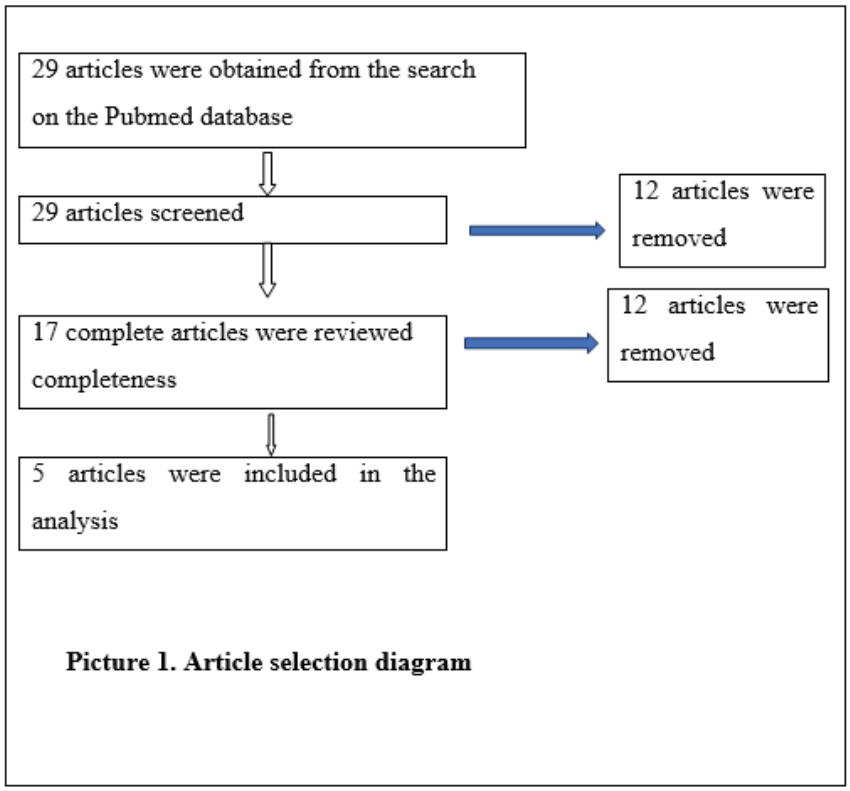
Diabetes mellitus is characterized by chronic hyperglycemia. The patients with Diabetes Mellitus will be found by various symptoms, such as polyuria (lots of urination), polydipsia (lots of drinking), and polyphagia (lots of eating) with weight loss.Hyperglycaemia cannot be detected because Diabetes Mellitus does not show symptoms (asymptomatic) and often referred to as the "Silent Killer" of human beings and cause vascular damage before the disease is detected. Diabetes Mellitus can causemetabolic disorders thatcause macrovascular and microvascular pathological disorders in the long-term.(11)

So far, diabetes has focused on diet only, but there are important things that have not been noticed, namely culture, ethnicity, and lifestyle, apart from genetic factors. Culture, ethnicity, and lifestyle can affect food consumption patterns which can result in overweight conditions and can trigger of arising of Diabetes.The original culture of ethnicity as well as the cultural changes experienced due to modernization can play an important role in the prevalence of diabetes in a certain

ethnic group. Therefore, the aim of the literature study is to provide an overview of how culture, ethnicity, and lifestyle can have no small effect on the occurrence of Diabetes.

## Method

In this literature review, was conducted an in-depth study of articles published in various journals indexed by Pubmed.The keywords used in the article search were "culture, ethnicity, lifestyle, and diabetes". In choosing articles, flow charts are used.The articles selected for analysis (inclusion criteria) were(1) articles containing descriptions of how a culture, ethnicity, and lifestyle can affect diabetics; (2) articles containing the location of diabetics; and (3) articles containing data on diabetics. Meanwhile, the exclusion criteria were articles written other than in English or Indonesian.Data taken from each research article includes information about diabetes, the location of diabetics, and data on diabetics.




**Picture 1. Article selection diagram**

## The Result

A total of 29 articles in the form of titles and abstracts were found in the search, as shown in Picture 1. The articles were checked, then were chosen 17 articles to be selected furthermore based on the inclusion and exclusion criteria. After eliminating the unsuitable articles, there were 5 articles published from 2013 to 2015 for further analysis (Table 1).

