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CURRENT STATUS OF EYE COMPLICATIONS, KNOWLEDGE, PRACTICE OF DISEASE PREVENTION IN PEOPLE WITH TYPE 2 DIABETES AND EFFECTIVENESS OF SOME INTERVENTION MEASURES IN 4 COMMUNES OF THAI BINH PROVINCE

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LIST OF SCIENTIFIC ARTICLES PUBLISHED
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1. **Nguyen Quang Lich, Nguyen Xuan Bai, Ngo Thi Nhu (2023),** Current status of eye complications in people with type 2 diabetes in some communes of Thai Binh province, *Vietnam Medical Journal*, Volume 532 (November - No. 2 - 2023), pp. 146 - 149.

2. **Nguyen Quang Lich, Nguyen Xuan Bai, Ngo Thi Nhu (2023),** Effectiveness of some intervention measures to prevent eye complications in people with type 2 diabetes in some communes of Thai Binh province, *Vietnam Medical Journal*, Volume 532 (November - No. 2 - 2023), pp. 384 - 389.

INTRODUCTION

Diabetes is a current public health problem in the world and in Vietnam. According to the International Diabetes Federation, in 2021 there were 537 million adults (aged 20-79) in the world living with diabetes mellitus (DM), 1 in 10 people have this disease.

In Vietnam, the number of patients with type 2 diabetes is also increasing rapidly. In 2003, the rate of patients with diabetes was from 2.7% to 3%. In 2005 in Vietnam, there were about 1,295,000 people with diabetes. The results of the Ministry of Health's survey in 2021 showed that the estimated incidence of diabetes in adults was 7.1%; equivalent to nearly 5 million people suffering from diabetes. Of these, the number of patients that had been diagnosed only accounted for about 35% and the number being managed and treated at medical facilities accounted for 23.3%. Currently, the issue of how to detect disease early and educate the community about early detection of disease has been of concern of the World Health. These would help prevent disease and the complications it causes. However, we often pay attention to easily noticeable complications such as the heart, blood vessels, kidneys, etc., without paying attention to the silent but very dangerous complications, which are eye damage and complications, causing patients with rapid vision loss, if not detected early and treated promptly, patients may lose their vision completely. Vision loss due to complications of diabetes is sometimes irreversible. Early detection and treatment of eye complications can reduce the risk of blindness by 95%.

In Thai Binh, how many people with type 2 diabetes have eye complications? What is the patient's knowledge and practice of preventing eye complications? What solutions are there to improve patients' knowledge and practice on disease prevention and eye complications? To solve the above questions, we therefore conducted research on the topic: "Current status of eye complications, knowledge and practice of disease prevention in

people with Type 2 diabetes and effectiveness of some intervention measures in 4 communes of Thai Binh province" with the following objectives:

1. Describe the current situation of eye complications and knowledge and practice of disease prevention in people with type 2 diabetes in 4 communes of Vu Thu district, Thai Binh province from 2018 to 2021.

2. Evaluate the effectiveness of communication interventions to improve knowledge and practice of people with diabetes on preventing diseases and eye complications of type 2 diabetes in the 4 communes mentioned above..

1. Significance and new contributions of the dissertation

- The research results show that the overall picture of the current situation of eye damage and eye complications in people with type 2 diabetes in the 4 communes studied in the initial investigation is very high (accounting for 77.6%); In which lesions such as vision loss (60.6%) and retinopathy (28.4%) account for a high overall incidence and some other eye lesions.

- After 1 year of health education and communication intervention, the project has been highly effective in improving knowledge, disease prevention practices, eye complications prevention and treatment compliance of people with type 2 diabetes being managed in the communes in this study.

2. Layout of the dissertation

The dissertation consists of 125 pages (excluding the table of contents (2 pages), Conclusions (2 pages), Recommendations (1 page) including 4 chapters: Chapter 1: Literature review, 33 pages; Chapter 2: Subjects and research methodology, 23 pages; Chapter 3: Research results, 33 pages; Chapter 4: Discussions, 31 pages. The dissertation has 34 tables, 9 charts and 125 references (Vietnamese: 55; English: 70).

Chapter 1. LITERATURE REVIEW

1.1. Some basic knowledge about eyes and diabetes
1.1.1. Overview of eye anatomy and physiology

Eye anatomy:

The human eye is a sense organ with an extremely delicate and complex anatomical structure.

