CHAPTER 5

Glycemic Control Practices in the Sri Lankan Cultural Context

This chapter is divided into three parts. The first part provides sociocultural context of the communities. The second part illustrates findings giving detailed description of glycemic control practices among adults with T2DM within their cultural contexts. The third part, the discussion, concludes the chapter.

Part I: Sociocultural Context of the Communities

This section serves as background context for the following information which reports the findings of the ethnographic phase of the study. The section is divided into four subtopics. The first is a brief description of Boralesgamuwa and Dehiwala, the communities where the ethnography was conducted, in Colombo district. The second is a description of the relationship between the religion and health among people in these communities. The third is an explanation of the traditional festivals and the food customs in Sri Lanka. The fourth explains the medical pluralism practiced by Sri Lankans.

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Description of Boralesgamuwa and Dehiwala Area

In the Western province there are three main districts namely Colombo, Gampaha and Kalutara and the Western Province accounts for more than one fourth of the total residents (28.8%) in Sri Lanka (Department of Census & Statistics,

2010b). According to a district–wise analysis of the population, Colombo district continues to be the most populous district of the country with a population of 2,323,826 (Department of Census & Statistics, 2012). Further, migration of people into these areas further facilitates the socioeconomic advancement of the area.

The borders of the city of Colombo are extended by formulating a circular area surrounding the city known as the Greater Colombo Area. The areas of Dehiwala and Boralesgamuwa belong to this area, and have developed rapidly due to the open economic policies of the government. The communities where the ethnography was conducted are located in one village in the District of Colombo (See Figure 1).

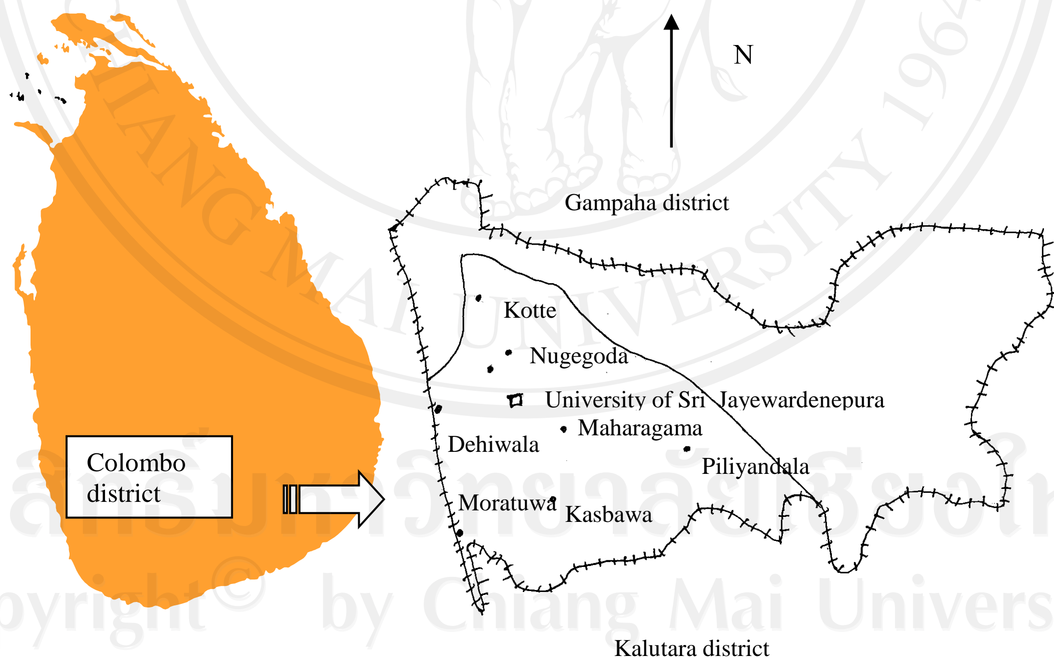

Figure 1. Map of study setting

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In Dehiwala and Kesbawa (part of the Boralesgamuwa) health areas there is a population of 87,834 and 244,062 respectively (Department of Census & Statistics, 2012). The population has over 51 % of females in both areas (Department of Census & Statistics, 2012). The 15-59 years age group consists of more than 60% of the population. Those more than 60 years consist of over 13% of the population in both areas (Table 5-1) (Department of Census & Statistics, 2012). Since T2DM is a health problem seen mostly in the elderly and the presence of a greater number of older people in the population makes the prevalence of the disease greater.

Table 5-1

Population and Gender Proportions of the Two Communities

District and Divisional Secretary's Division	Total number of persons	Male (%)	Female (%)	Age 15-59 year (%)	Age 60 years and above (%)
Dehiwala	87834	42687 (48.6)	45147 (51.4)	55630 (63.3)	14207 (16.2)
Kesbawa	244062	118738 (48.7)	125324 (51.3)	158452 (64.9)	33339 (13.7)

Note. From *Population of Sri Lanka by district*, by Department of Census & Statistics, 2012, Retrieved from http://www.statistics.gov.lk/samplesurvey/occ_code.pdf

Migration of workers to the industrial areas in Dehiwala and Kesbawa areas promoted an increase in the population. The development of the roadways promoted and further enhanced the development. The upgrading of schools, health centers and facilities, such as cheaper housing with easy access to the central city of Colombo, further promoted the migration of families into the area. As a result of development of industries, a number of employment opportunities opened up for men and women. Most people selected the Boralesgamuwa and Dehiwala areas as suitable for residence

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due to the ease of commuting to the city of Colombo which is the commercial and administrative hub of the country.

Along with the above developments, there was rapid urbanization and extensive town and road development. This has caused rapid development of the towns in the area including Boralesgamuwa. In addition the first high speed transportation highway was built cutting through this area and therefore it has linked up Boralesgamuwa to the central city of Colombo easily. This has enhanced transportation facilities and along with it people have migrated to the area to find better paid forms of employment. These development processes have converted the area from farming land to a more industrialized township with manufacturing factories, warehouses, and offices.

Furthermore, the sociocultural environment of Boralesgamuwa and Dehiwala areas has improved and changed extensively over the last 30 years. Since the liberalization of the economy and the opening up of the rural sector in 1977, there has been a dramatic change in the rural environment that prevailed in the area. The social status of the people changed from farm and plantation cultivation to more modernized coconut and vegetable farming. The development of several multifaceted industries, amongst them garment manufacturing, porcelain/pottery manufacturing, rubber tire vulcanizing and rebuilding, car/vehicle repairing, and pre-mix concrete manufacturing, have provided multiple employment opportunities for men and women.

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Religious Beliefs and Health

Sri Lanka is mainly a Buddhist country; there is a strong impact of Buddhist religious belief on the individual's personality. Often Buddhists believe that they pass through from one life to another in a wide cosmic journey. In this process any acts of good or bad one does are returned back to one in the form of good or bad fortune. This provides a better sense of balance for one to face adversity with equanimity and acceptance. Therefore, most Sri Lankans, even though some of them do belong to another religion, they use the lay term "karumaya" or penance, when they have to face something very unfortunate especially with regard to illness. As for example, contacting a disease which has no cure like cancer, dying due to illness, or dying prematurely without living one's life span, are all considered a karumaya. This term derives from the Sanskrit word karma in the Buddhist religion. Likewise, if people have good fortune or a good result from something, they believe that it has happened due to their good karma. Some examples considered as good karma are living with no major illness (being healthy in old age), recovery from a severe illness, and recovery from a severe diabetic foot ulcer without amputation.

Peoples' religious beliefs and practices have changed over time and most people who practiced many traditional rituals have converted over to the recognized religions of Buddhism, Hinduism, Christianity, and Islamism. Some rituals are still practiced to overcome the effects of demons, and paranormal experiences causing illness and mental illness to people. These are known as Bali and Thovil. They are practiced minimally unlike in the past. When people fall seriously ill often the relatives consult a soothsayer or an astrologer who can read the horoscope; an

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astrological chart prepared according to the time of birth. The soothsayer/an astrologer predict the future and lists out remedial measures to overcome the bad karma. In this context, karma is known as a retribution or punishment meted out by fate or circumstances for bad deeds and actions performed by one in a past life or the present life.

