



**UNIVERSITI PUTRA MALAYSIA**

***COMPETENCIES OF DIABETES EDUCATORS IN FACILITATING SELF  
MANAGEMENT AND ITS ASSOCIATED FACTORS AMONG DIABETIC  
PATIENTS IN MALAYSIA***

**UMMA DEVI A/P SUBRAMANIAM**

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By

**UMMA DEVI A/P SUBRAMANIAM**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfillments of the Requirements for the Degree of Master of Science**

**July 2016**

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## **DEDICATION**

This thesis is dedicated to:

My dearest husband

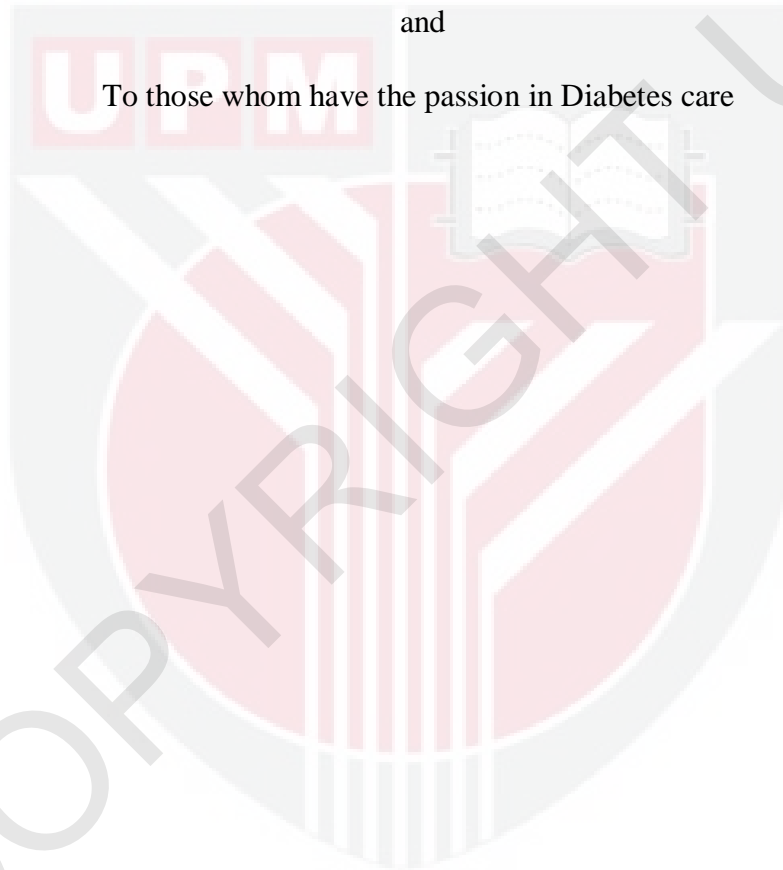
My lovable son

My supportive mother in law

My sister and brother in law

and

To those whom have the passion in Diabetes care



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the Degree of Master of Science

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By

**UMMA DEVI A/P SUBRAMANIAM**

**July 2016**

**Chairman : Hayati binti Kadir@ Shahar, PhD**  
**Faculty : Medicine and Health Sciences**

**Introduction :** Diabetes Mellitus is emerging as an epidemic of the 21<sup>st</sup> century and threatens to overwhelm the health care system in the near future. There were nearly 1.5 million adults affected by the disease and there is an increment of about 3.3% in the prevalence of diabetes over the last decade in Malaysia. Self-management of diabetes among diabetic patients can be achieved through diabetes education provided by competent diabetes educators.

**Objectives :** The aim of the study was to determine the diabetes educators' competencies to facilitate self- management and its associated factors among diabetic patients in Malaysia. The specific objectives of this study were to determine the socio-demographic, service and training factors of diabetic educators, their knowledge on the five domains of competencies on the clinical understanding of diabetes management (Domain I), culturally-competent supportive care across the lifespan (Domain II), teaching and learning skills (Domain III), diabetes self-management practices (Domain IV), and health promotion and other programs (Domain V), and the challenges faced by them in counselling diabetic patients.

