

## Unity in Diversity and the Standardisation of Clinical Pharmacy Services

Editors: Elida Zairina, Junaidi Khotib,  
Chrismawan Ardianto, Syed Azhar Syed Sulaiman,  
Charles D. Sands III and Timothy E. Welty



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### **Unity in Diversity and the Standardisation of Clinical Pharmacy Services: Proceedings of the 17th Asian Conference on Clinical Pharmacy (ACCP 2017), July 28-30, 2017, Yogyakarta, Indonesia**

Elida Zairina, Junaidi Khotib, Chrismawan Ardianto, Syed Azhar Syed Sulaiman, Charles D. Sands III, Timothy E. Welty

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# The affect of audio visual education towards knowledge and the adherence DMT1 patients

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**ABSTRACT:** Non adherence of Diabetes treatment still becomes a problem in Diabetes management. Moreover, the adherence of diabetes patients was affected by knowledge. This quantitative research design is one-group pretest-posttest to observe the influence of audio-visual education in type 1 diabetes patients at age 11-19 years who are self-injecting insulin towards knowledge and the adherence. Respondents were followed for 3 months using material education needed by patients altogether with ISPAD Guideline. There were significant differences before and after audio visual intervention toward the increasing of adherence by using questionnaire,  $p=0.00$ (CI=0.95; $\alpha=0.05$ ) with  $p\text{-value}<0.05$ . Knowledge data of type 1 diabetes patient before and after education from 22 participants by using questionerre, the mean of the pre-post intervention of knowledge were  $5.36\pm 2.574$  and  $8.05\pm 2.299$  with significant of knowledge and adherence  $p\text{-value}<0.05$ . This study conclude that audio visual education can affect knowledge and the adherence before and after education of the adholescent patient. **Keywords:** Education, Audio visual, Diabetes type 1, Knowledge, Adherence

## 1. INTRODUCTION

According to the World Health Organization, Diabetes is a metabolic disorder that occurs either when the pancreas does not produce enough insulin or when the body can not effectively use the insulin that is produced.<sup>1</sup> Insulin is a hormone that regulates blood sugar and consequently hyperglycaemia is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels. (WHO,2006) Insufficiency

function of insulin can be caused by disruption or deficiency of insulin production by Langerhans beta cell of the glands pancreatic (diabetes Type 1). (WHO, 2006) Most cases are primarily due to T-cell mediated pancreatic islet  $\beta$ -cell destruction, which occurs at a variable rate. There are usually serological markers of an autoimmune pathologic process, including islet cell antibodies (ICA), insulin autoantibodies (IAA), glutamic acid decarboxylase (GAD), the insulinoma-associated 2 molecule (IA-2) and zinc transporter 8 (ZnT-8).(Craig *et al.*, 2011)



Diabetes problems can be seen from uncontrolled blood glucose, thereby increase the cost of patient therapy and another complication. (Salas *et al.*, 2009) Because of the high prevalence of diabetes and its complications, diabetes control is one important component of the program's health care system by providing education about diabetes. Knowledge of medication is an important step in the self-management process of adolescents diabetes patients.(Farsaei *et al.*, 2011)

According to the International Society for Pediatric and Adolescent Diabetes (ISPAD) Clinical Practice Consensus Guidelines, nearly 90% of Diabetes Mellitus patients in western are Diabetes type 1 consists of children and adolescent that diagnosed before 15 year. (Craig *et al.*, 2011) In Indonesia, at some hospital theres many DMT1 patient had community that helping patient to improved quality of life patient.

For children which have Diabetes type 1, most of complication's cases are hipoglycemia and ketoacidosis diabetic which caused by nonadherence diabetes therapy. (NICE, 2010: 9-29) Increasing the adherence of diabetes treatment can be done by giving education , which is important in diabetes management. This intervention can improve patients' knowledge about the disease and its treatment. (Osterberg and Blaschke, 2005)

Pharmaceutical care has changed the orientation from drug oriented to patient oriented. (MENKES, 2008:1-55) Pharmacist as health professional has responsibility to give education program for patients, so it can reduced morbidity and mortality DMT1 patients. (Blekinsopp *et al.*, 2000; WHO, 2005:4-30)