In the study setting, there is a very popular buddhist temple, Bellanvila Maha Vihara. Often most Buddhist temples have a "Bo tree" (similar to the tree under which the Buddha attained enlightenment). This temple too has a bo tree and people believe that worship at this tree will bless them and promote them to achieve good health. I observed many of my informants going there to make a wish or bara-hara to have better health. Most Buddhist people do some rituals to pray for better health such as bodhi pooja, praying and worshiping at a bo tree. The bo tree is venerated by Buddhists in the country and also caring for the tree by pouring water to it venerating by offering with flowers, and holding incense is a form of paying homage to the Buddha. Often patients or their relatives pray on behalf of the diseased and make a wish, known as bara-hara, that is, they make a wish and tie a small piece of cloth with a washed coin promising to do a good deed when the wish is fulfilled. Drinking religiously chanted and blessed water, given by a Buddhist monk or Kapumahaththaya (a leader in the Dewalaya), or a Christian priest is also another form of ritual. The religious leader prays and blesses the holy water first and then it is given to the patient to drink.

I observed in the study area there are mosques and churches, so informants go to these places to pray when they have time in addition to their daily worship or praying at home. When I made home visits I observed that some informants had

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plenty of Buddhist books, or Compact discs with Pirith (recorded Dhamma chanting) on their table. Many times some informants showed a Buddhist book and informed me of the pages they read in those books and how they understand the Dhamma teaching in relation to their life events.

Traditional Festivals and Food Customs in Sri Lanka

This study was conducted during the month of April which celebrates the Sinhala and Hindu New Year. Regardless of other issues, all Sri Lankans celebrate the New Year with its traditional customs. A number of traditional sweets and sweet meals containing large quantities of refined sugar, and coconut sugar syrup are prepared in every home to celebrate the New Year. Often families gather in family reunions, parties, treating relatives, neighbors with sweets, visiting relatives and neighbors' houses, to pay respect to each other are all prominent customs during this time. Usually serving visitors with some traditional sweets and a cup of tea is the traditional custom in every house as a mark of their hospitality and welcome during this New Year season. As I observed during my field visits, some informants faced uncomfortable situations because they could not eat these sweets or drink beverages with sugar and also they could not refuse it as it is very impolite. One informant reflected as follows:

> *You know during this New Year time we have to go to see our relatives. It is a must and also a custom. Everywhere they have plates full of sweet things kawum (oil cake), Aluwa, Asmee (kinds of Sri Lankan sweets) when we go to a house they treat us with these... so I am reluctant to go because I cannot eat... all are sweets, how can I refuse? It is not nice, my children are really happy to visit others How can I not do it?(Female, 39 years old)*

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Drinking tea with sugar and eating bread made of refined wheat flour are some dietary habits which were inculcated by the Portuguese, Dutch and British when Sri Lanka was colonized by Europeans before 1948. Especially during the British period, they started cultivating tea in Sri Lanka and commercially exporting it. Thus Ceylon tea became a very popular hot refreshing beverage all over the world. Since that time, Sri Lankans use a cup of tea with sugar as their main hot beverage. Sri Lankan also use a cup of tea as the welcome drink for visitors. Usually, cup of tea is prepared by boiling water and pouring it into the tea pot with dried tea leaves. The water is left to absorb the flavor from the tea leaves for few minutes. Then the flavor absorbed tea is strained into a cup. Sugar and sometimes milk is also added to the tea to enhance the flavor and taste.

Sri Lanka is an agricultural country with a tropical monsoon climate where plenty of rice is grown in paddy fields. Therefore, eating rice for three meals has been the staple dietary practice amongst almost all people in Sri Lanka for centuries. Though the country grows topical vegetables, eating a relatively big portion of rice with few portions (mostly one or two) of vegetable curries cooked with coconut milk, green leaves with coconut shreds (so called mallung) with a meat (mostly a fresh fish or dry fish curry, occasionally chicken curry) is the normal meal, regardless of socioeconomic status. As the country is an island, plenty of sea fish provide the main protein source for a reasonable price, especially in the Western province.

Additionally, the use of a wide range of spices play a major central place in Sri Lankan food customs, and adding coconut milk to cooked vegetables is the usual cooking art among people. Generally, in cooking the emphasis is on taste and flavor rather than on visual presentation. Banana and papaya are the most common fruits

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available throughout the year in Sri Lanka and are the most commonly consumed fruits. There are some slight differences between the cooking styles among ethnicities and religions but in general they all cook in the same way with coconut extract as the main base for the curries with spices.

Medical Pluralism Practiced by Sri Lankans

Sri Lanka has a wide range of alternative healthcare systems, which are patronized by the general population. Considering the debility of the disease and the lifelong need for medication of the disease, most affected patients with T2DM get tempted to try this multitude of available remedies. The constriction of the day-to-day life style with the prescribed medication regimen, diet control and the need for exercise, most patients get motivated to seek alternative treatment methods to run in parallel with the western medicine. When visits were made to the Ayurveda practitioners, I observed the same patients who had attended the western medical diabetic clinic at the Colombo South Teaching hospital.

This confirms the view that most Sri Lankans practice all types of health care facilities available to them in the area, be it Western medicine, Ayurveda medicine, or religious practices. Hence a multifaceted medical pluralism is practiced by Sri Lankans regarding their health-seeking behaviors. Although most medical practitioners are aware that most patients with T2DM are influenced by traditional food and dietary practices and beliefs of the community, the extent of this awareness was highlighted only in this study. This creates an urgent need of all Western medical practitioners and health care workers to take into consideration the needs of these

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patients with T2DM in the context of multiculturalism, multiethnicity, and pluralism in medical care.

Part II: Glycemic Control Practices in Sri Lankan Context

Table 5-2 shows that there were more female informants (78.6%). The age of informants ranged from 37 to 69 years. The majority of the informants were above 50 years of age. All of them were married. Majority of them belong to the Sinhala ethnic group (64.3%), however some were of the Tamil (21.4%) and Muslim (14.3%) ethnic groups. Half of them (50%) had education up to grade five and most of them (50.0%) had an average household monthly income above 20,000 Sri Lankan rupees. Nearly equal proportions of the informants had type 2 diabetes and more than half of them (57.1%) had uncontrolled glycemic levels.

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Table 5-2

Characteristics of Adults with T2DM (n=14)

Characteristics	Number (%)
Gender	
Female	11 (78.6)
Male	3(21.4)
Age (Years)	
≤ 50	4(28.6)
>50	10(71.4)
Range = 37- 69	
Mean (SD) = 55.9 (9.67)	
Ethnicity	
Sinhala	9 (64.3)
Tamil	3(21.4)
Muslim	2(14.3)
Educational status	
0-Grade 5	7 (50.0)
Grade 6- O/L	4 (28.6)
≥ A/L	3 (21.4)
Average monthly income Sri Lankan Rupees)	
≤ 10,000	5 (35.7)
10,001- 20,000	2 (14.3)
>20,000	7 (50.0)
Duration with T2DM (years)	
≤ 5	4 (28.6)
6- 10	3 (21.4)
11- 20	4 (28.6)
≥ 20	3 (21.4)
FBS (mg/dl)	
≤ 126.0	6 (42.9)
> 126.0	8 (57.1)

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Table 5-3 provides detailed demographic characteristics of Ayurveda practitioners/traditional healers who participated in in-depth interviews. Two thirds of informants were male (66.7%) and the majority of them were Ayurveda practitioners. Most of them were aged above 50 years (55.6 %), and most of them (66.7%) had more than ten years of experience in treating adults with T2DM. As a result, these informants had wide experience of caring for adults with T2DM and had perceived their behavior.

Table 5-3

Characteristics of Ayurveda Practitioners /Traditional Healers (n=9)

Demographic characteristics	Number (%)
Gender	
Female	3(33.3)
Male	6(66.7)
Age (years)	
≤ 50	4(44.4)
>50	5(55.6)
Occupation	
Ayurveda practitioner	6(66.7)
Traditional healer	3(33.3)
Treating adults with T2DM (years)	
≤ 5	1(11.1)
6- 10	2(22.2)
>10	6(66.7)

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Glycemic Control Practices

Findings from informants and field work are presented in five themes (Table 5-3). These five were: 1) gaining religious support; 2) changing food habits as a struggle; 3) doing exercise is challenging; 4) taking Western medicine causes long-term consequences; 5) using Ayurveda/traditional treatment to be cured. Each of the themes are discussed as follows:

Table 5-4

Themes and Subthemes of Informants Experience About Glycemic Control Practices

Theme	Sub-themes
Gaining religion support	Bad karma cause diabetes
	Praying /worship for better health
Changing food habits as a struggle	Facing hunger with less amount of rice
	Getting disappointed with restriction of taste
	Having conflict to prepare separate meal
	Reducing sugar intake is enough
	Limiting certain food can control diabetes
Doing exercise is challenging	Daily work is enough
	Having a busy life
	Exercise is not common
Taking western medicine causes long- term consequences	Medicine harms the body
	Have to take medicine forever
	Skipping medicine when feeling good
Using Ayurveda/traditional treatment to be cured	Ayurveda/traditional treatment is natural, does not harm the body
	Trust the Ayurveda/traditional treatment
	Beliefs in healing with herbs and vegetables

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Gaining Religion Support

Most of the informants believed that they got diabetes due to their bad karma and they prayed or worshiped to have better health as follows. Most informants practiced their respective religions and often went to temples or other religious places to pray for better health or cure.