**Methodology :** This was a cross-sectional study using a self-assessment questionnaire adapted from American Association of Diabetes Educators Guidelines (2013) with 445 diabetes educators randomly selected using simple random sampling in Primary and Secondary Healthcare Centres from five states in Malaysia. The reliability and validity of the questionnaire were done. Mean and standard deviation were used to compute the competencies of diabetes educators' on the five domains of competencies. Their level of competency was determined as Level 1 (low competency), Level 2 (moderate competency) and Level 3 (high competency). The study also described the challenges faced by the diabetes educators in their daily job. To test the significant

association between the independent variables (socio-demographic, service and training factors factors) and dependent variable (level of competency), a Pearson Correlation test of association was used. Multiple linear regression was used to predict the variables of diabetes educators' competency.

**Results :** The findings of the study showed that mean value for the competency of the diabetes educators is  $3.11 \pm 0.44$ . The mean values for the Domain I was  $3.35 \pm 0.55$ , Domain II was  $3.37 \pm 0.54$ , Domain III was  $2.69 \pm 0.59$ , Domain IV was  $3.21 \pm 0.50$  and Domain V was  $2.91 \pm 0.70$ . In terms of association between the independent and dependent variables, that there was a weak and negative association between age and competency. There was also weak and significantly positive association between the number of years as diabetes educator and competency. There were significant associations between gender, ethnicity, job position, academic qualification and type of post-basic course attended and their level of competency. The overall mean for the challenges faced by diabetes educators was at moderate level. Predictors of diabetes educators' competency were gender, ethnicity, academic qualification and number of years as diabetes educators.

**Conclusion :** The overall competency of the Malaysian diabetes educators was high at Level 3. Their competency was associated positively with gender, number of years as diabetes educators and type of post-basic course attended and negatively associated with age, ethnicity, job position and academic qualification. They were satisfied as their role was recognised by their superiors and they were given the empowerment to carry out the relevant programs related to the patients' diabetes control.

**Keywords:** Diabetes Mellitus, diabetes educator, competencies, self-management of diabetes, diabetic patients.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

**KOMPETENSI PENDIDIK DIABETES DALAM MEMBANTU  
PENGURUSAN DIRI DAN FAKTOR-FAKTOR BERKAITAN DIABETES  
DALAM KALANGAN PESAKIT DIABETES DI MALAYSIA**

Oleh

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**Julai 2016**

**Pengerusi : Hayati binti Kadir@ Shahar, PhD**  
**Fakulti : Perubatan dan Sains Kesihatan**

**Pengenalan :** Diabetes Mellitus telah mula berkembang menjadi suatu epidemik dalam abad ke 21 dan dijangka menjadi suatu masalah kesihatan yang besar dalam pengurusan kesihatan. Lebih kurang 1.5 juta orang dewasa menghadapi penyakit ini di Malaysia dan terdapat peningkatan sebanyak 3.3% pada dekad yang lalu. Pengurusan kesihatan diri yang baik dalam kalangan pesakit diabetes boleh dicapai melalui pendidikan diabetes yang diberikan oleh pendidik diabetes yang kompeten.

**Objektif :** Mengkaji kompetensi pendidik diabetes dalam membantu pengurusan diri dan faktor-faktor berkaitan diabetes dalam kalangan pesakit diabetes di Malaysia. Objektif khusus kajian ini ialah untuk menentukan faktor sosio-demografi, perkhidmatan dan latihan yang dilalui oleh pendidik diabetes, tahap ilmu pengetahuan mereka di dalam lima domain kompetensi iaitu pemahaman klinikal dalam pengurusan diabetes (Domain I), bantuan kepada pesakit dari pelbagai budaya dan usia (Domain II), kemahiran pengajaran dan pembelajaran (Domain III), amalan pengurusan diri dalam diabetes (Domain IV) dan promosi kesihatan dan program lain (Domain V) serta cabaran yang dihadapi oleh mereka dalam hal kaunseling pesakit diabetes.