According to a systematic review, the arrangement management therapy of pharmacy community service and their education in diabetes patients, can improve long-term outcome in blood glucose profile, instead of patients who only received standart therapy without pharmaceutical care. (Chisholm-Burns *et al.*, 2010) Improve the

understanding of treatment instruction for patient safety, because it can change patient's habits to improve their adherence with treatment. (Apsden *et al.*, 2006) Some research on using audio visual resulted in positive outcome to control patients blood sugar. (Glazier *et al.*, 2006) These studies found that the patient can forget 72% of all oral information given by health care professional. (Houts *et al.*, 2006)

## 2. METHODS

### 2.1 Study population

Inclusion criteria on this research is diabetes patient type 1 at age 11-19 years who are self-injecting insulin and willing to participate in this research, able to communicate in Indonesian, literate, do not have hearing and communication problems

### 2.2 Method of the Study

This study is a quantitative research by one-group pretest-posttest. In this study, researchers wanted to know the effect of education by using audio visual media in DMT1 patient with ages ranges 11-19 years. The intervention is audio visual education technique .

Education material contains the definition of diabetes type 1, diabetes type 1 management such as monitoring the blood glucose, healthy lifestyle, physical activity, insulin treatment, complication (hypoglicemia and DKA) and also how to handle it. Review of the education for every 1 month during the study

Audio visual education is given to diabetes type 1 patient face to face by using simple animation. The samples in this study must follow for the educational intervention with audio visual for 3 months.

The sample of research should be controlled by the doctor routinely once a month to get education from pharmacist for 3

months and also to fill up the adherence and knowledge questionnaire. Every 2 weeks, we monitor patients by phone to review the audio visual education.

Instrument that used as education intervention is audio visual which have been validated from one expert doctor in methodology dan statistics research, one pediatrician endocrine and two clinical pharmacy. Self Care Inventory-Revised Version (SCI-R) questionnaire was used to observe the adherence. (Weinger *et al.*, 2005) Meanwhile a modification of Diabetes Knowledge Assessment (DKNA) was used to observe the knowledge of participants. (Dunn *et al.*, 1984) If the value of correlation coefficients is greater than 0,3 so it is valid question for questionnaire. (Siregar, 2013)

This research used Wilcoxon signed rank test data analysis to find out the influence of education toward the adherence and knowledge patient before and after audio visual education intervention. The question in knowledge and the adherence questionnaire are Likert scale with the value 1=never, 2=rarely, 3=sometimes, 4=often dan 5=every time. While for knowledge with paired t-test analysis to know about the influence of education which given to increase the adherence before and after audio visual education intervention.

Multivariate logistics regression is used for analyzed the compounding factor in this research with seen the Nagelkerke R value. Statistics analysis in this study is using SPSS 20.0 programs for Windows.

### 3. RESULTS AND DISCUSSIONS

According to patient's characteristics, from 50 total population, there were only 22 patients participated in this study. Three patients drop out while 25 patients were not qualified to participate in this study.

#### 3.1 Demographic characteristics

Most of respondents were at age range 13-15 years (36.36%) and most of them were female (63.64%). Most of respondents were high school graduates (40.91%), with the same type of insulin regimen between basal bolus insulin and *split-mixed* insulin which is 50% respondents.

Table 1: Demographic Type 1 Diabetes Patients

Demographic type 1 diabetes patient (n=22)		
	(Σ)	(%)
Gender		
Male	8	36.36
Female	14	63.64
Age (year)		
11-12	5	22.73
13-15	8	36.36
16-18	6	27.27
19	3	13.64
Level of Education		
Elementary School	5	22.73
Junior High School	7	31.82
High School	9	40.91
College	1	4.54
Duration of illness (years)		
1-5	10	45.45
6-10	12	54.55
Insulin Regimen		
Basal bolus insulin	11	50.00
Split-Mixed insulin	11	50.00

