

Establishment of the Latest Medical Management System to Prevent Diabetes Complications

Seong-Ran Lee

Department of Medical Information, Kongju National University, Chungnam

Abstract

This paper is to establish a recent medical management system to prevent diabetes complications. The subjects of this study were surveyed on 96 patients who visited the internal medicine clinic from July 13 to October 18, 2021 in the Metropolitan area. The derived results of this study are as follows. Firstly, weight loss was 70.8% in the experimental group, significantly higher than 35.4% in the control group ($X^2=1.75$, $p<.01$). Secondly, consuming roe deer mushrooms was the average 31.22 points of after application of management system, which was significantly higher than the average 10.53 points before the application of medical managementsystem ($t=-4.15$, $p<.01$). Thirdly, after applying the management system, the frequency of urine decreased after 8 days. In conclusion, it was confirmed that the effect was effective after applying the system approach to prevent diabetes complications. Therefore, it is necessary to establish the latest management system for diabetes treatment

Keywords: Diabetes mellitus, Complication, Medical management system, Roe deer mushrooms, Urine

1. Introduction

Diabetes is a disease in which glucose levels in the blood are maintained high. The incidence and prevalence of diabetes are increasing rapidly worldwide [1],[2]. The number of diabetic patients is estimated at about 100 million worldwide, and about 6% of the population in the United States has diabetes. Figure 1 shows the sleep time and the risk of diabetes type 2 in a U type. Diabetes was the lowest in 7-8 hours of sleep a day. In the study, mutations in the genetic domain are associated with sleep time. Diabetes is more likely to occur if people sleep long or short or long [3],[4]. In weak hyperglycemia, it is difficult to think of it as diabetes because most patients do not feel symptoms or are ambiguous. When blood sugar rises a lot, people get hyperglycemia persists, several complications occur. Thirsty, drink a lot of water, and go to the bathroom often due to increased urine volume. Also, people lose weight and often feel tired. Diabetes is a type of metabolic disease that lacks insulin secretion or does not function

[5],[6]. Diabetes is caused by a high calorie, high fat, and high protein diet according to the westernization of diet. It can also be caused by defects in genes, pancreatic surgery, infection, and drugs. If hyperglycemia is maintained for a long time, various complications such as retinopathy, nephropathy, and neuropathy occur [7],[8].

A sudden lack of insulin in the body can lead to acute complications. Acute diabetes complications can be fatal if not treated immediately and properly. Chronic complications include retinopathy, nephropathy, and neuropathy. In addition, complications of great vascular disease include coronary artery disease, peripheral artery disease, and cerebrovascular disease [9]. The health information system needs to be applied to prevent diabetes complications. Therefore, it is to establish a recent medical information system to prevent diabetes complications. This is to treat diabetes complications and reduce mortality.

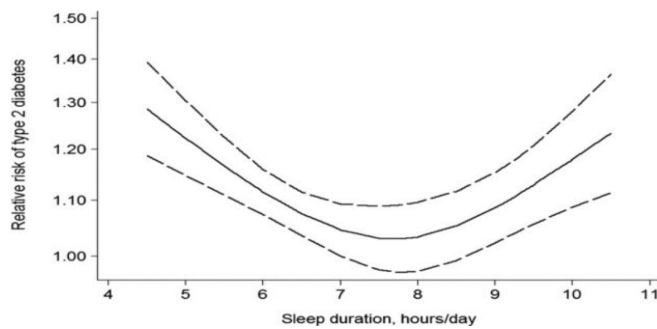


Figure 1. Relationship between sleep and diabetes type 2

2. Materials and Methods

2.1 The overall framework for preventing diabetes complications.

Figure 2 presents the causes of diabetes complications. The causes of diabetes complications occur due to incorrect lifestyle habits, individual constitutional characteristics, and body energy metabolic function. Figure 3 presents the overall framework for preventing

diabetes complications. 1) Investigating the patient's condition 2) Knowledge of diabetes complications 3) Application of information system for patients with diabetes 4) Comparative analysis of derived data 5) Improvement of the life of diabetic complications patients 6) Analysis of the usefulness of information systems. 7) Prospects for the treatment of complications of diabetes 8) Proof of the effectiveness of treating complications of diabetes