Bad karma causes diabetes. According to the informants' point of view, the main cause for getting diabetes is due to their bad karma in the previous life or this life. Although most of them had a positive family history of diabetes they believed that they became affected with diabetes as a result of bad acts they have done in their past life, for example:

> *I do not like sweet things, since I saw how my grandmother and mother suffered with this sugar illness. I didn't eat sweets, but I still got it. I think I got it because of my bad karma; I may have done a bad thing in my previous life and so I got this in this life. (Female, 37 years old)*

Likewise this informant's husband also believed that the cause for diabetes is bad karma:

> *Actually this kind of illness happened due to poorwa karma (past bad karma). My wife is young , but she cannot eat as she likes, cannot go out as she wants, have to take these injections every day ...you know all are dukka (sufferings)*

Some of them also attributed the disease to be a bad return (penance or punishment) for a bad action done in a previous life. One informant expressed her ideas as follows:

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Why I did I get this? I cannot eat as I want, have to take this and that tablets oh... it is my bad karma. I may have done harm to somebody in my last life. I didn't do anything bad purposely this life (Female, 62 years old)

Praying /worshiping for better health. The majority of informants believed that their religion is a support system to get better health, whether they belonged to Buddhist, Hindu, Muslim or Catholic religions. Most spent some time of their day to pray or worship their respective religions. They believed that by doing they could live healthy lives without the complications of diabetes and have better health until death. As mentioned earlier in this chapter, these informants go to temple or other religious places to pray for better health or cure. Moreover, some Buddhist informants did some rituals to pray for better health such as bodhi pooja and also caring for the bo tree by pouring water, offering flowers and incense. Often these informants and their relatives pray on behalf of the diseased and make a wish, as bara-hara. Furthermore, it was observed that during field visits most informants devoted some time daily, to worship or pray to Lord Buddha, God Shiva, God Jesus or God Allah. Some of them asked Lord Buddha or other leaders to protect them from this disease in their next life (birth). It was observed that most of them have arranged a separate place in their home to worship or offer prayers according to their religion. Some visited the places of worship daily or two to three days per week, or during the weekend. Christian informants prayed at Sunday mass.

Some informants worshiped the bo tree and other Gods praying and requesting for relief from the deity for their suffering, from the complications of diabetes such as body aches, and leg pains. Some informants expressed their ideas as follows:

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I go to the Bellanvilla Temple when I have time, especially on weekends. I go there and worship for relief from these pains. I pour water on the bo tree, after that I worship God Katharagama, Godess Kalimani for my health. I know they help me. (Female, 65 years old)

When I have time I go to the Bellanvila Temple with my daughter. I worship for hours by sitting there. I feel sanaseema (calm) in my mind when I sit under the Bo tree. I ask our Lord Buddha to give me better health, I worship two times every day at my home too (Female 62 years old)

Some informants' family members also believed that going to the temple helped them to feel better:

I take my wife to worship Belalnvila vihara when I have time. It helps her to be happy and calm. She worries about her diabetes a lot. (Informant's Husband)

One Hindu informant prays to God Shiva and Goddess Kalimani for better health. She prayed to God Shiva every day, and prays to Goddess Kalimani every Wednesday and Friday. She strongly believes that they will protect her from suffering from her illness and give good health to her:

I believe in our God. I pray to God Shiva, Goddess Kalimani for my health every day. I have their help. I know that they protect me from illness and give me good health. (Female, 59 years old)

Likewise, some Christian informants expressed their beliefs in religion as follows:

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I pray to Lord Jesus every day. On Sundays I go to Church for Sunday mass. I pray to Lord Jesus asking for better health, and relief from this suffering. (Female, 50 years old)

Another Muslim informant who had her leg amputated due to uncontrolled blood glucose levels told me that she prays to Allah:

I pray at my home for God Allah. I cannot go out now because of my leg but I pray every day. I ask him to allow me to live without pain and suffering from this illness. I already got my leg cut because of this sugar in my body. I do not want it to happen again. (Female, 51 years old)

However, some informants tolerate the illness because they believed that there is nothing to do now, because they have already got it. One informant and her husband (both with diabetes) refer to diabetes as a friend who does not go away from their body:

This diabetes is like my friend does not go away from my body, until I die this diabetes will live with me ha ha (laughs). If I worry about this illness I feel more sick, I cannot do my daily work and also feel sick the whole day, so I do not think about it, just follow what the doctor told me to do, just that. (Female, 51 years old)

Another said:

I have to live with diabetes until I die. The doctor told me that, so I don't worry, worrying does nothing. I have to go to do my job, earn money for living. If I worry I cannot be happy and do my job. I will not live for another 100 years, so I don't think about my illness, I take medicine, control my food as they told me. (Female, 54 years old)

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Changing Food Habits as a Struggle

Following the health personnel's advice on changing food habits to consume a recommended diabetic diet, was considered to be hard work by most of the informants. They mentioned many issues regarding changes in their food habits such as facing hunger with a smaller portion of rice, getting disappointed with restriction of taste, having conflicts to prepare a separate meal, reducing sugar intake is enough, and limiting certain foods can control diabetes. Each of these subthemes is discussed as follows:

Facing hunger with less amount of rice. Health care personnel's' advice to eat less amount of rice with more vegetables was not practical for the informants. This is because they are used to eating a relatively big portion of rice with less amount of vegetables in their life and as mentioned earlier, it is the normal eating habit in Sri Lanka. However, sometimes they ate less rice and they feel "not full" and hungry, and then did not adhere to the recommended diabetic diet plan. Two informants explained:

> *At the clinic, the nurse told me to reduce the rice amount in my meal, but I eat rice as usual. I cannot reduce the rice amount because I feel hungry, then I cannot work, I feel no energy to work. (Male, 41 years old)*

> *I take the same rice amount because if I reduce the rice portion as they advised me I feel hungry whole day. I have tried it two or three times but I feel hungry, so I eat rice as usual and more vegetables. (Female, 54 years old)*

Some Hindu informants use rasam (a thin soup made from Tamarind pulp and various spices and other ingredients, which is originated in South India) to eat

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with rice, then they were able to reduce the volume of rice. This is because when they eat rasam with rice they feel full. I observed this habit especially with Hindu informants because it is a common food habit among Tamil ethnicities; however, it is not a common practice among other informants. Some Hindu informants commented their use of rasam as follows:

> *I prepare rasam to eat with rice and then I need less rice. Because of rasam I feel full. I have been doing this for a long time (Female, 59 years old)*

Further, some Ayurveda practitioners and traditional healers encountered this feeling of hunger among their patients with T2DM, thus some of them advise their patients with diabetes to prepare a vegetable soup first, and eat it with less rice, to makes them feel full. Further, some traditional healers advised to eat some food prepared from kurakkan flour (*Eleusine coracana*, finger millet) as their breakfast or dinner because it has high dietary fiber and therefore takes a long time to digest. Eating food made of finger millet (Kurakkan) flour produces a sense of fuller and satiety. This flour has high fiber content and was a traditional favorite in Sri Lanka in the past. Some of them shared their ideas as follows:

> *Usually in our country we eat big portions of rice with less portion of other curries. Once we tell our patients to reduce the rice amount to reduce their carbohydrate intake it is not practical because they feel hungry. They are used to eating a big portion of rice, so what I advise them is I ask them to prepare a vegetable soup first. They can put whatever vegetable they have to make it and then eat it with the less amount of rice and you know it works. Some of my patients said they do it well. (Ayurveda practitioner)*

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I usually advise my patients to reduce the rice amount but it makes them hungry so I tell them to have some kurakkan pittu (steamed cylinders of ground rice flour mixed with kurakkan flour layered with coconut) or rotti (generally Indian bread containing kurakkan flour seed rice flour) for their breakfast or dinner. Then they feel full easily and do not feel hungry. (Traditional healer)

