



Impact of coaching and self-hypnosis intervention on blood glucose levels of older adults in Indonesia[☆]



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Abstract

Objective: To explore the impact of an integrated method of coaching and self-hypnosis on the maintenance of blood glucose levels among older adults in Indonesia.

Method: The study's design was quasi-experimental with two sample groups: an intervention group and a controlled group. For the sampling method, 76 people were chosen using the multistage sampling method, then the member of the intervention group was chosen based on the study's purpose. This study used a paired *t*-test and an independent *t*-test. Non-fasting blood sugar tests (random blood sample) were taken twice, before and after the intervention for 4 weeks.

Results: There was a significant difference between blood glucose levels before and after intervention in the intervention group ($p = 0.000$). Coaching and self-hypnosis method was decreasing blood glucose levels significantly in the intervention group better than in the controlled group.

Conclusions: Coaching and self-hypnosis, when sustained for 4 weeks, can decrease blood glucose levels. This intervention can be part of lifestyle modification to decrease the blood glucose levels of older adults with diabetes mellitus. Furthermore, coaching and self-hypnosis intervention can also be integrated as part of the promotion and preventive acts in the prevention and management of non-communicable disease programs in communities.

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Introduction

The increase in life expectancy in Indonesia also causes an increase in the population of older adults in Indonesia. Besides, the world's life expectancy has also increased drastically. Nowadays, the prevalence of older adults reaches 11% of 6.9 billion total populations in the world.¹ Research showed that Indonesia's older adult population in 2013 makes up 8.3% of the total population, and it is predicted to become 21.4% by 2050.² This increasing population of older adults is accompanied by increases in morbidity and mortality rates, especially sickness or death caused by degenerative diseases such as diabetes mellitus. More than 346 million people worldwide have diabetes mellitus; 90% have type 2.³ The prevalence of people with diabetes mellitus (≥ 15 years old) in Indonesia has reached 2.1%.⁴ Complications of uncontrolled diabetes include retinopathy, stroke, cardiovascular disease, high blood pressure, kidney disease, blindness, nervous system disease, dental disease, amputation, complications in pregnancy, and biochemical imbalances that can cause life-threatening events.³

According to the author's survey in 2016 given to populations of older adults with diabetes mellitus concerning diabetes management practice, older adults showed confusion and guilty feelings about their daily diet. They felt there were too many rules that they needed to obey to follow a diabetic diet. They also said that they had not exercised as regularly as suggested. In addition, older adults also experienced temper tantrums and anxiety toward their health conditions or risk of complications, diseases, or death. They also said that they had not managed their stress appropriately. In conclusion, they said they had not managed their lives as suggested because they had not received clear guidelines about how to live with diabetes mellitus, especially regarding the diets, the exercise, and the stress management.

Older adults with diabetes mellitus need clear and accurate guidelines about life with diabetes mellitus. They will continue to face unique challenges in implementing diabetes mellitus management because of their functional decline. Additionally, older adults face difficulties exercising regularly due to their weaker bones and muscles. Older adults also have a risk of depression 28% higher, or 2–4 times higher, than other age groups.⁵ Previous researches showed that practice of self-management in older adults with diabetes mellitus, especially in diet arrangements, exercise, and stress management, showed significant results toward improving and controlling blood sugar levels.^{6,7}

Diabetes mellitus self-management based on an educational and holistic approach determined by health professionals is needed by older adults. That approach needs to enhance the practice of managing diabetes mellitus and to empower older adults to manage their diabetes mellitus. Thus, they can control their blood glucose levels regularly and prevent diabetes mellitus' complications by increasing their health status. In addition, education about self-management with diabetes mellitus needs to be associated with a skills-based approach focused on the clients'

ability to make their own decisions about their health.⁸ Diabetes education has changed from a didactic approach focusing on providing information to empowerment models that focus on helping those with diabetes make informed self-management decisions.⁸

Previous research showed that coaching methods could improve clients' ability to control their blood glucose levels.^{9,10} Another previous research showed that coaching methods could improve clients' ability to overcome obstacles while implementing diabetes self-care management.¹¹ Another previous research also showed that coaching methods could improve clients' skills in disease management and supporting health behavior changes.¹²

This research integrated coaching methods with self-hypnosis. Previous research showed that hypnosis reduced stress, which affects blood glucose levels.¹³ Hypnosis can also motivate respondents to exercise and maintain their participation in their physical routines, which in the end will provide significant results in respondents' physical fitness.¹⁴ Increasing respondents' motivation through the hypnosis method in diabetes mellitus self-care management, especially in the exercise aspect, is important because it can improve respondents' awareness about the importance of controlling blood glucose levels, increasing insulin sensitivity, and assisting with complication prevention. The applied coaching intervention, which was integrated with self-hypnosis, focused on skill mastery to increase respondents' motivation.

