



RESEARCH ARTICLE

Theater Performing Art: a Strategy to Improve Self-efficacy and Social Support in Patient with Type 2 diabetes Mellitus (T2DM)

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Abstract

Background: The lacks of self-efficacy and social support are two neglected issues in patients with type 2 diabetes mellitus (T2DM). One of the popular methods to enhance those factors is theater performance art education (TPA), but its evidence in T2DM is lacking. Therefore, this study was aimed to measure the effectiveness of TPA toward social support and self-efficacy in T2DM. **Methods:** This study used quantitative methods with a quasi-experimental non-equivalent pre post-test control group design. The two variables measured were self-efficacy and social support. The subjects of this study were Prolanist member of patients with T2DM in the four primary health care centers in Sleman Yogyakarta Indonesia. Pre-test and post-test measurement were taken and compared to determine the efficacy of the TPA. **Results:** 102 subjects were used in this study (32 in control and 70 in intervention group) with women and 45-60 years old age group comprised the majority of the subject population. Mann-Whitney test showed that the self-efficacy score increased more pronouncedly in intervention group compared to control group (Δ mean intervention: 3.34 ± 4.74 ; Δ mean control: -0.75 ± 3.98 ; $p: 0.000$). Same result was also observed in social-support variable (Δ mean intervention: 1.63 ± 1.84 ; Δ Mean control: 0.38 ± 1.84 ; $p: 0.002$). Multiple logistic regression revealed that TPA only significantly affected self-sufficiency (Adjusted OR: 0.173; $p: 0.001$; 95%CI: 0.062 - 0.479) while barely influenced social support. **Conclusion:** The implementation of theater performing art-based community empowerment as part of social education helps in improving self-efficacy in patients with T2DM.

Keywords: T2DM, Theater performing art, Self-efficacy, Social support.

Introduction

Diabetes Mellitus (DM) is a chronic disease that caused by decrease in insulin secretion or sensitivity and often associated with micro- and macro vascular complications [1, 2]. The severity of this disease is reflected by its mortality rate at approximately 1.5 million deaths worldwide [3]. Type 2 diabetes mellitus (T2DM) is the most common type of DM which mainly caused by decreased insulin sensitivity and its incidence is

projected to increase from 347 million in 2013 to 438 million in 2030 [1, 3-6]. Unlike Type 1 DM, T2DM is strongly associated with sedentary lifestyle and obesity which are also a common trend in modern world [7]. Same trend is also observed in Indonesia in which the prevalence of DM is predicted to increase to 21.3 million in 2030 [8]. The integral part of T2DM management is controlling blood glucose level with more focuses are directed

to fasting blood glucose level [3]. However, poor self-management behavior often silently contributes to the worsening uncontrolled blood glucose level in diabetic patients. In addition, the development of comorbid or diabetic complications often lead to depression which then hamper patient's self-managing behavior.

It is believed that good self-management is positively influenced by good knowledge, positive beliefs, and self-efficacy [9]. These factors can be improved through education in health promotion aimed to improved knowledge, awareness, and healthy life [10]. In fact, patients who received an education tend to have better self-management, self-efficacy and knowledge, especially in maintaining blood glucose level [11, 12]. The previous study reported that community empowerment significantly improved patient's awareness in achieving a better and healthy life [13].

Community empowerment program often use educational media to deliver health messages to patients with significant impact to patient's survival [14]. Although such educational program has never been used in Indonesia, they have been implemented with great impacts in several developing countries. In Africa, theater performing art (TPA) was effective in increasing knowledge about malaria prevention and could easily understand by people with low educational level [15, 16].

However, the implementation of this program requires actors or trained personnel as well as regular training to reduce performance errors which can alter the intended messages [17]. The health messages are hoped to induce behavioral changes which will support medical treatment received by the patients. Therefore, according to the aforementioned description, this study aimed to evaluate the effectiveness of theater performing art (TPA) as social support and self-efficacy education in patients with T2DM

Methods

Study Design and Population

This study used quasi-experimental design pre-posttest control group design. The study population was Prolanis member with T2DM in two public primary health care centers (one intervention group and one control

group) and two private primary health care centers (one intervention group and one control group). Sample size was calculated according to statistical calculation with statistical power (β) at 20%.

$$n1 = n2 = 2 \left[\frac{(Z\alpha + Z\beta)s}{(x1 - x2)} \right]^2$$

According to the formula, a minimum of 32 subjects were needed for each group with a total sample size of 70 respondents. The sample number was already taking into account 10% drop-out probability. Inclusion criteria in this study included: T2DM patients that registered in the corresponding health centers, aged between 30-69 years old, committed to participate in the study, taking diabetic medication regularly, and has complete medical record. Those with visual, auditory, and/or kinetic disorders were excluded.

Intervention: Theatre Performing Act

Education Performing arts performed in four steps adapted from "The California Arts Standards for Theater" [18]. TPA was performed by peers (peer lead education) accompanied by the facilitator. The patients actively compiled a story script in a Javanese (local language) and Indonesian assisted by a performing arts expert. At the discussion phase, patients were divided into small groups with a maximum of eight patients. At the end of the discussion, the patients performed the act in front of their peers. TPA was performed for 30 minutes using simple and patient-like tools and properties.