During my field visits I observed that many groceries in the setting sell kurakkan cereal. Also during the study period there were many newspaper articles highlighting that the importance of using kurakkan in diabetes. I also observed that some wives were aware the benefits of kurakkan for diabetes and prepared kurakkan pittu for dinner for their husbands with diabetes. Some of them expressed their ideas as follows:

I heard that kurakkan is good for diabetes and it reduces the sugar in the body, so I prepare kurkkan pittu or kurkkan string hopper two or three times per week for my husband. It is good for his diabetes. (Informant's wife)

Getting disappointed with restriction of taste. According to the informants point of view another highly mentioned struggle for changing their food habits was their disappointment with the restriction of taste. This is because health care personnel advised them to stop taking sugar and sweets. Further, they are advised to avoid adding the first extraction of coconut milk into curries and use less salt in the food. As mentioned earlier, drinking a cup of tea with sugar two-four times per day is the most common dietary habit amongst almost all Sri Lankans. Further, adding the first extraction of coconut milk to any vegetable curry gives a good taste because it has a high fat content. Adding salt to taste is normal cooking practice

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amongst Sri Lankans. Hence the advice to consume low fat, low salt diet does not suit the majority of informants. They reported their fondness for traditional Sri Lankan food and their displeasure with the advised diabetic diet such as:

Before having this sugar illness I drank a cup of tea with sugar 4-5 times per day, but they told me to stop sugar, but I still take some sugar into my tea, it is very difficult to drink tea without sugar. It has no taste at all. (Female, 55 years old)

Some informants and their family members mentioned that rather than viewing food simply as a form of substance, they considered food to be an essential ingredient to their quality of life. The following narrative explains this:

You know the nurse at the diabetic clinic told me to put less salt, add the second time coconut milk to curries. How can I do it? If I do like that I feel I am just eating boiled vegetables, no taste. It is very difficult to eat like that, one or two times can eat like that but cannot do it all the time, so I put enough salt and first time coconut milk when I cook. We all like to eat food with a good taste … (Female, 50 years old)

Likewise, some family members also mentioned that food restriction make their wife or mother unhappy as follows:

These people with diyawadiyawa (the Sinhala term for diabetes) cannot eat anything as they like. How can they be happy? Don't eat this thing, that thing... everyone tells like that. (Informant's husband)

I feel sorry for my mother. She likes to eat bread with butter and sugar but due to her diabetes she cannot eat. (Informant's daughter)

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Furthermore, some informants' use alternatives to drink their cup of tea to provide the sweet taste. Many informants use Jaggery (a traditional concentrated product of cane sugar or palm sap) because it gives a sweet taste. I observed this habit among some informants.

I take a small piece of Jaggery to drink my cup of tea, but I don't put sugar into my tea, tea is tasteless without sugar. Before I had this illness I drank plenty of tea with sugar, now I cannot. (Female, 65 years old)

However, some informants had already stopped taking sugar with their tea cup but still use the same usual meal in order to have good taste.

I stop taking sugar with my tea, at first it was very difficult but I practice it and now I can drink tea without adding sugar, but I still eat my meals as usual. In the past, my wife cooked curries with enough salt and coconut milk. I need to have a good taste in my meal. (Male, 41 years old)

During my field visits to informants' houses many times I was offered a cup of tea. In these occasions most of the informants asked me whether I prefer a cup of tea with sugar, little sugar or without sugar, though they were aware that I am not a diabetic patient. This made me realize that these informants perceived that having tea without sugar is healthy or good but their own desires of taste were a challenge for them.

Having conflict to prepare separate meal. Several informants reported that although they know about the diabetic diet, it is very difficult to have it in their daily life. This is because usually in Sri Lanka food is often prepared for family members where the aim is to cook a fulfilling meal. A family meal consists of rice,

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vegetable curries and meat or fish. As mentioned earlier, eating a meal together as a family is a highly valued cultural tradition in Sri Lanka. Hence preparing a separate meal is not practical for them. Thus most informants explained that it is often difficult for them to meet the specific dietary needs of an individual within the family as the family meal is for the social group as a whole. The informants' point of view and my observations, having a family meal which is not a diabetic diet, made some conflict among informants. Though informants know the ideal diabetic diet they should take, in reality they cannot practice it. As the informants commented:

In my family we eat the same meal. Sometimes I cook brown rice/red rice but my children do not like it much. I cook a normal meal for my family and I also eat it with them. I know it is not the advised diabetic meal for me. (Female, 62 years old)

Usually I eat lunch and dinner with my children and wife, I eat the meal that my wife prepares for our family. Sometime I feel it is not the diabetic diet, but I cannot eat a separate meal. Also it is not possible to cook two meals for lunch or dinner. (Male, 41 years old)

During my field visits and participant observation a wife or mother prepared the meal for her family and ate the same meal as her family. While cooking some informants mentioned that this is not the meal for diabetics or after eating some of them said it is difficult to prepare another meal. However, interestingly I have observed that if the husband and wife both have diabetes or either one has high blood pressure, high cholesterol level and were living without children, it was easy for them to have a diabetic diet which has more vegetables, high fiber, less fat and less salt. As an informant's narrative indicated:

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Now my children got married and live in another house, here only me and my wife. I have diabetes and my wife has high cholesterol, so both of us eat more vegetables, less meat, less oil, less salt food. It is good for both of our health. In the past we cannot do like this because our children don't like to eat like this. (Male, 69 years old)

Furthermore, with the understanding of this conflict of having a diabetic meal and family meals some Ayurveda practitioners ask the adults with diabetes to come for consultation with their wife/ husband. Then, they advised informants to eat healthy food which is good for the whole family, not only to the person with diabetic. Further I have observed some Ayurveda practitioners emphasize the risk to getting diabetes for their children in the future, if the family does not eat according to their advice. This made a somewhat frightening impact among parents and they heeded to eat diabetic meal that was also a healthy meal for a family. As an informant stated:

I usually ask my diabetic patients to come here with their wife/husband, then I talk for a long time to explain the importance of eating a diabetic meal, I explain to them this meal is healthy and anybody can eat, and it reduces the chance to get this illness for their children too. I also give them a variety of food items they can prepare, and then they have many options, various types of food, food preparations... (She shows me the menus with many kinds of food varieties), then it is easy for them to have a meal as a family not only for their diabetic mother or father. (Ayurveda practitioner)

On the other hand, I have observed that cultural expectations about traditional gender role have increased this conflict of eating a diabetic diet among female informants in this study. In the Sri Lankan family system mostly the breadwinner is the father or husband. Respect to males more than female members in

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a family is a traditional custom. The wife or mother's central roles in the household, are preparation meal and caring for the children and the home. If the wife or mother has diabetes their diet related needs tend to take a back seat over the husband's or father's needs and preferences, for example:

I know I have to eat my food as doctors and nurses told me but I cannot prepare a meal only for me. I have to prepare the meal as my husband likes. He is the person who earns money for food and all in this family. He is the first priority in my family, so what I prepare as a meal is based on my husband's preferences, not my illness. (Female, 55years old)

I prepare a meal for my family. I have to have to give priority to what my husband likes and dislikes, not my sugar. (Female, 49 years old)

Some informants believed that limiting certain foods especially white sugar is enough as their diet control. Further they mentioned that, eating vegetables like Karawilla (Bitter gourd) can control their diabetes when they stop taking some foods.