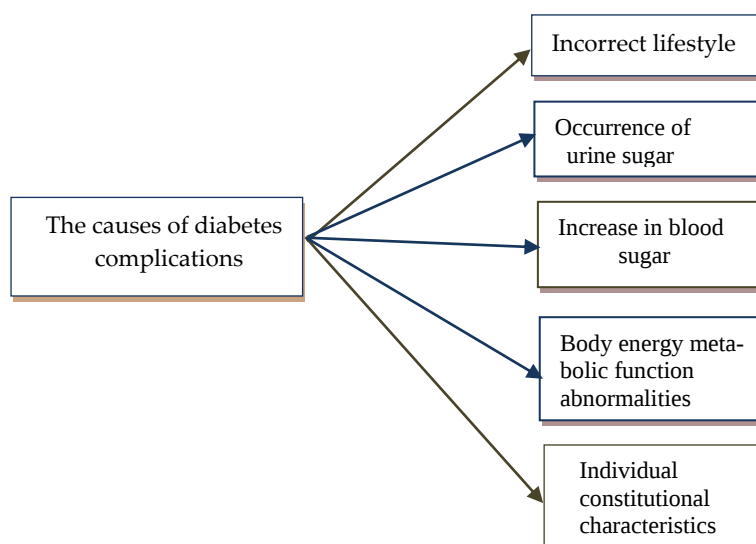


Figure 2. Analysis of the causes of diabetes complications

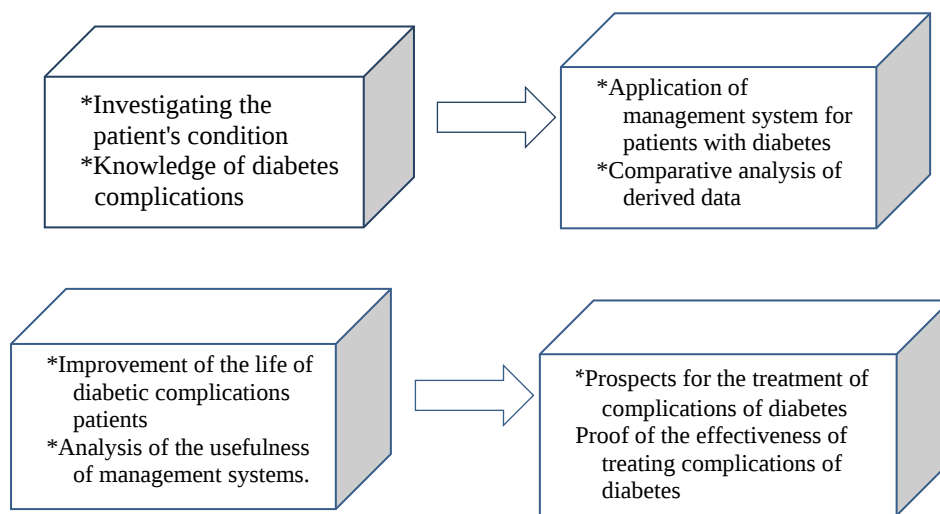


Figure3. The overall framework for preventing diabetes complications.

2.2 Materials

The subjects of this study were surveyed on 96 patients who visited the internal medicine clinic from July 13 to October 18, 2021 in the Metropolitan area. The analysis of this study used a Likert 5-point scale. It is judged that the higher the score, the more positive it has in preventing diabetic complication. In previous studies, Chronbach'a was .78.3 points and in this study, it was higher with 80.6 points.

2.3. Methods

The general characteristics of the study subjects were the Chi-square test. The lifestyle before and after the application of the management system was analyzed by a t-test. Changes

in diabetes symptoms over time were performed by a t-test. The lifestyle for diabetes treatment over time was analyzed by a t-test.