**Table 1. Articles selected for systematic review**

| No | Author, Year, Title |
|---|---|
| 1 | Małgorzata E. Drywień, Joanna Frąckiewicz, Magdalena Górnicka, Beata Ważna, Paulina Zielińska, Katarzyna Wójcik, Stanisław Kulik, 2017 Somatotype, diet and nutritional status of females |
| 2 | Toni Tripp-Reimer, PhD, RN, FAAN, Eunice Choi, DNSc, RN, CS, Lisa Skemp Kelley, MA, RN, and Janet C. Enslein, MA, RN, 2001 Cultural Barriers to Care: Inverting the Problem |
| 3 | CATHERINE A. CHESLA, RN, DNSC, FAAN, KEVIN M. CHUN, PHD, CHRISTINE M.L. KWAN, PHD, 2009 Cultural and Family Challenges to Managing Type 2 Diabetes in Immigrant Chinese Americans |
| 4 | Joseph G. Grzywacz, PhD, Thomas A. Arcury, PhD, Eddie H. Ip, PhD, Ha T. Nguyen, PhD, Santiago Saldana, MS, Teresa Reynolds, BA, Ronny A. Bell, PhD, Julienne K. Kirk, PharmD, and Sara A. Quandt, PhD, 2013 "Culture" in Diabetes-Related Beliefs among Low- and High- Education African American, American Indian, and White Older Adults |
| 5 | Rochelle K. Rosen, 2012 Perspectives on Diabetes and Obesity from an Anthropologist in Behavioral Medicine Lessons Learned from the "Diabetes Care in American Samoa" Project |

In this systematic study, the following data were collected on the relationship between energy value and nutritional intake with body shape and size parameters (weight, height, waist, and hip line) which were carried out in 2014 and 2016 on 148 female volunteers aged 57- 88 from Mazovian and Lublin Province (Poland).The sample selection targeted elderly age with different body types.The exclusion criteria were: multi-organ failure, cancer, and disability.Then among the subjects, a survey was conducted, which included demographic data, lifestyle, health status, and vitamin and mineral supplement intake.WHR and BMI index, total protein intake, animal protein intake, vitamin E intake ($p \leq 0.05$), and fat, phosphorus and thiamine intake ($p \leq 0.1$).The results showed that the place of residence, physical activity, chronic disease, diet use, fluctuations in body weight, BMI, and WHR differed depending on the somatotype in female groups. Endomorphic subjects had a significantly bigger waist and hip line and diastolic blood pressure compared to other somatotypes. The somatotypes only have a significant effect on total protein, animal protein, and vitamin E intake, and ectomorphic elderly women may be particularly susceptible to nutritional deficiencies. Due to the risk of macronutrients, vitamin and mineral deficiencies in the diets of the women examined, the mean age of the subjects was 68 years. Most of the subject's education is high school.The majority of women surveyed live in cities of more than 100,000 residents.Significant differences were found between somatotypes and residence ($p < 0.001$).Ectomorphic females are most prevalent in cities with under 100,000 population.Mesomorphic and endomorphic subjects live mainly in cities with a population of over 100,000.Among the villages, the most dominant are endomorphic.Statistically significant relations between somatotype and physical activity, chronic disease, and application of a special diet were observed.All women with ectomorphic physiques engage in regular physical activity such as recreational activities.The majority of mesomorphic women are active, unlike the endomorphic ones who rarely do physical activity. The chronic disease most often occurs in an endomorphic physique. The application of a special diet is most popular among endomorphic women, less popular with mesomorphic subjects, and least popular among ectomorphic subjects.

Endomorphic women were more likely to experience fluctuations in body weight than those in other groups. All are ectomorphic and mostly mesomorphic are thin. Conversely, the highest number of women who were overweight or obese was found in the endomorphic group.They also had significantly more frequent WHRs above 0.8 (the tendency for ectomorphic abdominal obsession ($p < 0.001$).Diastolic blood pressure differed significantly in somatotypes and was significantly higher in endomorphic women than in ectomorphic ones ($p = 0.046$).Average daily energy intake, total protein, animal and vegetable protein, fat, saturated fatty acids, monounsaturated and unsaturated fatty acids, cholesterol, sucrose, and fiber were estimated based on a 3-day diet.Statistically significant higher total protein intake was found in endomorphic subjects, than lower in mesomorphic ones, and low in ectomorphic women ($p \leq 0.05$).There was a statistically significant effect on the somatotype of animal protein intake.Ectomorphic and mesomorphic consume less than endomorphic. In the study group, the tendency to increase total fat intake among endomorphs was also higher compared to other types ($p \leq 0.1$).There are no other statistically significant differences in macronutrient intake between the somatotypes.The highest propensity for higher intakes of amines ($p \leq 0.1$) and phosphorus ($p \leq 0.1$) was observed in women with endomorphs compared to the other groups.Intakes of other vitamins and minerals are similar in all subjects regardless of somatotype.[12]