Self-hypnosis intervention integrated with other modality therapies will help to improve respondents' motivation, which can be beneficial by creating long-term or permanent changes in respondents' behaviors.¹⁵ Thus, if an individual who has learned about self-hypnosis can perform it, he or she can achieve positive changes and high motivation.¹⁵ Based on the explanation above, the researcher decided to complete a study integrating coaching intervention and self-hypnosis to determine its impact on blood glucose levels among older adults with diabetes mellitus.

Method

This study is quantitative research with a quasi-experimental design involving an intervention group and a controlled group. This research's sampling method was *multistage sampling* without *random assignment* to choose members of the experimental group or the controlled group. Members of each group were chosen based on the research's purpose.

This research passed the ethics test from Committee Research Ethics, Faculty of Nursing at Universitas Indonesia (No. 105/UN2.F12.D/HKP.02.04/2017) and applied basic ethical principles such as autonomy, beneficence, maleficence, and justice in the implementation phase. Coaching and self-hypnosis were conducted in two groups for 10 sessions over 4 weeks. Blood glucose levels were measured before and after the intervention. Each group was analyzed with a paired *t*-test. Thus, results from the intervention group and the controlled group were analyzed using an independent *t*-test.

Table 1 Difference in blood glucose levels after intervention ($n = 76$).

Variable	Intervention group		Controlled group	
	Mean difference	p value	Mean difference	p value
Blood glucose level	-37.69	0.000	6.92	0.143

Table 2 Blood glucose levels after intervention ($n = 76$).

Variable	Intervention group		Controlled group		p value
	Mean	SD	Mean	SD	
Blood glucose level	152.45	27.836	181.92	50.896	0.000*

* $p < 0.05$

Results

The research results showed that the gender of group members was predominantly female both in the intervention group (89.5%) and in the controlled group (94.7%). The groups' educational background was mostly individuals whose education extended until middle school both in the intervention group (63.2%) and the controlled group (65.8%). The marriage status was dominated by group members who were married both in the intervention group (57.9%) and the controlled group (63.2%). The mean age of the respondents was higher in the controlled group: 65.48 years old. The mean of the respondents' annual income in rupiahs was 1,602,631.58. The mean of the members' period of suffering from diabetes mellitus was higher in the intervention group: 3.61 years. The means of age, income, and period suffering from diabetes mellitus in both the intervention group and the controlled group were equivalent.

Results of univariate analysis, especially the mean score of blood glucose levels before the intervention, in the intervention group was 190.93 (SD = 40.788) and mean score of the controlled group was 175 (SD = 42.77). The blood glucose levels of the intervention group after intervention decreased to 152.46 (SD = 27.836).

In Table 1, the mean score of blood glucose levels in the intervention group before and after intervention showed a mean difference of 37.69. Thus, the paired t -test proved that intervention could decrease blood glucose levels in the intervention group ($p = 0.000$); however, the controlled group had results opposite from the intervention group. Table 2 shows that coaching and self-hypnosis has a significant effect on blood glucose levels ($p = 0.000$).

Discussion

After coaching and self-hypnosis intervention, the intervention group's blood glucose levels decreased and became lower than the controlled group. Previous research compared the impact of health coaching on the self-management of individuals with diabetes mellitus. Health coaching is the practice of health promotion to increase implementation of chronic diseases management.¹⁶ Coaching intervention has also proven to decrease fasting blood

glucose levels and diastolic blood pressure, and to improve individuals' physical endurance.¹⁷ Another research showed that self-hypnosis improves health status in the primary service setting as far as health problems, medical problems, and cessation of cigarettes.¹⁸ Self-hypnosis is an innovation that contributes to decreased stress and health promotion, including increased relaxation after the hypnosis experience.¹⁹

Blood glucose test was using non-fasting blood glucose test. Blood glucose test was done after 10 sessions of interventions for 4 weeks. This research used non-fasting blood glucose test because it worked more effectively for community-based research because the instruments were easy to find and it saved money. The author found that several older adults had normal blood glucose level before gotten the intervention. They said their normal blood glucose level caused by their active participation in Integrated Health Post for Older Adults (Posbindu). The author found that several older adults felt weakness, emotional instability, numbness in fingers and toes, skin dryness, sleep disturbance, and diabetic feet.