3. Results

3.1. General characteristics of subjects

Table 1 shows the general characteristics of the subjects. In terms of urine frequency, 85.4% of the experimental group was significantly higher than 39.6% of the control group ($X^2=2.63$, $p<.01$). Weight loss was 70.8% in the experimental group, significantly higher than 35.4% in the control group ($X^2=1.75$, $p<.01$)

Table 1. General characteristics of subjects

Variables	Experimental Group	Control. group	X^2
	N(%)	N(%)	
No. of urine			
Frequently	41(85.4)	19(39.6)	2.63**
Average	7(14.6)	29(60.4)	
Thirsty			
Heavy	37(77.1)	22(45.8)	5.49*
Average	11(22.9)	26(54.2)	

Body weight			
Weight loss	34(70.8)	17(35.4)	1.75**
No change in weight	14(29.2)	31(64.6)	
Feeling of fatigue			
A lot of	36(75.0)	21(43.8)	4.18*
little	12(25.0)	27(56.3)	
Total	48(100.0)	48(100.0)	

p<.05 p<.01

3.2.Changes in lifestyle before and after information system application

Table 2 presents changes in lifestyle before and after the application of the management system. The feeling of fatigue was higher in before application of management system at 32.18 points than after application of management system at the average 25.46 points. Consuming roe deer mushrooms was the average 31.22 points of after application of

management system, which was significantly higher than the average 10.53 points before the application of information system ($t=-4.15$, $p<.01$). Squat exercise was the average 37.01 points after application of the system, significantly higher than 19.48 points before application of information system ($t=-5.36$, $p<.01$).

Table 2. Changes in lifestyle before and after information system application

Items	Before	After	T
	Mean±S.D.	Mean±S.D.	
Feeling of fatigue	32.18±3.91	25.46±3.57	1.94
Eating roe deer mushrooms	10.53±5.27	31.22±4.82	-3.82**
Eating Yeosu	13.61±1.49	32.65±1.37	-4.15**
Regular jogging.	20.47±0.18	36.18±0.53	-1.63*
Blurry eyes	34.03±5.72	29.52±4.91	4.59
Numbness in legs	31.25±2.63	27.45±2.86	2.78
Squat exercise	19.48±0.44	37.01±0.74	-5.36**
Acupressure of feet	13.18±3.57	34.24±3.29	-1.94**

*p<.05, ** p<.01

3.3 Changes in diabetes symptoms over time

Figure 4 shows changes in diabetes symptoms over time before and after the application of the management system. After applying the information system, the frequency of urine decreased after 8 days. However, the frequency of urine increased again after 16 days.

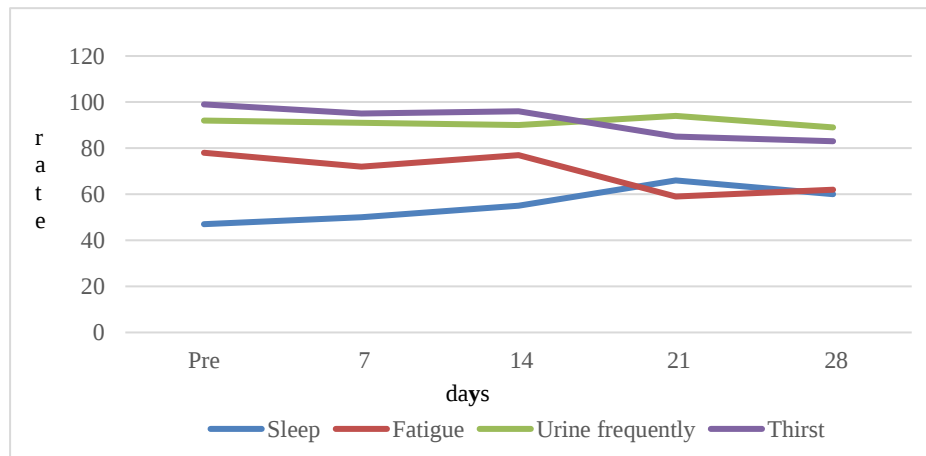


Figure4.Changes in diabetes symptoms over time

3.4 Lifestyle habits over time for diabetes treatment

Figure 5 presents lifestyle habits over time for diabetes treatment. Yeoju intake increased

significantly 7 days after the application of the managementsystem. However, Yeoju intake tended to decrease slightly 14 days after the application of the management system.

