



Knowledge and self-care management of the uncontrolled diabetes patients

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1. Introduction

The World Health Organization (WHO) claims that diabetes mellitus (DM) has become a serious disease and a costly health condition around the world (WHO, 2014). In 2014, the International Diabetes Federation (IDF) estimated that 382 million people in the world had DM, with more than 90% of them diagnosed as having type 2 diabetes (T2DM) (IDF, 2014). The number of people with DM is expected to increase to about 439 million in 2030, and 69% of this increase is expected to occur in developing countries (Shaw, Sicree, & Zimmet, 2010).

In Thailand, chronic hyperglycemia is a major concern since it will lead to progression of complications for individuals with DM. A study by Rawdaree reported a glycemic control rate of 38% with less than the American Diabetes Association (2012) recommended value of HbA1c < 7% in urban cities (Rawdaree et al., 2006) and 29% in rural areas of Thailand (Aekplakorn et al., 2011). Research studies in Thailand suggest that despite the availability of treatments for type 2 diabetes patients, only 15 to 35% of them control their blood sugar levels (Aekplakorn et al., 2011). Approximately 50% of Thai persons with diabetes cannot control their blood sugar level because of poor self-care management which may be a result of family issues or a poor health service system (Deerochanawong & Ferrario, 2013).

DM complications can lead to a lot of medical conditions which include diabetic nephropathy (DN) that was found to be the most common complication (Deerochanawong & Ferrario, 2013). When DN progresses to the later-stage or chronic kidney disease (CKD), the person with DM can have a disability. This will have a big impact on the person, family, and society. Therefore, it is very important to prevent DM complications to avoid economic burden to the family (Tsiouli, Alexopoulos, Stefanaki, Darviri, & Chrousos, 2013).

Health care providers also provide services to help the people living with DM about self-care management which includes analysis of their home environment. Despite these efforts, the rate of patient re-admission in the hospital remains very high (Aekplakorn et al., 2011). Even though a lot of research has been conducted on diabetes, there is a lack of research on life-style change, effects of illness, and self-care of persons with diabetes in Thailand (Rawdaree et al., 2006). In order to address the gap in knowledge about diabetes self-care management in Thailand and on why diabetes patients cannot control their blood sugar levels, a study was developed to explore the phenomenon of self-care

management from the perspective of Thai persons living with diabetes (Sowattanagoon, Kotchabhakdi, & Petrie, 2009).

This research helps to understand more about why these diabetes patients cannot deal with their illness. The researcher used a qualitative research method. It is a natural study. The researcher believes in the unity of individual and that the patient's behavioral changes depend on the environment under social, cultural, and individual beliefs.

2. Methodology

This qualitative research design used a semi-structured interview method. The aim of this research is to explore the experiences of self-care management among Thai people living with diabetes who have uncontrolled blood sugar levels. The overall goal of this study is to help develop a diabetic care system in Thailand, by first analyzing the cause of the problem and then by looking at the following questions: Why some diabetes patients cannot control their disease? What are the root causes? What can medical professionals and social workers do to help those diabetes patients who have early progression of diabetic nephropathy? This guide was approved by three experts in diabetes and in the qualitative research field. The questions have undergone content validity by three experts. The specific purposes of this research project are: 1) To study the perception and their knowledge of diabetic disease among Thai diabetes patients who have uncontrolled blood sugar levels, and 2) To study lifestyle changes and self-care experiences of Thai diabetes patients who have uncontrolled blood sugar levels.

The purposive sampling method was used for this study because it is convenient, accesses information easily, and it has specific sample requirements. According to the design method mentioned above, the criteria for samples were designed as follows: 1) the patient must be diagnosed as having diabetes mellitus with uncontrolled sugar levels for more than one year, 2) the patient must be > 18 years old, 3) the patient must be willing to provide information related to this study, and 4) the patient should be able to communicate effectively. Data were collected between November 2016 and January 2017. Approval for this research involving human subjects was obtained from the Naresuan University Institutional Review Board (COA No. 311/2016) before data collection.