Ethnic society was stripped offfrom their land and forcibly resettled and reserved,which currently have the highest unemployment rates in the United States. For years, diabetes rates have been very low among Native Americans.In the 1950s, the Cornell University Medical Team provided and performed physical examinations for most members of the Many Farms Navajo community and found several cases of type 2 diabetes. In 1998, Hall, Hickey, and Young 11 revisited many farms and collected the comparison data. They found that members are now 10 times more likely to have diabetes than they were 30 years ago. The main changes in society included dependence on subsidized food, consisting mainly of refined flour, cheese, lard, and refined sugar.These factors coupled with the dramatic reduction in physical activity resulted from changes to traditional work patterns and greater access to fast food. Healing rituals restore body, mind, and spirit to a state of balance for a balanced and harmonious life between food, activity, prayer, sleep, and social relationships. Widely in the Southwest and Mexico, they are known to be hypoglycemic to nopal (prickly pear cactus), garlic, onions, and hintonia (copalquin).Some of these ingredients also contain toxins. Hintonia, for example, con. contains alkaloid pyrrolizidine which can cause severe liver damage. 29,30 Other ethnic groups have followed suit.Rural South Africa Americans may believe that "blood sugar" is caused by an imbalance in eating (lots of sugar and starchy foods) and is exacerbated by stress.Common treatments include prayer, trusting in God, and the use of bitter foods and herbs (lemon juice, garlic, juniper berries) to neutralize the blood. Older African Americans may reverse the typical pattern of older ethnic members using more traditional therapies, including prayer, belief in God, and the use of bitter foods and herbs (lemon juice, garlic, juniper berries) to neutralize blood. Older African Americans with diabetes were found to use popular remedies less often. Chinese Americans may have incorporated diabetes into the traditional Chinese medical system. Diabetes may be considered a "hot" or yang illness that can be neutralized by "cold" or yin remedies. Ginseng is one of the cooling herbs believed to restore energy and cure diabetes. Mexican-American and Puerto Rican patients may believe that diabetes results from their consuming too much sugar or as God's will or punishment.This population reports the following symptoms indicating increased blood glucose: weakness, headache, nervousness, leg pain, joy, and anger. In one study of elderly Puerto Ricans with diabetes, more than half used herbs and prayer to treat diabetes, reporting that the latter provided a peacefulness that improved their diabetes.[13]

Culture and family challengesto diabetes management within foreign-born Chinese American families are identified as "participant" statements.

The family's symptoms challenged family harmony. Increased irritability as a diabetes symptom was frequently described as a challenge to family harmony. Participants noted that patients "get angry easily" particularly when their blood glucose was high. Emotional variability held particular resonance for Chinese immigrants because social ease, avoidance of overt expression of strong negative emotions, and accommodation of family members' expressed and unexpressed needs were culturally valued. Emotional fluctuations were most often attributed to the disease. The meaning of rice in the Chinese family diet was a culturally multifaceted and historically nuanced story about sustaining holistic health and well-being and partaking of symbolically vital food. Patients and families were challenged by being asked to restrict rice and change from familiar white "fragrant" rice to foreign "chewy" and "tasteless" brown, red, or black rice. These challenges were persistently noted by participants who felt called upon to cope with this change in communal meals. The importance of rice was taken for granted in group discussions. Participants agreed that the amount of rice provided in institutional meals - such as airplanes or hospitals is very small, "If you don't eat rice can you sustain your daily living?" Additionally, participants expressed significant suffering because of restrictions on rice, a symbolically comforting food. Many found that disease-related food restrictions disregarded cultural concerns for balancing foods (e.g., "hot" and "cold") understood to have specific medicinal properties according to traditional Chinese medicine (TCM). Even for those who did not specifically incorporate TCM in their diet management, the metaphor of balance was powerfully invoked. Participants additionally feared that diabetic food restrictions, if strictly followed, might lead to emotional imbalance and depression. Pleasurable food was generally appreciated as crucial to mental health and balance: "If I say every time, 'This and that you can't eat' some people would develop negative feelings and say, 'There's no meaning to life now.'" Patients' difficulties in following an appropriate diet at Chinese restaurants led some to withdraw from socializing over meals. Spouse: "Now when I asked her to go to dim sum, she would say, 'I am not going. You can go.' I don't want to go alone, right? (Why?) It's meaningless to go by myself." For many Chinese participants, social interaction was an integral part of a meal. Attending dim sum or Chinese breakfast alone was meaningless because meals were sustaining only if shared. Difficulties in managing the social elements of meals were intensified in ritual meals. Birthdays, weddings, or Chinese New Year's banquets, with multiple courses and desserts, were unavoidable, yet socially fraught: "Gee, I couldn't even eat a bowl of sweet dessert soup! How miserable." The social context of ritual meals provided layered concerns for patients and families. The presence of family reminded patients of their responsibility to observe diabetes restrictions, as a duty to family. "Since they tell you, you don't dare do it. You are well aware that the bowl of sweet dessert soup may do you a lot of harm." Reciprocally, family members felt obliged to care for patients' disease and yet at the same time to create social ease and pleasure. It's better to die. You restrict me like this and don't let me eat." Disagreements arose about whether all family members should observe the patient's dietary restrictions. A few participants argued in favor of family restraint because the diabetic diet supported general health and observing restrictions demonstrated camaraderie with the patient. Participants also argued against such family restraint as unnecessarily restrictive. He agreed to his wife's strict restrictions on family dinners but would not relinquish his breakfast pork buns. Families were additionally challenged when patients and spouses held differing expectations about what family members should learn about the disease. Some patients felt neglected because spouses were "not very aware" of the risks and demands of the disease.[14]