Reducing sugar intake is enough. Most informants perceived that their diabetes is a disease related to sugar and sweet intake. Thus they believed that inhibiting sugar intake, mostly white sugar and sweets is enough to control their diabetes. Informants frequently expressed their views as:

After I got this illness I stopped taking sugar with tea, I drink my tea, coffee, or other drinks without sugar. I do not eat sweets too, so I think I can control my sugar, but you know many times it is over 200. It is high. (Female, 60 years old)

Doctors at the diabetic clinic told me to stop taking sugar, so I do not add sugar into my tea, I do not eat toffees, chocolates, ice cream, my sugar should

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be low, but many times it is high. I do not know. I do not take sugar, sweets. (Female, 49 years old)

Limiting certain food can control diabetes. The majority of informants believed that stopping intake of some food could control their diabetes well. As an example, most mentioned that they stop or limit eating bread from white flour, potatoes, pumpkin, beet root, dhal (lentils) and white rice and believed that it will help to control their diabetes. Some informants commented:

After I got diabetes I stopped eating white rice. Earlier I used to eat white rice, I like it a lot but now I stopped eating it and eat brown rice. I also stop eating potatoes, sweet potatoes, beetroot I heard that these vegetables contain sugar and are not good to eat when having diabetes. (Male, 41 years old)

I used to eat bread, string hoppers made from white flour, but after I got sugar, I stopped eating these and eat string hoppers made from rice flour, and also I eat brown rice instead of white rice. I think it is good to control my sugar. (Female, 50 years old)

Furthermore, many Ayurveda practitioners/traditional healers also emphasized to stop eating white rice and bread made by white flour, because of their high carbohydrate values. Instead of these foods they advise patients to eat brown rice and food items made from rice flour and having varieties of grains (green gram, cowpea, chick pea for breakfast. However, from the Ayurveda practitioners point of view there is no any restriction on vegetables for diabetic patients:

I strongly advise these diabetic patients to stop eating bread and white rice. I tell them to eat brown rice, kurakakan pittu, pittu from rice flour, because it has high fiber and taking a little amount is enough to feel full. cowpea, chick

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pea, for their breakfast..., they can eat any kind of vegetables as they like. I advise them like this. (Ayurveda practitioner)

Doing Exercise is Challenging

Most informants being asked to do exercise by their health care personnel. However, there were some challenges to perform exercise such as beliefs that daily work is enough, having a busy life and doing exercise is not common. These subthemes are discussed as follows:

Daily work is enough. According to informants most were aware of the importance of doing exercise for their diabetes control. However, most believed that doing daily hard work is some exercise. The health care providers who treat them had advised them to do some activity mostly termed as "exercise" to make them sweat which was good to control their diabetes. Hence informants believe that while doing their work they sweated and thus had enough as exercise. As the informants stated:

I have enough work to do at my home, cooking, cleaning, washing clothes and also I take my daughter to her extra class, we walk there, so I think I have enough exercise by doing these every day. (Female, 59 years old)

I know I have to do exercise, they told me to do it but ...I do everything at my home. I have to go to work. I go there by bus, walking to the bus stand is also good exercise here. At my work place I do heavy work, these all are enough. I sweat by doing all this work, and so I do not need any more exercise. (Female, 54 years old)

The nurse at the diabetic clinic told me to do exercise. I do my gardening, I help my wife to do housework, I take my children to classes, and I think these all are enough as exercise. (Male, 41 years old)

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However, two male informants in this study did exercise every day. They were retired and had little responsibility in their home, so they devoted some time, to do walking. I observed these two male informants walking along the roads close to their home. They started around 6.30 to 7.00 in the morning and did it for 40 to 60 minutes. They told me that they feel better after walking and sweating a lot, and one stated:

My blood sugar was high. The nurse told me to do exercise as much as I can, so I started to do it last year, then slowly my blood sugar has gone down, I do walking every day. (Male, 69 years old)

Having busy life. Most informants stated they have a very busy life and to devote some time separately to do exercise is not an easy task for them. During my field visits I observed that most female informants had a lot of work to do in their daily life and male informants have to work outside, mostly to earn money for their family needs. Some of them start their day early in the morning because as a mother or wife they have to prepare the breakfast and lunch for their working husbands and children. Though some female informants did not go to work they had plenty of household work to do. So doing exercise was not practical for them, for example:

They told me to do exercise. How can I do it? I have to do lot of work at home by myself, I don't have time to go for walking or other things. (Female, 59 years old)

I prepare breakfast and lunch for my family and then go to work. After I come back from my job I have to clean the kitchen and then prepare the dinner for my family, so how I can go to do exercise? (Female, 54 years old)

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Some informants reported that though they need to go to walk in the late afternoon and it is very difficult to do with their daily work. Two informants stated:

Yes, I know I have to do exercise and in the past sometimes I did, but when I go to walk at 5 or 5.30pm, I keep thinking about preparing dinner for my family, then I have to hurry to come back home, I have to cook dinner, my husband and children come after their job and need to have their dinner, so later on I didn't go to walk in the evening. In the morning I cannot go. I have so much of things to do at my home. (Female, 55 years old)

I wake up at 5am in the morning and until 8- 8.30 I'm very busy because I need to prepare breakfast and then lunch packets for my husband and my children. Once they go I start to clean the kitchen, house, washing and all, sometimes I go for marketing, paying light bills, water bills... then in the evening they come home and I have to prepare the dinner, again cleaning the kitchen, doing ironing and preparing vegetables for next day, cooking ...every day I go to bed late at night so you see how can I do exercise.... even though I know I have to do it, my blood sugar is also high but I am very busy.(Female, 50 years old)

Exercise is not common practice. For many informants especially for female informants, the traditional Sri Lankan cultural perceptive for women, social conditions within the home and surrounding environment provided challenges to do exercise. Most of the informants perceived that doing exercise is related to doing a sport or going to a gymnasium to do exercise /physical activity. Further they mentioned that doing sports usually come as an activity for children or athletes. Other than that doing exercise is seems to belong to high class people who can wear shorts, shoes and walk in public areas or go to a gymnasium and pay the money. In general these informants work hard to earn money for their living and they do not have a habit

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to do exercise nor the ability to spend on exercising in their day-to-day life. Especially, women perceived that they have their own role at home and generally they should not go out for leisure activities without their family members. Therefore, even though the health care personnel advise them to do exercise, informants are unable to do it. As the informants commented:

> *Nurses told me to do exercise, but I don't like to wear these long bottoms, and run here and there, I cannot, I didn't do it. I need to be at home. (Female, 62 years old)*

> *I feel afraid to go out and walk in the roads; it is not safe for a woman. I used to go for walk few times only if my husband comes with me, otherwise I don't go to walk, it is not good. You know we are women. (Female, 39 years old)*

Furthermore, some Ayurveda practitioners and traditional healers also mentioned that doing exercise is not a habit among Sri Lankan people as the majority of them do hard work for their living. Therefore these practitioners/healers provided some alternative ways to do exercise for their patients.

> *These patients have very busy lives, from morning until midnight they have some work to do, so they are unable to go for walking or other exercise. As we know it is not a common habit in our people. Our females cannot go out for exercise, it is not safe today is it? So what I told them is to do gardening for 1-2 hours if they can. If they go to work get down from a bus one bus halt before the destination and walk to their office, or do it when they come back home. Go to buy groceries by walking fast like that. (Ayurveda practitioner)*

However, during my field visits, I have noticed that, recently there is a trend to walk among both males and females. The reasons behind this may due to

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awareness activities conducted by different media about high prevalence of diabetes and other lifestyle-related diseases related to sedentary life among Sri Lankan. Further, the government has started to constructing many walking paths in popular cites as there was no place to walk. I observed that some men and women use to walk in the evening at the Lake road (a walking path besides the lake) at Boralesgamuwa one of the field settings for this study.

Taking Western Medicine Causes Long Term Consequences

The majority of informants and their family members held specific ideas about the nature and effects of Western medicine, including diabetes medicine. This is because as mentioned in the part 1 of this chapter, Sri Lankan people believe that Western medicines are harmful to the body. Informants' narratives mainly focused on their fears about the effects of diabetic medications especially metformin. Metformin is the commonest form of oral hypoglycemic used to treat diabetic patients. This theme consists of three subthemes namely Medicine harms the body, Have to take medicine forever, and Skip medicine when feel good, are discussed as follows:

Medicine harms the body. Most informants took their medicine to control their blood sugar sugar and they were aware that they have to take it. However, many believed that taking their diabetes medicine for a long time could bring about more harm than cure, or even cause damage to their body organs. Further informants and their family members were influenced by information provided by their neighbors, friends, and other patients with diabetes regarding the harmful effects of metformin. As their narratives commented:

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I have to take these tablets three times per day, the doctor told me to take it like that, but you know I heard that these tablets damage my kidneys when I take them for long time. So I am very afraid about it, and I don't take it as they told me. (Female, 49 years old)

I have taken these tablets for ten years now. I am so afraid of what has happened to my kidneys because I heard that this metformin causes kidney damage. (Female, 62 years old)

Similarly, some family members also believed that taking diabetes medicine is harmful to the body, for example:

I heard that this metformin causes kidney damage. Many people at the clinic talk about it. I am afraid what will happen to my mother's body in the future. (Informants daughter)

Additionally, some informants believed that western medicines elicited "faster" results in lowering their blood sugar and because of that they take it:

When I feel like sick, lazy, cannot work, need to sleep all day like that, I know my sugar is high so I take metformin to lower my sugar levels. (Female, 50 years old)

Ayurveda practitioners and traditional healers also believed that metformin causes kidney damage among diabetes patients. Further, they believed that giving insulin injections to these patients with T2DM inhibits producing insulin inside the body and will lead to patients having to take insulin for their entire life span. One commented:

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This western medicine especially metformin damages kidneys and as we know giving insulin for type 1 diabetes is needed because no insulin is produced in their body, but for type 2 diabetes patients no need to take insulin because when giving insulin injection, then the body will not produce insulin and they have to take insulin all their life. So what we do is give our medicine to stimulate the insulin production more and more, then no need to take insulin from outside the body. (Ayurveda practitioner)

During my field visits since I am health care personnel, the question of "Does metformin harm our body and or the kidneys?" was the most frequently asked question. I realized many informants needed to know this because they were scared to take it and most of them had to take metformin as their diabetic medicine.