**Kaedah :** Kajian ini berbentuk kajian analisis keratan rentas dengan menggunakan soal-selidik penilaian sendiri yang diadaptasi daripada Garis Panduan Persatuan Pendidik Diabetes Amerika Syarikat (2013). Sampel kajian seramai 445 orang pendidik diabetes telah dipilih dari Pusat Kesihatan Primer dan Sekunder dari lima negeri di Malaysia melalui persampelan rawak. Kebolehpercayaan dan kesahan soal selidik telah dilakukan. Min dan sisihan piawai telah digunakan untuk mengira kompetensi di dalam lima domain kompetensi. Kompetensi mereka telah ditentukan sebagai Tahap 1 (kompetensi rendah), Tahap 2 (kompetensi sederhana) dan Tahap 3

(kompetensi tinggi). Kajian ini juga menjelaskan tentang cabaran-cabaran yang dihadapi oleh pendidik diabetes dalam tugas harian mereka. Untuk menguji sama ada terdapat perhubungan yang signifikan di antara variabel tidak bersandar (faktor sosio-demografi, perkhidmatan dan latihan yang dilalui) dan variabel bersandar (tahap kompetensi), Ujian Korelasi Pearson telah digunakan untuk analisis data. Regresi Linear Multiple telah digunakan untuk meramal variabel-variabel yang menentukan kompetensi pendidik diabetes.

**Hasil :** Keputusan kajian menunjukkan bahawa min keseluruhan kompetensi pendidik diabetes ialah  $3.11 \pm 0.44$ . Nilai min bagi Domain I ialah  $3.35 \pm 0.55$ , Domain II ialah  $3.37 \pm 0.54$ , Domain III ialah  $3.37 \pm 0.54$ , Domain IV ialah  $3.21 \pm 0.50$  dan Domain V ialah  $2.91 \pm 0.70$ . Dari segi hubungan di antara variabel tidak bersandar dan bersandar, terdapat hubungan lemah dan negatif yang tidak signifikan di antara umur dan kompetensi. Terdapat hubungan yang lemah dan positif yang signifikan diantara bilangan tahun perkhidmatan sebagai pendidik diabetes dengan kompetensi. Terdapat hubungan yang signifikan di antara jantina, etnik, kedudukan jawatan, kelayakan akademik dan jenis kursus pos-basik yang dihadiri dengan tahap kompetensi. Min keseluruhan bagi cabaran yang dihadapi oleh pendidik diabetes berada pada tahap sederhana. Variabel-variabel jantina, etnik, kelayakan akademik dan bilangan tahun perkhidmatan sebagai pendidik diabetes adalah variabel ramalan kompetensi.

**Kesimpulan :** Kompetensi keseluruhan pendidik diabetes Malaysia berada pada tahap yang tinggi iaitu tahap 3. Terdapat hubungan yang positif di antara jantina, bilangan tahun perkhidmatan sebagai pendidik diabetes dan jenis kursus pos-basik yang dihadiri dengan kompetensi dan hubungan yang negatif di antara umur, etnik, kedudukan jawatan dan kelayakan akademik dengan kompetensi. Pendidik diabetes berpuas hati dengan pengiktirafan yang diberikan oleh pihak pengurusan dan mereka diberi kuasa untuk melaksanakan program-program berkaitan kawalan diabetes.

**Kata Kunci:** Diabetes Mellitus, pendidik diabetes, kompetensi, pengurusan diri diabetes, pesakit diabetes.



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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
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## LIST OF ABBREVIATIONS

MOH	Ministry of Health, Malaysia
DE	Diabetes educators
DSME	Diabetes self-management education



## CHAPTER 1

### INTRODUCTION

#### 1.1 Background

Diabetes educators are healthcare professionals who focus on educating people with and at risk for diabetes and related conditions (Hill & Clark, 2008). They are specialized in diabetes education, well-experienced in the management of diabetes education and have the credentials to provide effective self-care diabetes education to the people across the spectrum of diabetes. In developed countries like United States of America, the diabetes educators have credentials with post graduate degrees. The American Association of Diabetes Educators (2016) has formulated the levels of practice for diabetes educators describing the roles and responsibilities of the multiple levels of diabetes educators and suggesting a career path for them in diabetes education. The diabetes educators' role has evolved from time to time, from merely being educators to managers and counsellors of the disease recently (Powers et al., 2006). However, the position of diabetes educators is different in Malaysia. There are a few challenges in expanding diabetes education in Malaysia since the definition of diabetes educators has not been defined yet. The official position of the diabetes educators are considered new in Malaysia.