These results suggesting that beliefs about diabetes held by low-education African Americans and American Indians differ from all other groups is also consistent with Kawachi and colleagues'contention that the combination of educational attainment and ethnic minority status has the potential to create distinct contexts for health disparities. Our results, when combined with the broader literature, suggest that

educational attainment and ethnicity both require careful consideration when developing and implementing culturally-appropriate diabetes education (and possibly broader health education) programs.Our multi-ethnic sample did not include individuals from other ethnic groups, like Latinos, that experience elevated rates of diabetes. The sample consisted of adults aged 60 years and older. Previous research suggests that age is associated with different EMs of diabetes among African Americans, presumably capturing either period or cohort effects. Consequently, the generalizability of the findings to young adults is unknown. Theoretically informed to ensure comprehensive coverage of diabetes-related beliefs. The comparative sample design with similar adults from three distinct ethnic groups provides a solid foundation for examining cultural differences in diabetes beliefs. The structure and content of diabetes beliefs held by Whites, African Americans, and American Indian older adults in rural North Carolina are very similar. Similarity across ethnic groups is particularly evident in the Symptoms and Consequence domains of diabetes beliefs. Where ethnic differences do exist, they appear to be driven primarily by socioeconomic factors rather than "ethnicity".[15]

71 percent of American Samoa females were obese and another 19 percent were overweight, leaving fewer than 10 percent of American Samoa females within the range of normal BMI. The reductions of physical activities that come with a transition away from an agricultural economy, other factors are directly connected to these increases in obesity and its related disease such as diabetes. Food choices have changed from a traditional plant and fish-based diet to one with a heavy reliance on highly processed imported foods, resulting in higher consumption of calories, protein, simple carbohydrates, cholesterol, sodium, and saturated fat. Fast-food consumption has also increased and as of this writing, the main American Samoan island of Tutuila has several fast-food outlets, including two MC Donald's. in 2011 the local franchises began advertising Samoan burger: a big mac sandwich to which a fried egg is added.[16]

## Discussion

Somatotype can be defined as the present morphological state of the individual. The ectomorphic body type is characterized by a slim physique, weak bones and muscles, sloping arms, relatively short torso, and long limbs. The chest is narrow and flat, arms rounded, thighs and shoulders weak, fingers long and delicate and skin is dry. This body type is characterized by rapid energy expenditure, low-fat cell count, and as well as slow muscle growth. The ectomorphic physique requires less intensive training, longer interruptions, higher protein intake, and an adequate resting period. Ectomorphs are considered introverted, ill-tempered, irritable, with a tendency to schizophrenia. A mesomorphic physique is a muscular body type with a strong skeleton, broad shoulders and chest, firm limbs, massive pelvis, and very fast muscle growth. A mesomorphic person is regarded to be energetic, active, dynamic, and aggressive. In contrast, the endomorphic type is characterized by a rounded physique, a large number of fat cells, a larger waist circumference than the chest, a large head, a broad face, and a short neck. Besides endomorphs have rounded shoulders, relatively short and weak limbs and fingers, small feet and hands, and strong bones. Results are presented in a three-digit form. An individual who has only endomorphic features has the assigned symbol 7-1-1, while a person with only mesomorphic characteristics 1-7-1 and ectomorphic one 1-1-7. This means that there are 343 possible combinations.[17]