Have to take medicine forever. Some informants reported that they have to take these diabetic medicines forever and it makes them very afraid. They believe that taking any Western medicine for a long time is not good for their body, and two informants indicated:

I am desperate about my life. I have been taking this insulin for 9 years now, but my diabetes is not cured yet. I know I have to take it until I die. The doctor started it with a few shots but increased it later, now I take 38 units in the morning and 46 units in the night. I don't know how it will be increased by the doctor in the future, how long I have to take this , how long. ...when I saw the needle, syringe I feel afraid, sad, how many days more... weeks, months more ...I have to take this ...what will happen to my body, I want to live. I have to take care of my daughter (deep long sigh and crying). (Female, 39 years old)

Doctor told me to take this metformin for the rest of my life. No cure for diabetes even though we take this medicine for lifelong. (Male, 41 years old)

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However, some informants got used to taking their diabetes medicine as a habit and they continue it:

Now taking these tablets is a habit for me, after I finished my breakfast, lunch or dinner I take them like drinking water after eating, (laugh...) (Female, 51 years old)

It is a habit for us. You can see my tablet box on the table, after we eat our meal we take it, now we are used to doing it like a habit. (Male, 69 years old)

Skip medicine when feel good. In general for Sri Lankans the concept “free from disease” means having no overt signs of illness, being able to continue their work, and the absence of any diagnosed disease. Likewise, most informants believed that if there are no signs of high blood sugar (e.g. the fasting blood glucose is within the normal range), if they can get about their daily routine work without interruptions due to bodily dysfunction; then their diabetes was cured. Furthermore many informants were afraid to take their oral diabetes medicine for a long time due to the belief of the harmful effects and this also leads them to skip medicine when they felt good. Further, due to their lack of knowledge about the biomedical underpinnings of diabetes they were not adherent to medicine as recommended. Some of their narratives as follow:

Doctor told me to take this tablet for three times per day but I take only night time. I think no need to take this much of tablets. (Female, 65 years old)

They told me to take metformin three times per day but I do not take metformin for three times a day. If I take the morning tablet my mouth has bad rusty taste so I do not take it. I take sugar tablet at night and go to bed (Female, 50 years old)

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Mostly, their use of the prescribed medicine was based on their self-assessment of how they felt. Some informants mentioned that once they felt high sugar levels in their body (hyperglycemia) they took their medicine as recommended, otherwise they did not take the oral hypoglycemic agents. Some of their narratives as follow:

Now I do not feel any sickness like in the past. I feel good, so I stopped taking metformin for the last three days now, I think now the blood sugar is controlled because I have taken these tablets for a long time. (Female, 50 years old)

When I feel a headache, become sleepy, I know my sugar has increased now…, so I take medicine three times a day. When I do not feel anything, and when I do not feel sick, I don't take them. (Female, 62 years old)

Furthermore, during field visits, I observed on many occasions that informants skip their metformin in the morning and after lunch. When the oral hypoglycemic tablet storing container was observed, it was noticed that even after three weeks of their last clinic visit they still have more metformin tablets remaining in their drug containers. This confirms that the compliance of the informants to the prescribed medication is poor and most take the medication in an ad hoc manner. This may be the main reason for the poor glycaemic control observed in most participants in the present study. However, interestingly, during my field visits I also observed many informants did not take their morning or afternoon dosage of metformin tablets but they took their morning insulin dose as ordered.

However, although some informants skip medicine when they 'feel good', some informants strictly adhered to the prescribed medicine as informed since they

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did not want to get into further trouble. It was observed that these informants were very concerned to take their medicine with the meals, which is after breakfast or lunch. Some informants commented:

> *I take my tablets and insulin as the doctor told me, I do not want to get into trouble any more. (Female, 51 years old)*

> *I take my tablets every day, the doctor told me, do not stop taking these tablets (Male, 69 years old)*

During interviews with Ayurveda practitioners and traditional healers, they mentioned that diabetes can be cured and after that there is no need to take medicine. Especially once they get patients newly diagnosed with T2DM, Ayurveda practitioners/ traditional healers treat them with their medicine for a short time and after that they stop medicine, strongly advising them to follow the diet as they recommended for the rest of the patient's life. I think this kind of information is based on the beliefs that diabetes can be cured after taking medicine for some time. An Ayurveda practitioner said:

> *If we get newly diagnosed patients it is easy for us to treat them and cure them. For other patients after treating them for some time and when the patients' blood sugar is controlled well for a couple months I reduce the dosage of medicine and later I stop giving medicine to them. But I strongly advised them to follow the diet as I recommended. (Ayurveda practitioner)*

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Using Ayurveda/Traditional Treatment to be Cured

As mentioned earlier, most Sri Lankans use western and nonwestern modes of treatment for their illness. This is because they hope to be cured and also they do not like to have an illness all their life. As Ayurveda/traditional treatment is rooted in Sri Lankan culture most informants also believed that they can get cured permanently from this mode of treatment. This theme comprised three subthemes: Ayurveda/ traditional treatment is natural does not harm the body, Trust the Ayurveda/traditional treatment, and Beliefs in healing with herbs. Each sub-theme is discussed as follows:

Ayurveda/traditional treatment is natural, does not harm the body. Most informants' appeared to be concerned about the chemical nature of their diabetic medicine. They believed that Ayurveda/traditional medicines are made from natural products and hence do not harm the body like Western medicines produced using chemical substances, for example:

All these tablets are made from chemicals, but "Sinhala beheth" (the lay term for Ayurveda/traditional medicine) are natural they are made from herbs... not harmful to my body, so I take them. (Female, 49 years old)

I take insulin for nearly 15 years now. I take these Sinhala Kashaya (decoction from many herbs) with my other medicine. All are natural things, so no harm to my body. (Female, 55 years old)

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Furthermore, some informants mentioned that they go to the diabetic clinic in the hospital when it is urgent to go to a hospital and it is easy to have a clinic number to get treatment there. As mentioned earlier there is a belief that Western medicine is quick treatment for high/low blood sugar so they take this. They also take

Ayurveda treatment because they believed that they can get cured from diabetes by using them later.

Trust the Ayurveda/traditional treatment. The informants trusted the Ayurveda/traditional treatment and also they trusted their close relationship with Ayurveda practitioners from whom they sought treatment. Some mentioned that Ayurveda doctors give many options of food to eat instead of telling them do not eat this and that. It gives them a feeling of what they can eat and get rid of a feeling like "I cannot eat anything". Some perspectives of participants are:

Ayurveda doctor told me many kinds of vegetables I can eat, many ways of using kurakkan flour instead of white flour, and she did not tell me do not eat this and that, not much restriction like the diabetic clinic.(Female, 49 years old)

Some Ayurveda practitioners mentioned that they do not tell the diabetic patients do not eat this and that as it makes them worry more about the disease, for example:

You know these diabetic patients worry because they think they can't eat anything. In western treatment the doctor tells them not to eat this and that, so they come to us with the fear that we will also tell the same thing. So at first we do not tell "do not eat this and that", instead we tell them they can eat as they want. Later we teach them how to make modifications to their meal then they become happy that they can eat. We all like to eat. It is human nature (Ayurveda practitioner)

Additionally, informants had trustworthy relationships with Ayurveda doctors due to various reasons, the doctors talk more with the them and their family,

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give them hope to get cured from diabetes. In contrast, in Western treatment mostly, only the patient goes to see the doctor (due to the heavy crowd of patients) and the doctor informed that diabetes is an incurable disease. Thus some informants trust getting cured by Ayurveda treatment. Some of their neighbors and relatives inputs also influenced this belief, like if one of them said he or she would get cured from diabetes or their blood sugar could be controlled by taking treatment from a particular Ayurveda practitioner, then others also believe it and follow.