According to American Association of Diabetes Educators' (2014), diabetes educators need to apply their knowledge and skills in the management of diabetes by possessing effective communication, counselling and educative skills to provide self-management education. The main aim of diabetes educators is to accommodate patients' behavioural changes in their life so that the patients could achieve a better health status in their lives. The diabetes educators should possess effective communicative, educative and counselling skills so that they could provide appropriate diabetes self-management education to their patients. The competent diabetes educators should possess sound knowledge in risk management and prevention of diabetes and be able to diagnose the disease at every stage of age and identify the psychological impact of the disease on the patients. They should also be well trained in teaching and learning skills and aware of the cultural practices of the patients so that they could use the knowledge on cultural differences to treat the patients accordingly. Currently, the diabetes educators are expected to use the data from relevant research findings on the diabetes management to guide them to provide the best treatment for their patients.

It is reported that diabetes education provided by diabetes educators improves clinical outcomes and quality of life; it is therefore recognized that persons with diabetes should have access to diabetes self-management education (DSME) (American Association of Diabetes Educators, 2014). The aim of the DSME is to provide better health status and quality of life to the patients and also help to reduce the increasing cost of treatment of diabetes. According to Syed Wasif Gillani et al. (2012), people with diabetes must acquire the knowledge and skills through education to provide

daily self-care in diabetes management which involves maintenance of healthy living, recognition and management of diabetes problems when they arise and taking preventive measures. The American Diabetes Association found that there was an increase in diabetic complications for those individuals with diabetes who had not received formal education concerning self-care practices (Mensing et al., 2006). The importance of diabetes education is further emphasized by Fan & Sidani (2009) who found that DSME is effective in improving knowledge, behaviour and metabolic control outcomes among patients with type 2 diabetes in Canada. The educational programs provided by diabetes educators can give patients the opportunity to manage their lifestyle better to cope with the disease (Rampal et. al, 2010).

DSME was first introduced around the 1980s in Malaysia. It is a collaborative process provided by diabetes educators through which people with or at risk for diabetes gain the knowledge and skills needed to modify their behaviour and successfully self-manage the disease and its related conditions (Kisokanth et. al, 2013). Even though the DSME has been found to be effective in controlling the disease in many developed countries but the result has not been as expected in developing countries like Malaysia. Tan et al. (2008) had found that in the management of type 2 diabetes in one of the Malaysian hospitals that there were deficiencies in intervention of lifestyle and screening of complications for the patients. This is followed by a study by Chew et al. (2011) who found that there is difficulty in providing optimal care and reaching treatment targets for adults' type 2 diabetics even at one of the country's leading tertiary outpatient clinic. They suggested that measures must be taken to improve care for patient with diabetes to reduce morbidity and complications. Both these studies suggested that the hospitals should provide better strategies so that the patients could adhere to the guidelines. It is recommended that a greater collaboration should take place between doctors and health care staffs since management of diabetes is complex and needs patients' behavioural change in their self-management of the disease (Salmiah & Kamaruzaman, 2009).

The service of competent diabetes educators is crucial in Malaysia as diabetes is emerging as an epidemic of the 21<sup>st</sup> century and threatens to overwhelm the health care system in the near future. According to the International Diabetes Federation (2015), there were 3.3 million cases of diabetes in Malaysia in 2015. The World Health Organization (2016) report stated that the prevalence of diabetes had doubled since 1980 from 108 million to 422 million in 2014. Diabetes has caused an estimated 1.5 million deaths which were directly related to diabetes and another 2.2 million which were due to high blood glucose. The organization had estimated that each year, the diabetes costs the world nearly \$830 billion in direct medical costs alone. The disease must be addressed as early as possible. In Malaysia, diabetic care management mainly focuses on the intervention level at pharmacological and surgical treatment (Rampal et al., 2010). Generally there is a lack of awareness among the public about the disease even though the Malaysian Ministry of Health carries out various health campaigns to educate them. It was found that the diabetes self-management of the patients and the interactions between the diabetes educators and the patients were still at a poor level. One of the ways to prevent or determine the disease is through DSME which is carried out professionally by the trained diabetes educators in Malaysia and worldwide.