Because females have a higher total fat mass, there are more femalesin an endomorphic state. The change happens as at both sexes except mesomorphic somatotype group increased until 50-year-old at the females and thereafter decreased, and Male endomorphy remained almost unchanged at the somatotype components. dried after age 30. The largest difference of all somatotype components was between the age groups 18–40 years. The mesomorphy continued to increase until the 6th decade and then decreased. The number of ectomorphy decreased until age 50 years and then there is no more

change to be observed.[18]

Somatotype, diet, and female's nutrient status 395 of endomorphic components, stability in one mesomorphy, and a little increase in ectomorphic components. It is believed that somatotype may be important in age studies like diabetes type 2 and Alzheimer's disease where the differentiation of the big body is observed. The somatotype technic can be equipped to observe and study the change of physic in this case illness.[19]

For reasons which are mentioned above and the relation between body composition and energy and the order of nutrition in this research between somatotype and diet and nutrient status of females,age 57-88 has been checked. Subjects and method of the design of the study and the research which was conducted in 2014 and 2008 2016 about 148 females 57-88-year-old from Mazovian and Lubin Province (Polandia). The result of the study in this paper is the first in Poland to show the effect of somatotype to indicators which are chosen from the health status, diet behavior, and national status nutrition of elderly females. The relations between somatotype and blood pressure has been shown in this research. Found that female endomorphy have diastolic blood pressure which is higher than mesomorphic and ectomorphic. The same correlation has been shown where the endomorphic subjects are characterized by higher blood pressure than another type.[18]

The government of CaliforniaState, for example, has the competency of established culture orientation to have contractor medical plans. 9 culture competencies include awareness and sensitivity of different cultures: knowledge of cultural values, beliefs, behaviors; and skill to work with a culturally diverse population. Cultural competency needs both at the practitioner level and agency. Contents and instruments have been available to evaluate practitionersand agency of cultural competency and to create service of cultural competence.[20]

A cultural assessment is a focused and systematic appraisal of beliefs, values, and practices conducted to determine the context and substance of client needs and then to best adapt (or construct) and evaluate health interventions. Unlike physical assessments, cultural assessments are necessary for each of the three phases of professional practice: problem identification, intervention, and evaluation. Cultural assessments are not exhaustive of all aspects of culture, but rather are focused on those elements relevant to the presenting problem, necessary intervention, and participatory evaluation.Needs to consider cultural factors in the treatment of diabetes patients has been identified for several decades. However,it is not close to problem-solving effectively. The main reason is that patient's culture is often seen as a problem, the cause-obstacle to care. Our problematize are patients and culture. Next, by thinking that culture is what another has, we mind that culture can keep away from ethnic patients.[21]

However franchise of fast food is a new phenomenon, Samoa non-high fat food has been part of the island diet since the early 20s century, while canned meat imported by the US army become a precious class that used in food exchange -an important golden rule for many cultural events.[22] The level of practice decreases because of the movement of agricultural and sub-system when giving birth lose the source of core physical activity regularly. [23] Although epidemiology research isin progress and perhaps gives the evidence of the impact of new genetic, modernization, American culture, and the change of another lifestyle in the last thirty-forty years all of them contribute to the levels of epidemy of obesity and diabetes.[23]

Samoan Concepts of Health, Body Image and Individuals Previous body image studies among Samoan adults have demonstrated the acceptability of large body size. Traditionally as well as in the past, larger body size was seen as beautiful and correlated with social prestige. [24]

## Conclusion

The general data of respondents on the five articles above show that most female respondents havea higher risk to have diabetes than males.It is caused by stress levels of psycho-social and people with colored skin had higher diabetes prevalence than white people because of

socioeconomic problems. Until now, we have assumed that when we exercise self-control and strict dietary regulation of what enters the body according to our knowledge, we will avoid diabetes and based on the writer's opinion that while someone's knowledge of disease is pretty good then they will avoidthe disease, but in the five articles above, there are not so many factors that influence, namely culture, ethnicity, and lifestyle. Therefore, in-depth research is needed in Indonesia to find out whether culture, ethnicity, and lifestyle really influence the prevalence of diabetes considering there are so many tribes in Indonesia.

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