> *One of my cousins got cured from diabetes by taking treatment from (name) Ayurveda doctor. I also went there, because I want to get cured from this disease. He gave me a list of herbs to boil with water and some powder to drink (shows the prescription) I am doing it... The Ayurveda doctor didn't tell me to stop my metformin, so I use both. (Male, 69 years old)*

Ayurveda practitioners' do not instruct their patients to stop Western medicine for two reasons. They are that the high blood glucose could not be controlled immediately by Ayurveda medicine, and once the patient felt better with Ayurveda treatment the patient asked and or stopped the Western medicine by themselves:

> *Some diabetic patients come to us after taking Western medicine for a long, long time, so we do not tell them to stop their metformin or insulin immediately because our medicine treats the cause not the symptoms and we cannot control blood sugar immediately. After a few months, once the patient takes our treatment for a few months and their blood sugar is controlled, the patient realizes the good feeling. They stop taking Western medicine by themselves. (Ayurveda practitioner)*

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Beliefs in healing with herbs and vegetables. Almost all informants used herbs and traditionally used plants to control their sugar or diabetes with the belief that they can be healed. Some of them got the advice to use these herbs from their Ayurveda practitioner/traditional healer, while others got the idea from their neighbors, relatives or other diabetic patients they meet at the clinic or from newspapers. During my field visits this is the most common and interesting behavior I observed from all informants' in their daily life. Some informants had learnt from experience that the use of some herbs (thebu leaves, kohomba leaves, kowakka leaves, bitter melon/bitter gourd) decreased their blood sugar levels. All informants believed that thebu (*Costus Speciosus, Cheilocostus specious*) can decrease their blood sugar and they use it once a week or every two weeks. Some shared their experiences as follows:

I eat thebu once a week as a sambol (salad). I grow the plant in my garden already. I heard it can decrease sugar in our body and is good for diabetes. (Male, 41 years of old)

I eat thebu, kowakka leaves. I know they reduce my blood sugar. (Female, 49 years old)

I eat thebu once every two weeks because I heard it reduces blood sugar. (Female, 50 years old)

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Most informants eat karawila (bitter gourd, bitter melon/Momordica Charantia) as it has a bitter taste and they believe it can reduce the blood sugar or control diabetes.

I usually eat Karawila. I heard it is good for diabetes (Female, 59 years old)

I eat karawila once or twice a week. In the past I did not like it. It has a very bitter taste but I heard it is good for diabetes and then I have started to eat it. (Female, 60 years old)

In summary, based on the above ethnographic analysis, informants' glycemic control behaviors were influenced by traditional Sri Lankan beliefs, and practices towards health and illness. Informants' beliefs on the cause of diabetes were based on their past bad karma and hope to get better health from praying or worshipping their religions. Due to the feeling of hunger, less taste of recommended diabetic diet and their family needs lead the informants to struggle to adhere to the recommended diet. Informants had some challenges to do exercise based on their beliefs of daily work as exercise, no time with their busy life and the impact of some sociocultural customs. Further informants' narrative included their fear of diabetes medicine, and their hope to be cured from Ayurveda/traditional treatment.

Part III: Discussion

This ethnographic study is unique. No studies have focused on the influence of sociocultural context of glycemic control behaviors among adults with T2DM in Sri Lanka. Based on the accounts of key informants in this study generally adults with T2DM had enough awareness about diet, exercise, medication-taking behavior and their effects on their control of diabetes. However, the major findings of this ethnographic study gives rich insight into the Sri Lankan cultural beliefs, customs and practices that influence diet, exercise and medication taking behavior among adults with T2DM. There is consistency within the findings with other investigations

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reporting the strong influence of particular sociocultural contexts on behaviors among adults with T2DM in other countries.

Most informants in this study believed that the cause of having diabetes was due to their bad karma and hence they prayed and worshipped in this life to get rid of this bad karma and to have better health. Not surprisingly, in Thailand where the majority are Buddhists, some Thai adults with T2DM also believed that they got diabetes as results of their past karma in the same manner as Sri Lankans, indicating diabetes as "karma illness". Some of the participants did meditation, meritorious activities and prayed in order to have better glycemic control (Sowattanangoon et al., 2009). In a recent study in Thailand, Lundberg and Thrakul (2012) reported that 29 Thai Muslim women with T2DM in Bangkok believed and prayed to Allah to get better health. Moreover, as stated in the current study some Buddhist informants believed in doing everything in the middle way (in moderation) which is in consensus with the Buddhist religion, and thus is good to control their diabetes. Likewise, in another study, Lundberg and Thrakul (2013) reported that some Thai Buddhist participants tried to follow moderation in their eating. However, in contrast, some study findings reported that informants believe that the diabetes was a result of a punishment from God. As an example, Hjelem and Mufanda (2010) conducted an interview study among 21 Zimbabwean adults with diabetes in order to explore their beliefs about health and illness. They reported that participants believed that they became diabetic as it was a punishment from God (Hjelem & Mufanda, 2010). Nevertheless, these beliefs and religious practices are tightly bound with the cultural context and religions in the particular country. In addition, as the current study informants mentioned heredity also as a cause of diabetes, many other studies too,

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reported participants' awareness of heredity as a cause of diabetes (Brown et al., 2007; Chun & Chesla, 2004; Hjelem & Mufanda, 2010; Sowattanangon et al., 2009).

In terms of adherence to prescribed diet, the findings of this study reported that this was the hardest life style adjustment for informants. Many attributed this difficulty as being due to their traditional food habits, beliefs and daily life. The majority of informants believed that eating less rice, eating brown rice, avoiding intake of white sugar and sweets, and limiting certain food was the ideal diet control. These beliefs are not congruent with the dietary guidelines provided by the ADA (2012) which states that no food should be avoided by people with T2DM although the emphasis is on small portion. The awareness of patients with T2DM regarding high fiber containing vegetable and fruit diet is low. The list of low glycemic index food has been established for Sri Lanka (Ekanayake, Welihinda & Jansz, 2009) and it is available at the National Research Council web site. Low GI foods have to be specified and individual portion sizes determined for each person with T2DM to achieve optimal control. Further informants in this study expressed that eating a small portion of rice and less tasty food is rather difficult for them. In Sri Lanka, an investigation conducted by Illangaseka (2011) also pointed out this misconception of reduction of carbohydrate than lowering of total energy intake among Sri Lankans with diabetes. Similar findings were reported from a qualitative study conducted among 20 Korean immigrants in USA by Cha et al. (2012),where it was revealed that restricting the traditional Koreans' on food, changes in the taste of food and limiting the concept of eating until they felt full were totally opposite to the traditional Korean food habits. Korean patients with T2DM too found these recommended dietary practices hard to follow. Interestingly, in Thailand, among 27 participants with

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T2DM, the value of eating rice as they needed and their major hassle to have "less rice" in order to adhere to prescribed diabetic diet (Sowattanangoon et al., 2009) was similar to the findings of the current study.

The current study also revealed that there were conflicts between the family diet and the diabetic diet for the patient with T2DM within in the household. Parallel results have been reported in Korea where participants mentioned that the preparation of the meal according to family preferences is a priority rather than the health of the person with disease (Cha et al., 2012). Another qualitative study of 19 Somaliland adults with diabetes reported that tastelessness of the prescribed diabetic diet and the difficulty to give up traditional food were barriers to follow a recommended diet (Wallin, Lofvandr, & Ahlstrom, 2007). In Netherlands, a qualitative study conducted by Kohinor, Stronks, Nicolaou, and Haafkens, (2011) among 32 Surinamese with T2DM, found that the high influence of Surinamese traditional foods, cooking patterns, and cultural beliefs/values of their participants limited their adherence to the recommended diet. Hence, the qualitative results presented in this study strongly suggest that dietary education with a focus on Sri Lankan traditional diet, and cultural practices towards food habits, will potentially have more success than just "less rice, no sugar" dietary advice for adults with T2DM. However, as highlighted in many other Asian countries such as China, Korea, and Bangladesh, food concepts of hot food and cold food was not found to be as important in relation to diet control in the context of diabetes control of the present study (Cha et al., 2012; Chowdhury et al., 2010; Chun & Chesla, 2004).