Variables, Grouping and Measurement

The Independent variables of this study is theater performing art (TPA) while the dependent variables were self-efficacy and social support. Self-efficacy and social support data were collected by using questionnaires which already validated. All respondents were asked to fill an inform consent before enrolled in this study and randomly assign into intervention and control group. Intervention group received TPA two times per month for 3 months while control group only got health education from health care personnel.

Measurement was conducted by using questionnaire that contained two parts (self-efficacy and social support).

Before commencing the study, all subjects filled pre-test questionnaire to measure their basis score for self-efficacy and social

support. At the end of the third month, a post-test questionnaire was used to measure the change in self-efficacy and social support.

Table 1: Baseline characteristic distribution of respondents

Variable	Intervention (n=70)		Control (n=32)	
	Frequency	%	Frequency	%
Gender				
Male	18	25.7	7	21.9
Female	52	74.3	25	78.1
TOTAL	70	100	32	100
Age				
<45 years	5	7.15	1	3.1
45-60 years	47	67.15	23	71.9
> 60 years	18	25.7	8	25
TOTAL	70	100	32	100
Education				
No education	2	2.9	3	9.4
Basic	18	25.7	6	18.8
Secondary	16	22.9	7	21.9
Tertiary	19	27.1	8	25
Higher	15	21.4	8	25
TOTAL	70	100	32	100

Statistical Analysis

All collected data were compiled and presented descriptively. Categorical data was presented in real number and percentage. Numerical data were analyzed for their normality before proceeding to bivariate analysis. It presented in mean \pm standard deviation and mean difference between pre- and post-test was calculated and compared between the two groups. Finally, multivariate analysis was performed to eliminate the effect of other variables (age, gender and education).

Results

Initially, there were 138 T2DM patients registered in all four health care centers but only 102 were eligible and enrolled respondents. As described in Table 1, most of the respondents in both groups were women

(Intervention group: 74.3%; Control group: 78.1%) with mean age between 45-60 years old. In both groups, the proportion of educational level, except for "no education" category, was quite proportional with only minority of them had no education. Table 2 presents descriptive data of pre- and post-test score in intervention and control group.

As depicted, the pre-test score in control and intervention group was similar in both self-efficacy and social-support variables. However, the differences became more striking when comparing pre-test with post-test score in which the differences were higher in intervention group, both for self-efficacy (Δ Mean: 3.34 ± 4.736) and social-support (Δ Mean: 1.63 ± 1.84) compared to control group (Δ Mean self-efficacy: -0.75 ± 3.98 ; Δ Mean social support: 0.38 ± 1.85).

Table 2: Pre-post test scores of the intervention and control groups

Variable	Control Group		Intervention Group	
	Mean \pm SD	Δ Mean \pm SD	Mean \pm SD	Δ Mean \pm SD
Self-efficacy				
Pre-test	23.31 \pm 3.84	-0.75 \pm 3.98	23.16 \pm 4.37	3.34 \pm 4.736
Post-test	22.56 \pm 3.57		26.50 \pm 3.51	
Social support				
Pre-test	11.19 \pm 2.39	0.38 \pm 1.85	11.09 \pm 1.68	1.63 \pm 1.84
Post-test	11.56 \pm 2.38		12.72 \pm 1.54	

Then, normality test were performed before commencing to bivariate analysis. Normality test (Kolmogorov-smirnov test for Intervention group and Shapiro-wilk for

control group) showed that the self-efficacy and social support score in both groups were normally distributed (Table 3).

Table 3: The results of normality test and Mann-Whitney test of the effect of TPA toward self-efficacy and social support

Variable	Δ Mean	Std. Deviation	p-value of Normality Test	p-value of Mann-Whitney
Self-efficacy				
Intervention	3.34	4.74	0.645	0.000
Control	-0.75	3.98	0.804	
Social support				
Intervention	1.63	1.84	0.165	0.002
Control	0.38	1.84	0.819	

Taking into account the result of normality test, Mann-Whitney test was used to compare the mean difference between pre-test and posttest in the two groups. As depicted in Table 3, the mean difference in intervention group was significantly higher compared to the control group (p-value self-efficacy: 0.000; p-value social support: 0.002). It should also be noted that the score of self-efficacy in control group has negative value which indicates that the self-efficacy was actually worsen in the control group

Finally, multivariate logistic regression was performed to analyze the independent effect of each variable (Table 4). The result showed that only the intervention (TPA) was significantly influenced the self-efficacy in our subjects (Adjusted OR: 0.173; p: 0.001; 95%CI: 0.062 - 0.479). According to the OR value, it seemed that the intervention group had lower risk of having deregulated blood

glucose level. However, in terms of social support, occupations were the only significant variable (Adjusted OR: 3.808; p: 0.032; 95%CI: 1.121 - 12.934). The TPA had a barely significant value (OR: 0.401; p: 0.060; 95%CI: 0.155 - 1.038) but there was an indication that it tend to have a protective effect similar with the one that observed in self-efficacy.