To perform optical functions, the eyeball has a system of transparent structure, from front to back, including: Cornea, Aqueous humor, Vitreous body, Vitreous humor

Transparent media form a focusing optical system with a power of about +60 diopters.

Eye physiology

The eyes provide up to 80% of information from the outside world to the brain. Images passing through transparent media converge on the retina, are received by receptor cells, and follow nerve pathways to the visual center in the occipital lobe. Eye vision is reflected through the visual acuity index. Visual acuity is considered normal when the angle of resolution is at least 1' (1 minute).

Reduced vision is often due to 2 groups of causes: Damage to transparent media or Damage to retinal nerve cells.

1.1.2. Diabetes mellitus and type 2 diabetes

The American Diabetes Association (ADA) has given a definition of diabetes: Diabetes is a chronic disorder, with the following attributes: (1) increased blood glucose; (2) associated with abnormalities of carbohydrate, lipid and protein metabolism; (3) The disease is always associated with a tendency to develop kidney, eye fundus, neurological and other cardiovascular diseases.

Pathogenesis of type 2 diabetes: Type 2 diabetes is characterized by impaired insulin secretion and insulin resistance or both.

Some factors related to type 2 diabetes: age, family, race, environment and lifestyle, history of giving birth to a child weighing more than 4kg, history of reduced glucose tolerance, hypertension, obesity, diet and physical activity, mental health issues.

1.2. Eye complications of type 2 diabetes and patients' knowledge and practice on preventing eye complications

Diabetes that is not diagnosed promptly and treated inappropriately will lead to complications. Complications of diabetes are often divided according to the time of appearance and severity of complications.

According to statistics, about 60% of patients with diabetes for 10 years or more will have damage to blood vessels in the eyes and 2% of them are at risk of blindness..

Do Dinh Tung et al. through their research showed that the main eye diseases in people with type 2 diabetes are cataracts, conjunctival disease, corneal disease, and retinopathy. Retinal damage due to diabetes is equivalent in both eyes; of which patients with moderate and mild nonproliferative diabetic retinopathy account for 74.2%; 22.6% are those with severe and very severe conditions.

Patients' knowledge and practice about diabetes and its complications play a very important role in preventing the progression of the disease and preventing complications in general and eye complications..

1.3. Some intervention measures to reduce eye complications in patients with type 2 diabetes

The number of people with type 2 diabetes is increasing rapidly worldwide. With the hope of reducing the rate of complications in general and diabetic eye complications in particular, intervention measures have been implemented to contribute to achieving the above goal. Interventions to prevent and treat eye complications in patients with diabetes include two groups: direct treatment methods and prevention programs.

Prevention plays a very important role, especially in preventing risk factors and detecting diseases early. Scientific evidence shows that if we eliminate risky behaviors, we will help prevent at least 80% of cardiovascular diseases, type 2 diabetes and over 40% of cancers. On the other hand, type 2 diabetes is a chronic disease and often progresses silently. If not detected early for timely treatment, the disease will progress seriously, causing many serious complications and treatment will be very expensive, while early detection is very simple and inexpensive.

Some general measures to prevent type 2 diabetes include: Improving knowledge, attitudes and practices of type 2 diabetes prevention of patients; Change your lifestyle, diet and exercise; Strictly manage type 2 diabetes and diabetic retinopathy; Early detection of diseases, diabetic complications and eye complications in diabetes; direct treatment.

In this study, we applied a multimodal communication intervention to improve knowledge and practice on preventing general and eye complications of type 2 diabetes.

Chapter 2. STUDY SUBJECTS AND METHODOLOGY

2.1. Subjects, research area and duration
2.1.1. Research subjects

* Objective 1

\+ Patients were diagnosed and confirmed with type 2 diabetes.

* Objective 2

\- All people with type 2 diabetes were investigated in the first phase in 4 communes with the criteria of agreeing to participate in the study, being able to access and fully answer information.

2.1.2. Research area

* Phase 1: The research was conducted in 4 communes in Vu Thu district, Thai Binh province. The selected communes must meet the conditions of the project including: The communes with the highest rate of people with Type 2 diabetes. The study selected 4 communes: Bach Thuan commune, Viet Hung commune, Minh Quang commune. and Vu Thu Town. These communes all have over 100 people with type 2 diabetes.