The strategy of this research's implementation considered older adults' physiological changes and cognitive impairments. This research also gave the intervention group members information about diabetes mellitus. Information was given on both simple and complex concepts to provide clear illustrations to improve respondents' understanding. The given information consisted of several topics; one topic was discussed per session because respondents have limited abilities to concentrate and sit still for a long period. Furthermore, the author gave the respondents opportunities to perform the skills they had learned, and used clear visual media, provided a comfortable environment, and implemented various learning methods.

Previous researchers have identified several important things that should be considered when educating older adults, such as the amount of learning time, because older adults do not learn as quickly as younger people, and they also tend to make decisions based on their past experiences; they need a longer time to think and analyze while learning something. Thus, older adults also reported that they sometimes felt unconfident in the learning process and tended to learn from observing their environment. These important findings need to be considered to provide greater time for

older adults to process their knowledge and to make their own decisions.²⁰ Coaching is a respondent-centered behavior or lifestyle intervention that helps respondents to make their own decisions. Therefore, it is important to include health promotion as part of coaching materials in order to trigger behavioral changes that can reduce the risk of sickness, increase self-management in chronic disease, and improve the quality-of-life of older adults.¹⁰

Coaching improves awareness, increases confidence, and teaches people how to set reasonable goals to help make important changes.²¹ Life coaching expands possibilities by helping people explore options, problem-solve, prioritize, anticipate and manage stumbling blocks, and make appropriate decisions that fit within their lives. The coaching method in this research used the “*Goal, Reality, Option, and the Way Forward*” strategy, also known as the GROW strategy. This strategy identified respondents’ goals (Goal), respondents’ current conditions (Reality), respondents’ choices (Option), and their commitment to implementing the plan that was decided (Way Forward). Besides identifying those five things, the GROW strategy also identified respondents’ problems and barriers when conducting diabetes self-management. It identified that the problems of the respondents included difficulty maintaining a proper appetite, boredom with the diet program, lack of understanding of their diet program or its benefits, lack of understanding of the benefits of exercise, irregular medicine-taking, physical limitations, and difficulty controlling their emotions. Therefore, this method has proven that it can identify and overcome older adults’ barriers while improving older adults’ self-management.²²

Coaching and self-hypnosis were performed for 4 weeks. The focus of the intervention consisted of diet management, exercise, and stress management. The author found that blood glucose levels commonly decreased because of older adults’ consistency in learning about diabetes mellitus self-management at every session until they could conduct their self-management. Their ability to perform self-management was demonstrated by their compliance to their diabetic diets, their active participation in exercise or any physical activities, their ability to identify their mood changes, and their ability to control their emotions. After conducting self-management, older adults felt relaxed, emotionally stable, and healthier.

Health coaching improves overall lifestyle while supporting self-management, better weight management, increased physical activity and mental health status.¹⁸ Self-management effects diabetes mellitus treatment in areas such as diet management, exercise, and stress management, and shows significant results in decreasing the risk factors of cardiovascular diseases in diabetes mellitus patients.⁷ The Integrated Health Management Model shows the increasing health knowledge, psychological condition, diet, and exercise duration in older adults.⁶

Health coaching increases the management of chronic diseases and effective patient education methods that motivate and improve lifestyle changes and supporting the patient’s home-based self-care.¹⁸ Health coaching is effective at developing self-efficacy, managing cognitive skills, problem-solving, and overcoming emotional barriers.²³ Health coaching is an effective intervention for

improving glycemic control, which provides more benefits than other diabetes treatments.²⁴

Based on the explanation above, coaching and self-hypnosis interventions performed over 4 weeks can decrease blood glucose levels among older adults with diabetes mellitus. Thus, the long-term impact of these interventions can facilitate behavioral changes, lifestyle modification, and overcoming of obstacles when conducting diabetes mellitus self-management.

Coaching and self-hypnosis focusing on diabetes self-management related to diet, exercise, and stress management over 4 weeks decreased blood glucose levels in the intervention group but not in the controlled group. This research can be used as a reference for community nursing services as intervention modification to improve self-management among older adults with diabetes mellitus. Thus, health promotion through coaching and self-hypnosis must become a concern of the government because these methods are beneficial for improving the quality of life of the older adult population in Indonesia. Suggestions for further research include increasing the intervention time to observe the long-term effects and permanent changes that are supposed to control blood glucose levels, behavioral changes and improve wellness and quality of life among older adults with diabetes mellitus.

Conflict of interests

The authors declare no conflict of interest.

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