Table 4: Multivariate logistic regression analysis results of the effect of TPA toward TPA toward self-efficacy and social support

Variable	Exp (B)	P-value	95%Confidence Interval
Self-Efficacy			
Gender	0.935	0.901	0.328 - 2.669
Age	1.260	0.609	0.520 - 3.051
Education	.809	0.685	0.292 - 2.247
Occupation	1.496	0.498	0.467 - 4.796
Intervention (TPA)	0.173	0.001	0.062 - 0.479
Constant	5.082	0.315	-
Social Support			
Gender	0.389	0.086	0.132 - 1.141
Age	1.472	0.395	0.604 - 3.588
Education	0.329	0.050	0.108 - 1.001
Occupation	3.808	0.032	1.121 - 12.934
Intervention (TPA)	0.401	0.060	0.155 - 1.038
Constant	6.919	0.239	-

Discussion

Theater performing art (TPA) based on patient empowerment has been proven to increase social support in T2DM, as shown in the result of this study, as well as in malaria and HIV. During the performance, peers provided mutual support and knowledge by sharing their experiences in controlling and maintaining blood glucose. Each patient was free to convey their problems that they

encountered in controlling blood glucose which then solved together by constructing strategy specific for their respective problem.

TPA was designed to be an entertaining and interactive educational method where the patients were presented with a collection of songs in combination with modern traditional music. The selections usually are the patient's or local's preferred media [15]. TPA has been implemented to socialize and

enhanced public awareness to several diseases in some regions [15, 16]. Several evidences also support the benefit of the implementation of TPA in T2DM, as this disease is chronic in nature and progress overtime[19]. In line with those reports, TPA also showed significant impact in terms of self-efficacy and social-support.

In some countries, the community empowerment model is realized in online. This program contains all the information needed about DM, including counseling with professional medical staff to establishing DM management plans [19, 20]. Several remarkable evidences were analyzed through systematic-review by Baldoni et.al., who reported that overall collective empowerment improved not only behavioral aspect of the patients, but also translated to their clinical parameters [21].

However, the timing in those studies ranged from 1.5 to 2 hours in a period of 6-12 months which is longer than the one used in this study. However, we proved that even shorter time per session and period (30 min per session for 3 months) was enough to induced significant behavioral changes. This difference might be influenced by several factors such as different approaches, local cultures, and subject's enthusiast. Nevertheless, it should be kept in mind that in applying TPA, traditional customs or theatre acts are preferable due to familiarity of local people toward it [22].

Social support based on community empowerment has profound effects on T2DM outcomes but it will only affect patients who are independent [20]. The support usually centralized on the family members as shown by several reports which showed that the patients who lived with or has close family boundary had improved self-care ability [23, 24].

This notion is apparent because low family support behavior is associated with poor medication compliance and blood sugar control [7]. The social support usually plays its most important role in enhancing patients compliance toward current therapeutic protocol and in doing physical exercise regularly [25]. In addition, family members can also contribute in helping the patient to solve any problems related to their medical

condition and providing explanation as well as assurance [26].

Indirectly, these factors improve the outcome of diabetes managements. This study provides further support for driving a change in paradigm about the health care system from a doctor-centered approach to a patient-centered one. The patient was encouraged independently by health workers to played an active role in problem identification and solving as well as the material that the needed to convey the messages to the others[27].

Increased in social support was also reported in several previous studies which showed that increased social support between teachers and students after participating in theater performance[28]. This social support is a social interaction that shows individual perceptions about being supported, loved, and valued through effective communication and reciprocal relationships [29].

Lastly, this study showed that TPA significantly increased self-efficacy which means that the patients were more independent in managing their disease. As shown previously, improvement of self-efficacy through family oriented self-management program effectively enhanced diabetic parameters such as fasting blood glucose and HbA1c [30]. In contrary to popular belief, it appeared that self-efficacy improved blood glucose independent from psychological effect since there is no link between self-efficacy to depression or anxiety[31].

However, this study has several limitations that should be considered in generalizing its findings. First, despite fulfilling the minimal requirement for sample number, the sample number in this study is still considered as small. The sample was also selected in only one province in Indonesia and other provinces or races have different culture and educational level distribution which could alter the result of TPA. Short follow-up time is also a limiter in this study and there is possibility that further changes in behavioral and laboratory aspects could be observed with longer follow-up.

Conclusion

Theater performing art (TPA) based on peer

empowerment significantly increased self – efficacy but it had less effect in social support in patients with T2DM. Further investigation with a more comprehensive study, longer period of observation, and inclusion of subjects from other provinces is needed to validate these findings.

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Ethic Approval

This study had been approved by medical and health research ethics committee of the faculty of medicine, public health and nursing, Universitas Gadjah Mada, on August 12, 2019 with ethical clearance number KE/FK/0938/EC/2019.

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