* Phase 2: The intervention study was conducted in 4 communes where the study group conducted the initial survey in Vu Thu district, Thai Binh province. Of which two communes Bach Thuan and Viet Hung were selected as intervention communes, Minh Quang commune and Vu Thu town were selected as control communes.

2.1.3. Research duration: divided into 2 phases

- From January 2018 to September 2018: Completing research outline and plan.

- October 2018: Doing research preparations and training research staff.

- From November 2018 to December 2021: Examining and interviewing research subjects.

- From January 2022 to December 2022: Intervention research in the study area.

- December 2022: Evaluating intervention effectiveness.

- 2023: Process data, writing and completing the dissertation.

2.2. Research methodology

2.2.1. Research design

- Phase 1 (meeting objective 1): The research was conducted according to an analytical cross-sectional descriptive research design.

- Phase 2: Design a controlled community intervention study.

2.2.2. Sampling size and method

2.2.2.1. Sample size and sampling method for stage 1

Sample size for determining eye complications:

The study applied descriptive research with cross-sectional survey so the sample size was calculated according to the following formula:

$$n = z^2_{(1-\alpha/2)} \times \frac{pq}{d^2}$$

According to calculations, the sample size calculated according to the above formula is 375 patients. In fact, we investigated 416 people with type 2 diabetes in 4 communes in phase 1.

The sample size for investigating practical knowledge of people with diabetes was calculated according to the following formula:

After examining and identifying people with diabetes to determine the rate of eye complications and determining some anthropometric indicators, all 416 patients who had had eye examinations were interviewed..

2.2.2.2. Sample size and sampling method for stage 2

Sample size for intervention research was calculated according to the following formula:

$$n = Z^2_{(\alpha,\beta)} \times \frac{p_1(1-p_1) + p_2(1-p_2)}{(p_1 - p_2)^2}$$

The sample size was calculated with n= 140. Adding 10% and rounding, the sample size for each group is as follows: the intervention group includes 160 patients and the control group is 160 patients. In fact, of the number of people with diabetes in communes investigated in the first phase, we chose 2 intervention communes with 203 patients and 2 control communes with 213 patients..

2.2.3. Variables and indicators in the study

* Variables of Objective 1

+ General information about research subjects: Age, gender, occupation, education level, household economy, people living with patients of diabetes, patients' weight and height at the time of investigation.

+ Information about diabetes: Blood sugar at the time of investigation, Duration of illness, Family history of someone with diabetes, Use of health insurance card in examination and treatment of diabetes, History of accompanying chronic diseases.

+ Clinical eye examination results: Percentage of diabetic patients with eye damage, Visual acuity results: levels <3/10 and ≥3/10, Percentage of patients with retinopathy, Glass Specific: cataract rate/number of patients, Rate of other eye diseases/number of patients.

+ Variables of knowledge about diabetes prevention and eye complications: Knowledge about types of diabetes complications, diabetic eye complications, knowledge about disease prevention, prevention of complications, knowledge about exercise sports for diabetes, knowledge about diet for diabetes, knowledge about medication use, and patient follow-up examinations.

+ Variables of controlling blood sugar, preventing risk factors (practice): Compliance with diet, exercise regimen, medication regimen and follow-up examinations.

+ Need for treatment care support: from family and from health care

* Variables of objective 2 (Results of intervention activities):

+ Number of patients receiving direct consultation and communication

+ Communication activities: leaflets, lectures, media.

+ Variables of changing knowledge about eye complications and prevention

+ Variables regarding treatment compliance (practice): medication use, exercise regimen, general follow-up examination, follow-up examination for eye complications.

2.2.4. Community interventions, implementation and evaluation

Four investigated communes still received general intervention from current health programs.

In the 2 intervention communes, we applied the community intervention measures of the project: communication intervention (direct, indirect) for patients in the intervention group about contents such as: diabetes, general complications, types of eye complications, disease prevention measures, general complication prevention, specific eye complications related to diet, exercise regimen, sports, follow-up examinations,...; Examination, detection, treatment, and patient consultation on treatment regimen, diet, and exercise regimen, periodically once a month by ophthalmologists and physicians participating in direct treatment of patients and staff. Department of the topic and PhD student.