The researcher conducted face-to-face interviews in a private room. All twelve participants are patients at Wang Thong Hospital in

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Phitsanulok, Thailand. There were five males and seven females. The age range were from 45 to 60 years old. Their occupations are two blue collar workers, four market store workers, three framers, two monks, and one is unemployed. The education level range was from no education to high school. They had been diagnosed of diabetic mellitus between three to ten years. All of them used medications to reduce blood sugar levels which they received from the hospital. The number of participants were considered from the data saturation as, no new concepts were emerging, the categories were full in all of them and all of the categories explained variety. There were ten subjects recruited in this study.

3. Results

The data analysis revealed four major themes which emerged in the interviews: recognition of diabetes, recognition of the effects of the diabetes, self-care management after receiving diagnosis, and having the knowledge but unable to apply it.

3.1. Recognition of diabetes

The first major theme is recognition of diabetes. All participants acknowledged that they have the disease. There are three minor themes or issues under this major theme: 1) bad eating habits that cause diabetes, 2) genetics as another cause of diabetes, and 3) diabetes causes adverse lifestyle changes.

3.1.1. Bad eating habits causes diabetes

Bad eating habits or poor dietary intake is one of the major causes of diabetes. Each participant realizes this, and this acknowledgment is evident in the statements they made during their interviews. An example statement is: *“after I joined that group in the hospital, I learned that this disease is caused by... bad eating habits.... But I love to eat sweet food,”* and *“I got a diabetes because I like to eat a cake every day from my uncle store.”*

3.1.2. Genetics as another cause of diabetes

There were participants who realize that their disease could have come from their parents, or is genetic. Someone stated: *“after I joined that group in the hospital, I learned that this disease is caused by genetic...I understood that I have diabetic because my father had it before.”* However, another one stated: *“I got a diabetes because my father was diabetes I know that.”*

3.1.3. Diabetes causes adverse lifestyle changes

Becoming a diabetic certainly changed each participant's lifestyle. Some of them had to take more time off from work since they have to go to the hospital regularly. This was his statement: *“My life changed a little bit...After I was diagnosed with diabetic. Since I have to go to hospital every month, I have to take vacation often from my job.”* Some participants had to change his association with friends because he could not drink and smoke freely with his friends anymore. He also said that: *“I used to smoking and drinking with my friend, but now, I couldn't do it like before.”* Another participant had to break the rules of monkhood and has to eat dinner every day after taking his medication. Buddhist monks are only allowed to eat once a day which is for breakfast which he verbalized as: *“I had to eat dinner every day after took a medicine, it leads me to abuse the rule of clergy.”*

3.2. Recognition of the effects of diabetes

The second major theme found from this research is the recognition of the effects of diabetes. Diabetes related diseases certainly have major impact on the patients, not only to their bodies but also on their minds. There are three minor themes under this theme: effect on the body, effect on the mind, and social aspect.

3.2.1. Effect on body

When describing the effect of diabetes on their bodies, a respondent said: *“I feel weak every day...I cannot sleep well some night and I feel hungry at night”*. Another one said, *“I often feel dizziness, fatigue, almost every day and I have insomnia some days...I couldn't see everything clearly, I have to be carefully when I was walking.”*

3.2.2. Effect on the mind

When describing the effect to their minds, an example for this study is: *“Every follow-up visit to doctor's office, when I do my blood test, my blood sugar level is always too high, which makes me very concerned... I am fine in general, but I am worried about my diabetic disease.”* other mentioned: *“After I got a diabetes, I felt hot-headed and frustrated all the time.”* And some participants talked about his experience when he was a monk: *“When I was a monk, I was stressed about taking a medication too much because I have to break the rule of clergy.”*

3.2.3. Social aspect

There is also an adverse impact on the social aspect in a diabetic patient, as a participant described: *“Before I got diabetes, I went to the temple every week because I am a leader to prayer merit, but now, I have to ask my friend to do it because I often have a dizziness.”* And another gave a good example of social aspect: *“I don't want to mention that... Uncomfortable because I must to be careful to eat when I go to meet friend or party.”*

3.3. Self-care management after receiving the diagnosis

The third major theme is the “self-care management after diagnosis.” There are seven minor themes under this which are continuing to take prescription medicine, finding alternative treatment, improving their diet – eating the right food, knowing the need to do more exercise, observing and being aware of diabetes symptoms, managing stress, and accepting support.