Despite the above issues related to diet, study informants also reported that the restriction of sugar and sweet foods interfered with their social life. This is

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because in Sri Lanka, offering a cup of tea with sugar is the tradition of hospitality for visitors and most common custom in many social gatherings. Also visitors accept whatever that is offered to them and do not have the courage to ask for a cup of tea without sugar. Often it is not considered as culturally polite behavior. As some informants stated they do not like to visit their relatives or friends because they could not refuse the offered cup of tea or food nor ask for tea without sugar as they perceived it as impolite. Perhaps because of this situation, adults with diabetes may be isolated in their home and their social life becomes restricted. Somewhat similar findings were reported with regard to food restrictions interfering with social life among Surinamese adults with T2DM (Kohinor et al., 2011). In this study, participants' stated, diabetic diet influences their traditional food customs because Surinamese food is high in fat. They cook a high fat meal especially for social gatherings, which are very frequent, and hence compliance to dietary advice is difficult (Kohinor et al., 2011). Similar results were reported in the study among British, Pakistani and Indian adults with T2DM (Lawton et al., 2008). Here participants had their own ideas about the food products they should use or restrict. However, avoiding fatty food was difficult for them due to their culturally inherent customs of food preparation. Often the traditions of hospitality override the priority of preparation of food taking into consideration the dietary guidelines of T2DM (Lawton et al., 2008).

Further, this ethnographic study revealed many subthemes of exercise for adults with T2DM. As evident from the informants' narratives, and field notes most of them are hardworking people, have a busy life and have no time to do exercise. Further, many informants mentioned that doing their daily activities in the household

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is enough exercise because they worked hard, and did not see the need to do more exercise. Similar findings were reported from an ethnographic study by Thompson et al. (2000) among Aborigine adults with T2DM in Melbourne. In this study, participants perceived that every day activities for and with their family, leave little time for them to exercise and taking extra time for exercise was seen to be difficult. In USA, a qualitative study conducted among 39 Mexican Americans, revealed that occupational and home activity was perceived as exercise, and the lack of time, was the main barrier to do exercise (Mier et al., 2007).

On the other hand for a woman, wearing exercise appropriate attire to do exercise is not culturally acceptable and activities of running or walking in public areas alone is usually not very acceptable for traditional Sri Lankan women. In this manner they avoid to do exercise although health care personnel advise them to do so. In support of these findings, Horne and Tierney (2012) in their systematic review stated that one barrier to exercise among South Asian adults is their beliefs that doing exercise may not be culturally appropriate. These findings may help to give better insight to the non-adherence to exercise behavior among most adults with T2DM in Sri Lanka.

The present ethnographic study revealed serious of behaviors of diabetic control among informants such as once they feel good, they skip the medicine. This is in line with what has been found from a recent investigation of rural Mexican adults with T2DM where the majority of participants reported intermittent, infrequent use of oral hypoglycemic medicine due to improvement of diabetic-related symptoms (Valenzuela et al., 2010). Furthermore, this ethnographic research showed that informants fear the chemicals in the diabetic medicine and avoided taking their

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medications as ordered by the health care personnel. In Nottingham, a qualitative study conducted by Brown et al. (2007) found that 16 African-Caribbean patients with T2DM mistrust diabetes medicine due to its chemical nature and believed it does more harm than good. In Sri Lanka too some of the Ayurveda practitioners had this misconception of the side effects of continued use of oral hypoglycemic drugs.

The informants in this study confirmed the medical pluralism practiced by adults with T2DM in Sri Lanka. The reasons for this such as, Ayurveda/traditional treatment does no harm, trust with the Ayurveda/traditional treatment methods and beliefs of healing with herbs, are deeply ingrained amongst the Sri Lankan patients. This trust and hope influences people with diabetes to seek treatment from Ayurveda practitioners/traditional healers in addition taking the western medications they receive free of charge from the state-run health care institutions all over the country. The majority of Ayurveda practitioners/traditional healers in the present study stated that T2DM can be cured especially, if identified in earlier stages. Thus many Ayurveda/traditional healers inform their patients that diabetes can be completely cured. In contrast, Western health care professionals informed that diabetes is an incurable disease. Once, both of these inputs are received often the person with diabetes will prefer the Ayurveda/traditional treatment as at least it gives a hope to be cured from this devastating illness. Further this hope motivates patients to use medical pluralism. In Sri Lanka Western medicine was introduced to health care under colonial rule, while Ayurveda medicine was introduced from India (where it originated) and was developed many centuries before this colonial rule (Uragoda, 1987). Sri Lanka has had a strong tradition with the Ayurveda system for many years and thus people believe and trust that they can get cured using this treatment. The use

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of medical pluralism was reported in a number of previous studies in Sri Lanka. For instance, a study conducted by Sachs and Tomson (1992) indicated that Sri Lankan patients use Western and Ayurveda treatment with the hope at getting cured from their illness. Another quantitative investigation carried by Broom, Wijeyawardena, Sibbritt, Adams, and Nayar, (2010) among 500 cancer patients in Sri Lanka, found that 67.4% of those used traditional, complementary and alternative medicine in conjunction with biomedicine. Further, they also reported that of those who use traditional, complementary and alternative medicine, 95.0% accepted this form of medication as "they thought it would cure their cancer" (Broom et al., 2010). Similar findings were reported in a recent study conducted in rural Sri Lanka by Weerasingha and Fernando (2011). In this study too participants believed that Ayurveda/traditional treatments are better to cure their illness however Western medicine is good to control the illness.

The present study findings also revealed that informants believe in the "faster response" of Western medicine and therefore they use it to control but to get cured they need to use the Ayurveda medicine. Similar findings have been reported from other studies in the context of diabetes. In the USA a phenomenological study was conducted on cultural issues in diabetes management among 16 Chinese immigrant families by Chun and Chesla (2004). The researchers reported that participants used Western medicine when seeking immediate relief whereas they preferred to use herbs for curative purpose. Likewise, in Taiwan, Chang, Wallis, Tiralongo, and Wang (2012) stated that 16 participants with T2DM used complementary and alternative medicine along with Western medicine to control diabetes in order to improve well-being. In India an ethnographic study conducted by Chacko (2003)

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mentioned that study participants relied on biomedicine for treating diabetes but frequently used Ayurveda medicine and folk herbal remedies as supplement. Xie, Zhao, and Zhang (2011) concluded in their review that traditional Chinese Medicine is becoming a popular complementary and alternative medicine in the treatment of T2DM. Therefore health care personnel need to be aware of this traditional, complementary and alternative medicine use for glycemic control among diabetics and to incorporate this knowledge into patients' assessment and interventions in Sri Lanka.

As described earlier, in order to get healed completely from diabetes, informants believed in using herbs. Field notes maintained during the study confirmed that most of the informants grew these herbs in their home garden in order to use them frequently. Similar findings are reported from many studies in different cultural contexts locally and internationally. In Sri Lanka, Ediriweera and Ratnasooriya (2009) summed up in their review that Ayurveda practitioners/traditional healers and people with diabetes have a good knowledge of herbs that can control diabetes mellitus and some of them take these herbs regularly to control blood glucose levels. Somewhat similar findings were reported in another study conducted by Nanayakkara and Ekanayaka (2008) who stated that traditional medicines are still used for treating oral conditions among Sri Lankan adults. Strong cultural beliefs and lack of confidence in Western medicine were the common reasons to use traditional medicine. In USA, a qualitative study conducted by Early et al. (2009) among Latinos and Caucasians with T2DM revealed the participants' trust, use of several herbs, and folk remedies to control the blood glucose. In another qualitative study, Chun and Chesla (2004) concluded that Chinese participants with diabetes believed

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herbs are harmless and they were more likely to try those in diabetes control. In rural Mexico, 37 adults with T2DM used herbs like cactus, herbal tea, and indigenous fruits to maintain their glycemic control (Valenzuela et al., 2010). Therefore, health professionals should take into consideration these herbal practices for future health planning for diabetes management in Sri Lanka. Furthermore, informants in this study had received advice from their relatives, and neighbors related to the use of herbs in blood sugar control. These informants were interested in and believed in this kind of word by mouth information. Chang et al. (2012) also stated that their participants with T2DM also were concerned with this kind of word by mouth information as a reason to use herbs in their blood sugar control.

In summary, consistent with other studies, this ethnographic study also highlighted that sociocultural factors influence the way in which adults with T2DM perceive and act on their glycemic control behavior. Therefore, in order to be effective in diabetes care, culturally sensitive diabetes education must be developed and delivered. This must address cultural/traditional values inherent amongst the people and include those factors that inhibit or enhance the glycemic control behaviors.

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