2.2.5. Data processing

- Enter data, clean and code data: using SPSS 16.0 software.
- Quantitative results are analyzed according to research objectives, presented in the form of tables and charts according to regulations. Use the Chi Square test χ^2 to test the difference between qualitative variables (proportions), the student t-test to compare 2 means.

2.2.6. Research ethics

- The topic was approved by the Research proposal Council of Thai Binh Medical University according to Decision No. 1751/QD-YDTB dated October 24, 2018.
- Patients voluntarily participated in the study. Patient information is carefully secured. Patients with clinically determined eye damage or suspected eye damage will be listed, consulted and referred to a specialized hospital for definitive diagnosis and appropriate treatment..
- When conducting research in phase 2, patients in the 4 research communes still enjoy all the same benefits from health programs.

- After the intervention period of the project, all measures and intervention activities were transferred to 2 control communes as implemented in the 2 intervention communes. Thus, all patients in the two control communes could enjoy all the same benefits as patients in the two intervention communes.

Chapter 3. RESEARCH RESULTS

3.1. Some general information and characteristics of research subjects

Table 3.1. Characteristics of age group and gender of research subjects

Gender / Age groups	Male (n=160)		Female (n=256)		Total (n=416)	
	No	%	No	%	No	%
<60	17	10.6	22	8.6	39	9.4
60 - 69	63	39.4	104	40.6	167	40.1
70 - 79	65	40.6	92	35.9	157	37.7
≥80	15	9.4	38	14.8	53	12.7

The results of table 3.1 shows that the age group with the highest proportion of people with diabetes is 60-69, accounting for 40.1%, the age group 70-79 was 37.7%. The remaining age groups account for a low proportion.

Table 3.2. Education level of research subjects (n=416)

Gender / Educational level	Male (n=160)		Female (n=256)		Total (n=416)	
	No	%	No	%	No	%
Illiteracy	0	-	6	2,3	6	1.4
Primary school	19	11.9	59	23.0	78	18.8
Secondary school	85	53.1	138	53.9	223	53.6
High school	35	21.9	32	12.5	67	16.1
Higher education	21	13.1	21	8.2	42	10.1

The results of table 3.2 show that all 6 illiterate people in the study were women. The proportion of women with primary and secondary education levels is much higher than that of men. On the contrary, at the high school level and higher education, the percentage of males is higher than that of females.

Table 3.3. Percentage of people with diabetes having eye lesions

Gender / Having eye lesions	Male (n=160)		Female (n=256)		Total (n=416)		p*
	No	%	No	%	No	%	
Yes	127	79.4	196	76.6	323	77.6	>0.05
No	33	20.6	60	23.4	93	22.4	

* γ2 (Chi-square test)

Table 3.3 shows that the proportion of diabetic patients with at least one eye disease is 77.6%. Of these, the proportion of men suffering from at least one eye disease accounts for 79.4%; Females account for 76.6%. However, the difference is not statistically significant with p>0.05.

Table 3.4. Vision situation of people with diabetes by gender

Gender / Eyesight	Male (n=160)		Female (n=256)		Total (n=416)	
	No	%	No	%	No	%
< 3/10	90	56.3	162	63.3	252	60.6
≥ 3/10	70	43.7	94	36.7	164	39.4
p*	>0.05					

* γ2 (Chi-square test)

The results of table 3.4 show that the rate of diabetic patients with vision damage is 60.6%; that of patients without vision damage accounts for 39.4%. The rate of men with vision damage, 56.3%, is lower than that of women, 63.3%. However, the difference is not statistically significant with p>0.05.

Table 3.5. Percentage of diabetic patients with retinopathy at research area

Gender / Having retinopathy	Male (n=160)		Female (n=256)		Total (n=416)		p*
	No	%	No	%	No	%	
Yes	37	23.1	81	31.6	118	28.4	>0.05
No	123	76.9	175	68.4	298	71.6	

* γ2 (Chi-square test)

Table 3.5 shows that the rate of diabetic patients with retinopathy is 28.4%. Among them, the proportion of men with retinopathy accounts for 23.1%; Females account for 31.6%. However, the difference is not statistically significant with p>0.05

Table 3.6. Percentage of people with diabetes suffering from some eye complications