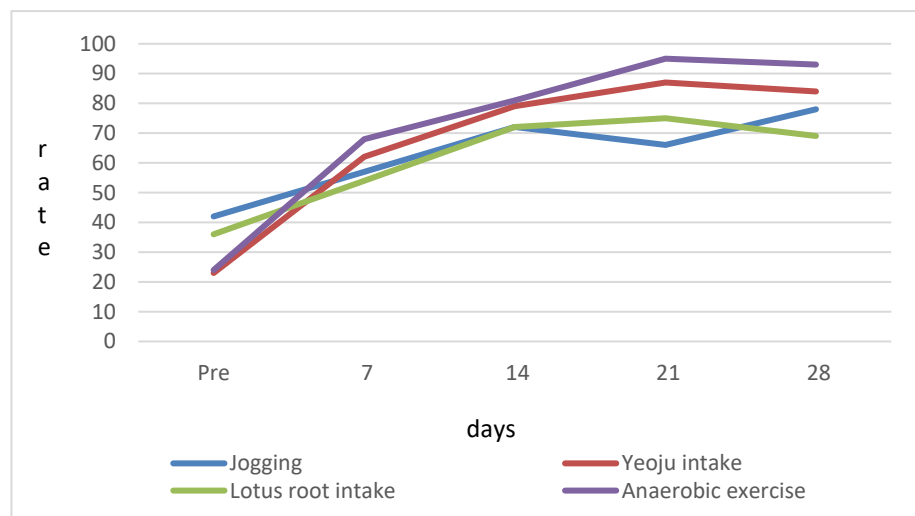


Figure. 5Lifestyle habits over time for diabetes treatment

4. Discussion and Conclusion

This research is to establish a recent medical management system to prevent diabetes complications. As a result of this study, according to the results of this study, roe deer mushrooms intake increased significantly after the application of the management system than before application. This is similar to the results of high blood pressure in previous studies[8],[10]. The fatigue caused by diabetes

tended to be significantly lower after application than before application of the management system. This showed similar results to previous studies[11],[12].

Diabetes complications occur when high blood sugar level is not treated and hyperglycemic condition persists. Thorough blood sugar management is very important to prevent complications. To prevent diabetes complications, exercise at an appropriate

intensity every day. To this end, diabetes management is necessary through the intervention of the medical management system. Personal lifestyle habits can be corrected through the application of the medical management system.

Acupressure on the back of the foot is important to prevent diabetes complications. It has good blood circulation, blurry eyes, and prevents numbness in legs. Therefore, it has been proven to be effective in preventing diabetes complications through the application of the medical management system. This study suggested an effective method to prevent diabetes complications. Therefore, it was confirmed that the effect was effective after applying the system approach to prevent diabetes complications. Through this, the fatality rate and incidence rate due to diabetes complications can be prevented.