3.3.1. Continuing to take prescription medicine

Typical positive attitudes toward diabetes were clearly reflected in a participant when they verbalized: *“I go to hospital on time for every follow-up visit and I take medicine every day because I want to control my blood sugar level.... I take 2 kinds of diabetic medicine”*. another participant said: *“I take a medicine every day because I want to control my blood sugar level, every follow up day, I worry about it too much, a doctor often warned me about my blood sugar level because It was still high.”* This was echoed by another participant: *“I tried to take a medicine following doctor order but my blood sugar level was still high.”*

3.3.2. Finding other ways of treatment (e.g. herbal medicine, spiritual beliefs)

The second minor theme is that most diabetes patients are looking for or searching for alternative treatment such as herbal medicine and spiritual beliefs. This reflects their strong desire to minimize the adverse impact of diabetes to their quality of life. Participants mentioned that *“I used to drink a water of herbal after it was boiled for 15 min, it looks like dry grass, my neighbor told me that it can help me.”* Some try to spiritual, for example, *“I do a prayer every day because my doctor told me that if I get a stress, I won't reduce my blood sugar level.”*

3.3.3. Improving their diet – eating the right food

The third minor theme is that everyone realizes the importance of eating the right food and improving their diets. As a participant has mentioned: *“I know that I cannot eat any sugary food...So I tried to reduce the sweet food intake. Now I only eat a little bit of sugary food. I eat a little sugary food. I eat more fish; I eat more vegetable. Also a little rice.”* And another participant stated that: *“I tried to eat no sweet food and more vegetable.”*

3.3.4. Knowing the need to do more exercise

The fourth minor theme is when diabetes patients know that they need to do more exercise however they normally do not exercise more for various reasons. A participant stated that: *“I don’t have time to do exercise, because I am too busy at work, I know about that from my group in the hospital. ha-ha. but I couldn’t do it”* And another participant also mentioned that *“I used to join exercise group in the village, but now, I can’t go because I often feel dizziness...just walk a little bit more makes me feel very tired.”*

3.3.5. Observing and being aware of diabetes symptoms

The fifth minor theme is observing and being aware of diabetes symptoms. Since they were diagnosed of having diabetes, all participants became much more observant and were more aware of diabetes symptoms. They started to pay more attention to any change on their bodies. A participant described it this way: *“I used to be hypoglycemia before I had the vertigo symptom and I was sweating a lot. After that I have to be aware about that.”* And another participant mentioned his symptom: *“I know that when I have frequent urination symptoms, it is due to the high blood sugar.”*

3.3.6. Managing stress

The sixth minor theme is stress management. Living with a diabetic disease causes a lot of stress to the diabetes patient. However, they all have to deal with the stress. One participant stated that he *“likes to go to temple to do merit to the monks on weekend, because it helps me to calm my mind, and gave me a peace of mind from my job and my disease.”* Another participant uses another method to reduce his stress: *“I do a prayer every day because my doctor told me that if I get a stress, I won’t reduce my blood sugar level.”*

3.3.7. Accepting support (from family, doctor, nurse, health care volunteer)

The last minor theme is to accept support from their family, doctor, nurse, and health care volunteers. It is essential for a diabetes patient to have a strong support system from anyone around him or her. They include family members, doctors, nurses, and health care service providers and volunteers. A participant described support from his family this way: *“My wife and my daughter told me all the time about I have to control eating sugar... my doctor and nurses did provide great support to me. When I went to the hospital, they gave me information about how to take care of myself.”* Another participant stated the support he received from his nurse: *“the doctor, nurse and health care volunteer help me too much about controlling my blood sugar level... Sometime, a nurse came to visit me at my house.”* Another participant said *“there was only health care volunteer come to temple to do blood screening test.”*

3.4. Having the knowledge but unable to apply it

The fourth major theme, which I feel is the most important one is that the diabetes patients have the knowledge of diabetes and how to do self-care management for themselves, but they cannot apply the knowledge for various reasons.