Eye damage	Male (n=160)		Female (n=256)		Total (n=416)	
	No	%	No	%	No	%
Cataract	123	76.9	187	73.0	310	74.5
Damage to eyesight	90	56.3	162	63.3	252	60.6
Neuro-retinal disease	37	23.1	81	31.6	118	28.4
Pterygium	6	3.8	14	5.5	20	4.8
Other eye diseases	9	5.6	18	7.0	27	6.5

Table 3.6 shows that the most common eye disease in people with diabetes was cataract, accounting for 74.5%; Next was vision damage, accounting for 60.6%; Diabetic retinopathy accounted for 28.4%; Other eye diseases accounted for a low rate.

3.2. Effectiveness of community interventions to improve patients' knowledge and practice on diabetes prevention and eye complications

Table 3.7. Change in knowledge of research subjects about complications of diabetes after intervention

Knowledge about complications of diabetes		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Eyes	BI	62	30.5	93	43.7	<0.05	52.1
	AI	96	47.8	86	41.7	>0.05	
	EI (%)	56.7		4.6			
Heart	BI	95	46.8	105	49.3	>0.05	46.0
	AI	182	89.7	153	71.8	<0.05	
	EI (%)	91.7		45.6			
Kidney	BI	76	37.4	79	37.1	>0.05	70.9
	AI	172	84.7	123	57.7	<0.05	
	EI (%)	126.5		55.5			
Stroke	BI	52	25.6	47	22.1	>0.05	69.5
	AI	161	79.3	113	53.1	<0.05	
	EI (%)	209.8		140.3			
Lipid disorders	BI	59	29.1	71	33.3	>0.05	86.0
	AI	154	75.9	124	58.2	<0.05	
	EI (%)	160,8		74,8			

* γ2 (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results of the table above shows the intervention effectiveness index on patients' knowledge about complications of diabetes. The highest changes were in kidney complications, stroke and lipid disorders with an intervention effectiveness index of 70.9; 69.5; 86.0, respectively.

Table 3.8. Change in knowledge of research subjects about eye complications of diabetes after intervention

Knowledge about eye complications of diabetes		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Cataract	BI	51	25.1	59	27.7	<0.05	107.7
	AI	153	75.7	115	53.7	<0.05	
	EI (%)	201.6		93.9			
Blind	BI	37	18.2	59	27.7	<0.05	201.5
	AI	149	73.8	121	56.5	<0.05	
	EI (%)	305.5		104			
Blurred vision	BI	6	3.0	12	5.6	<0.05	1203.8
	AI	112	55.4	77	36.0	<0.05	
	EI (%)	1746.7		542.9			
Damage to the retina	BI	7	3.4	17	8.0	<0.05	1426.5
	AI	133	65.8	87	40.7	<0.05	
	EI (%)	1835.3		408.8			

* $\gamma 2$ (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results of the table above show that the research subjects' knowledge about complications of diabetic retinal damage is the highest at 1426.5%; Next is the blurred vision complication of type 2 diabetes with an intervention effectiveness index of 1203.8%; Other complications had insignificant changes in the intervention effectiveness index. The change in knowledge about eye complications of type 2 diabetes patients in the intervention group was higher than that in the control group and was statistically significant with $p < 0.05$.

Table 3.9. Change in patients' knowledge about diet to prevent
complications of diabetes after intervention

Knowledge about diet to prevent complications of diabetes		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Eat enough meals	BI	100	49.3	142	66.7	<0.05	50.1
	AI	172	84.7	173	81.2	>0.05	
	EI (%)	71.8		21.7			
Limit foods high in salt, sugar and fat	BI	182	89.7	196	92.0	>0.05	5.7
	AI	199	98.0	203	95.3	>0.05	
	EI (%)	9.3		3.6			
Drink enough water	BI	71	35.0	117	54.9	<0.05	110.3
	AI	172	84.7	154	72.3	<0.05	
	EI (%)	142.0		31.7			
Change diet and do exercise regularly	BI	86	42.4	114	53.5	<0.05	63.2
	AI	176	86.7	161	75.6	<0.05	
	EI (%)	104.5		41.3			
Not strictly go on a diet	BI	15	7.4	61	28.6	<0.05	544.7
	AI	107	52.7	102	47.9	>0.05	
	EI (%)	612.2		67.5			