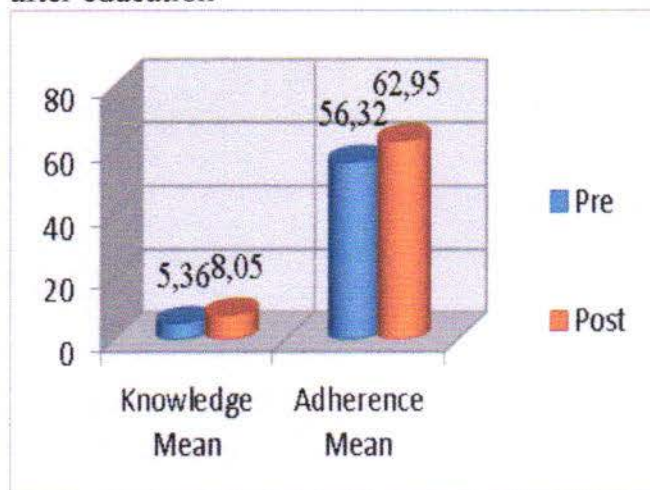
#### 3.2 Quantitative research

The total number samples this research are less than 50 samples, therefore Shapiro-Wilk test were used to analysed the data. A data can be said normal distribution if p-value is greater than 0,05. (Dahlan, 2010) The p-value of adherence before and after education showed the significance less than 0.05, so was not normal distributed. The p-value of knowledge before and after education showed the significance greater than 0.05, which means the data distribution was normal.

The analysis of the adherence before and after education with Wilcoxon signed rank test, indicated the significance p-value = 0.001. While the results of the knowledge

data of diabetes patients type 1 before and after education during 3 months differences level from 22 participants showed a significance value of  $p < 0.05$  is equal to  $p = 0.00$ .

Figure 1: Knowledge mean data before and after education



### 3.3 Confounding analyses

The result of multivariate logistics regression analysis indicates that age, level of education and duration of illness did not influence significantly in increasing patients knowledge with  $p$ -value greater than 0.05 (age  $p=0.26$  95%CI 0.03-2.72 OR=0.26; education level  $p=0.27$  95%CI 0.34-51.62 OR=4.17; duration of illness  $p=0.62$  95%CI 0.05-6.33 OR=0.54)

The first phase of this research were looking for information of type 1 diabetes patient about glycemic control by doing the interview. It was done in order to get audio visual material education that will increase the knowledge of adolescent patients so that it can improve the obedience's patients for treatment.

In education research that used valid audio visual method, conducted the adherence's measurement and knowledge of diabetes patients type 1 by using questionnaire before and after education within 3 months. The results of Wilcoxon signed rank test analysis showed that the significance is  $p=0,001$  (CI=0,95;  $\alpha=0,05$ ), which means there is a significant difference of the adherence before and after intervention with the average score

of pre-test are  $56,32 \pm 9,95$  and post-test are  $62,95 \pm 9,02$ . This finding similar with other studies. (Von Sengbusch *et al.*, 2006; Couch *et al.*, 2008; Kahana *et al.*, 2008)

The result of paired t-test on knowledge with DKNA questionnaire found an average pre-test score was  $5.36 \pm 2.574$  and post-test score was  $8.05 \pm 2.299$  with significant 0,00 (CI=0,95;  $\alpha=0,05$ ), which means there was a significant difference knowledge before and after intervention. Other studies found similar results, that there were differences level of knowledge before and after intervention. (Von Sengbusch *et al.*, 2006; Couch *et al.*, 2008; Howe *et al.*, 2005; Verrotti *et al.*, 1993)

The results of logistic multivariate regression showed that knowledge and adherence in diabetes patients type 1 were not influenced by others factor such as age, the level of education, the duration of illness, and also insulin regimen. The Nagelkerke R value 0.15; showed the confounding factor of knowledge level participants. While the result of the analysis showed that the adherence influenced by another factors with  $p$ -value less than 0,05, because in this study the value of participant compliance variables showed the obedient data.

### 3.4 Limitation

The limitation of this research is not doing the process of random sample, short research period only 3 months and used little sample so the data cannot be generalized for another diabetes type 1 population. Intervention by audio visual education become something new for diabetes patients type 1, so that it needs an adjustment and approach to achieve the purpose of the adherence's patients changing behavior with preliminary research through the interview.

## 4. CONCLUSION

The result of this research indicates that audio visual education method can be used as an educational tool for diabetes type 1 patients.

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