3.4.1. Incomplete knowledge – limited knowledge – ignorance

In the first situation, the diabetes patients have either incomplete knowledge, that is, limited knowledge or they are ignorant. An example for this study is *“I have to tell you that I love “kaowshar”, it is my favorite drink... (“kaowshar” is a Thai local drink, it is made from rice yeast) (when researcher asked him: Does drinking this contribute to your high blood sugar level?) Really? I am not sure. I will stop drinking it if it is not good for my health.”* Another participant said: *“every time before I go to gambling, I like to go meet friend at a coffee shop nearby but I don’t drink a coffee ...I know that it not good for my health. (researcher asked: What do you drink then?) I drink soft-boiled egg with M-150 (a local energy drink). I don’t know that it has high sugar or not...Really? Oh. I see.”* And another participant shared his experience living as a Monk: *“I took a medicine every*

evening...I don’t know that I have to eat dinner after that. you know. I can’t eat dinner...If I do that I will get Karma.”

3.4.2. Lack of self-control

The second situation is that diabetes patients lack self-control even though they know it is not good for them. A participant described his experience in this way: *“when I arrive home, I am so tired. I just want to take a shower and go to sleep. Since both my wife and I are very busy at work, sometime, I buy junk food from the market to eat...But sometime I want to eat some desert. I eat it once a week.”* Another participant said: *“I used to join exercise group in my village but now, I can’t go because I often feel dizziness...just walk a little bit more makes me feel very tired.”* Another shared his experience of living as Monk: *“I have to eat whatever food people gave it to me Because I can’t select something to eat...It’s Karma...I know that some food is more sweet but I have to eat a little bit more.”*

4. Discussion

The following section discusses the research work conducted by others to support all the themes mentioned above. Under the first major theme, Recognition of diabetic disease, the researcher found research done by [Wilaiwan \(2004\)](#) which supports the first minor theme: improper eating habits cause diabetes. Diabetes patients like to eat sweet food because it gives them high energy. That research concluded that frequently eating sweet food makes the beta cell of patient’s pancreas work much harder, which causes insulin secretion disorder, and in turn makes a patient much more susceptible to diabetes.

For the second minor theme, participants mentioned that the diabetes disease is a genetic disease because their parents had this disease. According to the [American Diabetes Association \(2012\)](#), one of the causes of diabetes is defects of beta cell gene transfer autosomal dominance, from parent to their child. It causes reduced insulin secretion, and it decreases conveying glucose into cell, which makes high sugar levels in the blood.

The third minor theme is: diabetes makes adverse lifestyle change. Participants mentioned that having diabetic disease changed their lifestyle. For those who do not have other complications from diabetes disease, they may not have too many life style changes. However, for those patients who have more diabetes related complications, they have more life style changes. There are two types of diabetes related complications: 1) acute complications such as hypoglycemia and ketoacidosis and 2) chronic complications such as diabetic retinopathy, diabetic neuropathy and diabetic nephropathy. According to [Lemes Dos Santos, Dos Santos, Ferrari, Fonseca, and Ferrari \(2014\)](#), the patient who has chronic complications must receive more treatment. So, the lifestyle changes due to diabetes related diseases depend on the symptoms and severity of the disease on each patient.

There are many studies that have discussed patient’s recognition of the effect of the diabetic disease. For the effect to the body, diabetic disease affects the nerve system. Two participants mentioned that they felt dizziness and numbness and this is because diabetes patients will get reduced circulation of blood to peripheral vascularity. It makes them feel pain in their legs upon rest, cold feet, and numbness. The diabetic disease also affects the eyes. Research by [Guven, Kuenzi, and Matfin \(2002\)](#) shows that diabetes causes the patient to be amblyopic and to have retinopathy. Retinopathy can cause cataracts or even blindness. Another effect on the body is that diabetes patients feel very weak, as Guven and his group (2002) reported that muscle pain is the symptom of the defect of cells that cannot use the sugar in blood to build enough energy in the body. Instead of sugar, the body uses the lipid; this causes high ketones in blood and acidosis that makes the patient feel weak all over their body.

For the effect to the mind, research by [Fatema et al. \(2017\)](#) indicated that diabetic disease makes the patient edgy and feel stressed because the patients need time before they can accept the fact that they have diabetes and accept the treatment. Different emotional levels of

each patient depend on the patient's mental health status, motivation, family and social support including patient's living environment.

One example of the social aspect is when a diabetes patient goes to a party. He or she cannot choose the food or drink, so she or he has to drink or eat whatever the host offers at the party. Research done by [Okonta and colleague \(2014\)](#) addresses this scenario.