References

1. [1] Pick H. J, Faghy M. A, Creswell G, Ashton D, Bolton C. E, McKeever T, Lim W. S, Bewick T. and Pick H. J, The Feasibility and Tolerability of Using Inspiratory Muscle Training with Adults Discharged from the Hospital with Community-Acquired Pneumonia, *Adv Respir Med*. 2021, Vol. 89, No. 2, pp. 216-220.
2. [1] Kurniawan A. H, Suwandi B. H, Kholili U. and Kurniawan A. H. Diabetic Gastroenteropathy : A Complication of Diabetes Mellitus, *Acta Med Indones*. 2019 Jul, Vol 51, No. 3, pp. 263-271.
3. [2] Sen S, Chakraborty R. and Sen S, Treatment and Diagnosis of Diabetes Mellitus and Its Complication: Advanced Approaches. *Mini Rev Med Chem*. 2015, Vol. 15, No. 14, pp. 1132-3. doi: 10.2174/138955751514151006154616.
4. [3] Zheng Y, Ley S. H, Hu F. B. Zheng Y, Global Aetiology and Epidemiology of Type 2 Diabetes Mellitus and Its Complications, *Nat Rev Endocrinol*, 2018, Vol. 14, No. 2, pp. 88-98. doi: 10.1038/nrendo.2017.151.
5. [4] Bloomgarden Z, Chilton R. and Bloomgarden Z, Diabetes and stroke: An important complication. *J Diabetes*. 2021 Mar, Vol. 13, No. 3, pp. 184-190. doi: 10.1111/1753-0407.13142. Epub 2020 Dec 27. *J Diabetes*. 2021. PMID: 33300237 No abstract available.
6. [5] Graves L. E, Donaghue K. C. and Graves L. E, Vascular Complication in Adolescents With Diabetes Mellitus. *Front Endocrinol (Lausanne)*. 2020, Jun 9, Vol. 11, No. 370. doi: 10.3389/fendo.2020.00370. eCollection 2020. *Front Endocrinol (Lausanne)*. 2020. PMID: 32582034 Free PMC article. Review.
7. [6] Schlienger J. L. and Schlienger J. L. Type 2 Diabetes Complications, *Presse Med*. 2013 May, Vol. 42, No. 5, pp. 839-48. doi: 10.1016/j.lpm.2013.02.313. Epub 2013 Mar 23. *Presse Med*. 2013. PMID: 23528336 Review. French.
8. [7] Hsiao T. C, Wu Z. Y, Chung Y. F, Chen T. S, Horng G. B. and Hsiao T. C, A Secure Integrated Medical Information System. *J Med Syst*. 2012 Oct, Vol. 36, No. 5, pp. 3103-13. doi: 10.1007/s10916-011-9793-z.
9. [8] Leon N, Balakrishna Y, Hohlfeld A, Odendaal WA, Schmidt B. M, Zweigenthal V, Anstey Watkins J, Daniels K. and Leon N, Routine Health Information System Improvements for Strengthened Health System Management, *Cochrane Database Syst Rev*. 2020 Aug 13, Vol. 8, No. 8. doi: 10.1002/14651858.CD012012.
10. [9] Rangraz Jeddi F, Nabovati E, Bigham R, Khajouei R. Rangraz, and Jeddi F, Usability

- Evaluation of A Comprehensive National Health Information System: Relationship of Quality Components to Users' Characteristics. *Int J Med Inform.* 2020 Jan;133:104026. doi: 10.1016/j.ijmedinf.2019.104026. Epub 2019 Nov 9. *Int J Med Inform.* 2020. PMID: 31733603
16. [10] Kopf S, Kumar V, Kender Z, Han Z, Fleming T, Herzig S, Nawroth P.P. and Kopf S, Diabetic Pneumopathy-A New Diabetes-Associated Complication: Mechanisms, Consequences and Treatment Considerations, *Front Endocrinol (Lausanne).* 2021 Nov, Vol. 25; No. 12, doi: 10.3389/fendo.2021.765201..
 17. [11] Kudiyirickal M. G, Pappachan J. M. and Kudiyirickal M. G, DiabetesMllitus and Oral Health. *Endocrine.* 2015 May, Vol. 49, No. 1, pp. 27-34. doi: 10.1007/s12020-014-0496-3.
 18. [12] Garla V, Kanduri S, Yanes-Cardozo L, Lién L.F. and Garla V, Management of DiabetesMellitus in Chronic Kidney Disease. *Minerva Endocrinol.* 2019 Sep, Vol. 44, No. 3, pp. 273-287. doi: 10.23736/S0391-1977.19.03015-3.