Therefore, it is crucial to make sure the diabetes educators are highly competent enough to educate and facilitate their diabetes patients, prediabetes or the public on their diabetes care.

## **1.2 Problem Statement**

Diabetes Mellitus is emerging at an alarming stage in Malaysia and the world. In Malaysia, The National Health and Morbidity Survey (2015) had reported that the overall prevalence of diabetes mellitus among adults of 18 years and above was 17.5% and there was a general increasing trend in prevalence with age from 5.5% in the 18-19 years age group, reaching a peak of 39.1% among the 70-74 years age group. The survey also reported that the prevalence was slightly higher in urban areas at 17.7% compared to rural at 16.7%. The prevalence was higher in females at 18.3% compared to males at 16.7%. The World Health Organization (2016) has reported that the healthcare professionals all over the world are facing great challenge in controlling the rising cases of diabetes and the disease is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. There is a necessity to re-look carefully at the diabetes management system to achieve a better control of diabetes. One of the important strategy to promote and improve the awareness of the disease among the public is through diabetes education (Rampal et. al, 2010). Many research studies reported that the quality of life of diabetic patients has improved with good quality diabetes education provided by diabetes educators who assist the patients on medications, exercise, diet, foot care and monitoring of glucose level regularly.

Diabetes educators usually provide the DSME and they focus on educating people with and at risk for diabetes and related conditions. They apply their in-depth competencies and skills in diabetes management, communication, counselling and education to provide diabetes self-management education. According to Anderson (2007), the amount of knowledge that is delivered to the patients depends very much on the delivery process in the education programmes. The quality of the education depends on the personality of the diabetes educators and their ability to counsel and educate the patients. The diabetes educators should not function as providers, but should function as facilitators and educators (Rampal et al, 2010). There is a need to improve the quality of DSME provided in the diabetes centres. Azimah et al (2010) has stated that the education sessions for diabetics in the centres need to be improved especially in the areas of knowledge. The modes of delivery, as well as counselling and educating skills of the educators are equally important and have to be addressed as well.

Rampal et al. (2010) suggested that the health care professional's role in managing the disease should be reassigned as facilitators and educators and capacity building of diabetes educators need to be enhanced. In Malaysia, it is vital to prevent the disease at primary level and the factors contributing the prevalence of diabetes need to be addressed urgently to avoid morbidity and mortality from diabetes. One of the approaches is to enhance the DSME in the community. The diabetes educators could educate the diabetes patients with the appropriate knowledge and skills of self-



management of diabetes through DSME. The Training Division of Ministry of Health has been conducting Post-Basic Diabetes Management Course for the diabetes educators since 2003. Even though a number of cohorts have completed the course successfully but till now, the Training Division nor the Service Division has yet to assess the performance of the diabetes educators who are serving in the Diabetes Resource Centres or any diabetes care units in the government health care centres. So, the study focused on diabetes educators who were working in the public health care clinics and hospitals.

The International Diabetes Federation (2003) has set a standard that the competence and performance of diabetes educators must be reviewed at least annually. This recommendation is further supported by Rampal et al. (2010) who suggested that there should be an assessment on the competencies of the diabetes educators in the management of the disease. As such, there is a need to determine the competencies of the diabetes educators on their clinical understanding, teaching and learning skills and self-management practices of diabetes. The study was as a stepping stone to see the overview of the Malaysian diabetes educators' competency level and from the findings of the study future research studies could be done to assess and enhance the crucial part of diabetes educator's role in DSME in Malaysia and abroad.

### **1.3 Significance of the Study**

This study provided a tool to give useful information on the level of competencies and skills of diabetes educators who have undergone the Diabetes Management course in Malaysia from self-evaluation and their own perspective. The result can be a milestone to enhance and improve their knowledge and skills in diabetes care. Diabetes educator's role as an educator and facilitator for their patients to achieve good quality of life with good self-management can be more credential. The study also focused on their challenges faced by them in the centres and the impact as diabetes educators which could be brought out for further improvement.