The third major theme is: self-care management by diabetes patients. The first minor theme under this is continuing to take prescription medicine. All participants are careful to take the medicine following their doctor's orders because they want to be healthy and to control their blood sugar levels. The medicine for treatment of type I diabetes is insulin. The patients have to use it their whole life to reduce sugar levels in their blood. The patients should know the method of using the medicine. For type 2 diabetes, the treatment is to reduce sugar levels in blood by using different medicines to stimulate the secretion of insulin, to increase sensitivity of tissues to insulin, and to reduce the absorption of glucose. However, different prescription medicines have different instructions. So, the patients should follow the instructions carefully as indicated by [Lemes Dos Santos et al. \(2014\)](#).

The second minor theme is finding alternative treatment. Participants mentioned that they used another treatment methods when they were taking prescription medicine from the hospital. Some patients tried to use only herbal medicines because they hope that it will help them to reduce their blood sugar levels without taking western medicine. However, there are unprocessed herbals in Thailand which can be harmful. So, the patient should be careful in using it ([Rawdaree et al., 2006](#)) when they try these unprocessed natural herbal products.

The third minor theme is improving their diet or eating the right food. After being diagnosed, all participants tried to change their eating habits by reducing sweet food intake and eating more vegetables. From the literature review, it was found that food control helps to reduce blood sugar levels of patients with diabetes type II by 58 percent, according to [Deerochanawong and Ferrario \(2013\)](#). The appropriate food for diabetes patient is mono-unsaturated fatty acids because high cholesterol laden food can cause complications in the vascular systems of diabetes patient. The patients should eat less than 25 g of carbohydrates per day and should stop eating sweet food and sugary drinks ([Lemes Dos Santos et al., 2014](#)).

The fourth minor theme is knowing the need to do more exercise. All of the participants told the researcher that they are aware that they should exercise, but they cannot exercise because they do not have the time to do it. Some participants have diabetes related complications such as dizziness and weakness, and these issues make it hard for them to do any exercise. Exercise makes the body use more energy and improves lung and heart functions. Lemes Dos Santos and colleague's research suggests that for type I diabetes patients, they should not exercise while they have too high or very low blood sugar levels ([Lemes Dos Santos et al., 2014](#)). For obese type II diabetes patients, when they are using insulin, they should not do exercises either; but if they use non-insulin drugs, they should do exercise because it helps them control their weight and blood sugar levels ([Lemes Dos Santos et al., 2014](#)).

The fifth minor theme is observing and being aware of diabetic mellitus symptoms. All participants have high levels of awareness of diabetes symptoms and are observant about the symptoms such as dizziness, weakness, vertigo, more sweating and frequent urination since they experienced it before. Those are symptoms of hypoglycemia and hyperglycemia that are acute complications of diabetes disease. This often happens to those patients who could not adapt themselves, according to the research by [McLeod \(2002\)](#).

The sixth minor theme is stress management. Participants mentioned that they manage their stress by doing good deeds such as donating food or making merit to monks and praying in the temple or at home every day. This is a good stress management method, and it can reduce stress and worries. However, sometimes it can also increase blood sugar level, as Anderson and his group pointed out in their research ([Anderson, Goebel-Fabbri, & Jacobson, 2004](#)).

The last minor theme in the third major theme is accept support. Participants mentioned that they have to accept and rely on support from family and friends to make their lifestyle change or to change their behavior. As Anderson described in his paper, "...because the family gives strong support to chronic illness disease patients in adaptation of new life style and for appropriate treatment" ([Anderson et al., 2004](#)). Also, in the literature review, it was also found that there is a strong correlation between social support and blood sugar level control for type II diabetes patients ([Fatema et al., 2017](#)).

The last major theme is having the knowledge but can't apply their knowledge. Under that, the first minor theme is: incomplete knowledge, limited knowledge or ignorance. All participants mentioned that they know what they have to do to control their blood sugar levels because they got the knowledge from a doctor and/or a nurse but they still eat something that they should not eat, such as they drink local drinks and soft-boiled egg with energy drink every day. Another participant took some medicine without having dinner because the participant did not have complete knowledge. So, when a health care provider educates the patient, the provider should be aware of the basic situation of each individual, including the patient's education level and interest, and then do evaluations and adjustments based on this information ([Fatema et al., 2017](#)).

The second minor theme is their lack of self-control. All of the participants mentioned that they cannot motivate themselves to exercise or eat right because they are too busy with their work and some of them cannot select the food to eat. Self-control is the ability to control one's emotions and behavior in eating and exercise, which is sometimes called self-regulation. From literature review it is claimed that self-control or self-regulation can control and improve the health of chronic patients by [Leeman \(2006\)](#).

The results support that patients with uncontrolled diabetes did not understand clearly the diabetes knowledge they got from health care providers in the Diabetes Clinic. It results to having poor self-care management for controlling blood sugar levels. However, [Lorig \(1993\)](#) suggested that effective self-management requires an individual with DM to have the ability to absorb and digest DM-related knowledge, apply that knowledge to his or her own situation and make adjustments of the self-management accordingly, as new challenges emerge. So in this sense, after a period of self-management, the individual will become an expert in managing his or her own disease.

The results show that uncontrolled patients need social and family support to deal with their disease. Social support also can foster adherence to recommended healthy activities for person with diabetes. A study in Thailand revealed that interventions for behavioral change or adherence to self-care requirements should include the family members of the person with diabetes as part of the self-management program ([Khuwatsamrit et al., 2006](#)). Most of Thai persons with diabetes cannot control their blood sugar levels because of poor self-care management which may be a result of family issues or a poor health service system ([Deerochanawong & Ferrario, 2013](#)).

Culture and religion may affect the experiences of diabetic persons along with their interpretation of self-management of this chronic disease ([Carbone, Rosal, Torres, Goins, & Bermudez, 2007](#)). This study found that the patient believes in the different ways on how to deal with the disease such as the food that they believe are good to eat and also trying alternative treatments. The study conducted by [Sowattanagoon et al. \(2009\)](#) found that for persons with diabetes in Thailand, their perceptions and management of the disease are the synthesis of their knowledge, health beliefs, and socio-cultural values. It was evident that in Thailand, both Western medicine and Thai religious culture influenced the way that a person with diabetes understands the cause of his or her diabetes, as well as how he/she lives and manages the disease.

5. The implications

The implications of this study for nursing and health promotion are:

1) Nurses and doctor or the health care team should spend more time to listen to what a patient says especially, to understand reasons for those who have difficulties in controlling their blood sugar levels. 2) Nurses and doctors or the health care team should give health education to the patient's family or caregiver to understand more about caring. 3) Caring in a diabetes patient should offer both care to their body and mind. They should also inform their parents about that because when they get diagnosed for the first time, patients will feel stressed and worry about their disease. So, the parents should help and support their children. 4) Nurses and doctors or the health care team should make suggestions about using herbal medicine or alternative forms of treatment to patients, providing guidance for the patients to make the right decisions and to use it properly. 5) Nurse and doctors or the health care team should continue the development of health education programs and evaluations for diabetes patients.

6. Conclusion

This study helps to learn more about the self-care management experiences of diabetes patients, which depend on how they accept the disease, their beliefs about the disease and the treatments of the disease. It is important to find the cause of behavioral changes and its difficulties. Specially designed self-care programs can be helpful. Educating patients, their families and their friends is also very useful.

This study helped the researcher understand more about the diabetes patients mindset including "accepting" (accepting the fact that they are diagnosed as having diabetes) from the patients' prospective. Some are inconsistent with the treatment such as accepting about taking medicine without dinner, so it leads to incorrect self-management of patients.

The researcher learned that he must prepare himself more about the knowledge of the disease including doing more literature review, studying more about the illness, and building a relationship with the sample in order to get accurate data. The researcher has also learned how to conduct qualitative research and practiced interviewing, conducting data analysis, and writing qualitative research.

7. Limitation

This study has following limitations: small sample, limited interview just one time per sample (cannot re-interview due to patient's access to the local clinic); no data possible from observation of participant behavior and their environment for independent verification of the data collected; no data from family members or close friends for verification; the researcher should interview nurses and doctors for additional support for the data obtained.

Conflict of interest

How diabetes patients accept the illness? And Does the patient's behavioural changes depend on environment under social, culture and individual beliefs?

- This research is to explore the experience of self-care management among Thai persons living with diabetes whose have early progression of diabetic ephropathy.

- The overall goal of the study is to help develop a diabetic care system in Thailand

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