The study should be a basis for further diabetes related research and also in identifying the diabetes educators' competencies at various levels of their practice. Moreover, the sample size in the study represented the population of diabetes educators in Malaysia. So the study-results can be generalized and this was a novel study done locally. So far in Malaysia those who have undergone this diabetes management course were not evaluated and no evaluation tool has been established. From the study, the Malaysian diabetes educators' competency level could be determined and follow-up measures could be taken to improve their services.

The study could help to enhance the current strategies used by the Ministry of Health in designing and directing DSME practice. It also would help the ministry to focus on the ways to educate, support and coach the diabetes educators credentials and award them a professional credibility according to their diabetes care knowledge and skills. To assist this, our health care system need to develop a guideline to measure the

diabetes educators' competencies. This guideline could be used to identify the diabetes educators' competencies in terms of their knowledge, skills and capability at different level of their practice. This could further provide a framework for diabetes educators to assess their competencies in diabetes management. The findings would help the Training Division of Malaysian Ministry of Health to indicate the strengths and weaknesses of the post-basic course conducted and improve and enhance the six month post-basic course curriculum and its implementation. The findings from the study also would assist the Training Division and the Service Division of MOH to review and improve the course curriculum and its implementation in near future. The study focused on the health care staffs whom were fully involved in facilitating Diabetes Self-Management Education (DSME) among diabetics in all the primary and secondary health care setting locally. The study determined the diabetes educators' competencies in facilitating diabetes self-management among the patients in Malaysia. Thus, the study could be used as a baseline study for developing more comprehensive diabetes management courses in future. Moreover the health care service centres could enhance their services in Diabetes Resource Centre (DRC) and other diabetes care centres.

Diabetes education which focuses on diabetes self-management is very crucial for diabetics. Therefore, diabetes educators' competencies in facilitating Diabetes Self-Management among diabetic patients is important. This is to make sure that the diabetes educators are more knowledgeable and skillful to deliver and facilitate their patients' diabetes self-management. As a result, diabetics in Malaysia can get the best diabetes care from their diabetes educators.

The study would also contribute significant findings to the body of knowledge on management of diabetes by diabetes educators in clinics and hospitals in Malaysia. The findings would enlighten the diabetes community of the world on the effectiveness of diabetes management provided by diabetes educators in Malaysia and would become a comparative study to gauge Malaysia's standing in the management of diabetes compared to other countries.

## **1.4 Objectives**

### **1.4.1 General Objective**

To determine the competencies of diabetes educators in facilitating diabetes self-management education and its associated factors among diabetic patients in Malaysia.



### 1.4.2 Specific Objectives

The specific objectives of the study were:

- i. to describe the socio-demographic of diabetic educators (age, gender, ethnicity) and the service and training factors of diabetes educators (job position, number of years in service, academic qualification, post-basic course attended, number of years as diabetes educator and allowance)
- ii. to describe the competency level of diabetes educators according to the five domains of competencies (pathophysiology, epidemiology and clinical guidelines of diabetes, culturally-competent supportive care across the lifespan, teaching and learning skills, diabetes self-management practices and program and business management/diabetes health promotion)
- iii. to describe the challenges faced by diabetes educators in counseling diabetics (non-recognizable role, no special allowance, empowerment on patients' diabetes control, patients' willingness to the counseling session)
- iv. to determine the association between socio-demographic, service and training factors of diabetes educators with their competency level among diabetic patients in Malaysia.
- v. to determine the predictors of diabetes educators' competencies among the diabetics in Malaysia.

### 1.5 Research Hypothesis

The research hypotheses for the study were:

Hypothesis 1:

H<sub>a</sub> : There is a significant association between socio-demographic factors and the competency level of diabetes educators in facilitating self-management among diabetic patients in Malaysia.

Hypothesis2:

H<sub>a</sub> : There is a significant association between service factors and the competency level of diabetes educators in facilitating self-management among diabetic patients in Malaysia.

Hypothesis 3 of the study:

H<sub>a</sub> : There is a significant association between training factor and the competency level of diabetes educators in facilitating self-management among diabetic patients in Malaysia.

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