* $\gamma2$ (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

Table 3.9 shows the intervention effectiveness index on patients' knowledge about diet to prevent complications of diabetes. The highest change was in the knowledge of not eating too fast and drinking enough water, with intervention effectiveness indexes of 544.7 and 110.3, respectively

Table 3.10. Change in knowledge of research subjects about diabetes treatment compliance after intervention

Knowledge about diabetes treatment compliance		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Take medication as prescribed	BI	171	84.2	198	93.0	<0.05	11.3
	AI	198	97.5	207	97.2	>0.05	
	EI (%)	15.8		4.5			
Take medication on time	BI	132	65.0	171	80.3	<0.05	25.3
	AI	188	92.6	201	94.1	>0.05	
	EI (%)	42.5		17.2			
On time follow-up examination	BI	124	61.1	164	77.0	<0.05	31.6
	AI	182	89.7	189	88.7	>0.05	
	EI (%)	46.8		15.2			

* γ2 (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results of the table 3.10 show the intervention effectiveness index on patients' knowledge about diabetes treatment compliance. The change in knowledge before and after intervention in the two groups was not significantly different with the intervention effectiveness index being 11.3; 25.3 and 31.6.

Table 3.11. Practice of research subjects on dietary compliance for people with diabetes after intervention

Compliance with diet		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Eat enough meals	BI	110	54.2	151	70.9	<0.05	39.9
	AI	175	86.6	182	85.0	<0.05	
	EI (%)	59.8		19.9			
Not go on a diet strictly	BI	64	30.0	48	23.6	<0.05	89.7
	AI	119	55.6	131	64.9	<0.05	
	EI (%)	85.3		175.0			
Drink enough water	BI	87	42.9	123	57.7	<0.05	55.8
	AI	162	80.2	162	75.7	<0.05	
	EI (%)	86.9		31.2			
Combination of diet and exercise or sports	BI	84	41.4	123	57.7	<0.05	64.9
	AI	168	82.2	165	77.1	<0.05	
	EI (%)	98.6		33.6			
Limit foods high in sugar	BI	153	75.4	183	85.9	<0.05	22.1
	AI	191	94.6	190	88.8	>0.05	
	EI (%)	25.5		3.4			

* $\gamma 2$ (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

Table 3.11 shows the change in dietary compliance of study subjects before and after intervention between the control group and the intervention group. Among them, the diet that is not too restrictive for people with type 2 diabetes has the highest effectiveness index of 89.7%; Next is diet combined with exercise with an intervention effectiveness index of 64.9%; Drinking enough water has an intervention effectiveness index of 55.8%

Table 3.12. Changes in compliance with exercise regimen for people with diabetes after intervention

Compliance with the exercise regimen		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Never	BI	11	5.1	12	5.6	>0.05	
	AI	6	3.0	7	3.3	>0.05	3.4
	EI (%)	44.4		41.1			
Sometimes	BI	87	42.9	52	24.4	<0.05	
	AI	27	13.4	24	11.2	>0.05	14.7
	EI (%)	68.8		54.1			
Usually	BI	59	29.1	67	31.5	<0.05	
	AI	82	40.6	97	45.3	<0.05	-4.3
	EI (%)	43.8		39.5			
Always	BI	46	22.7	82	38.5	<0.05	
	AI	87	43.1	86	40.2	>0.05	85.5
	EI (%)	89.9		4.4			

* γ2 (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results of the table show the change in compliance with the exercise regimen of the study subjects before and after the intervention between the control group and the intervention group. In particular, active compliance (usually and always) in the intervention group changed more than that in the control group. The intervention effectiveness index changed the most in the frequency of always complying with the exercise regimen at 85.5%.

Table 3.13. Changes in patients' compliance with medication regimen
after intervention

Compliance with medication regimen		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Never	BI	3	1.5	1	0.5	>0.05	33.3
	AI	2	1.0	1	0.5	>0.05	
	EI (%)	33.3		0			
Sometimes	BI	61	30.0	28	13.1	<0.05	9.5
	AI	16	7.9	10	4.7	<0.05	
	EI (%)	73.7		64.1			
Usually	BI	97	47.8	92	43.2	>0.05	-15.5
	AI	101	50.0	111	51.9	>0.05	
	EI (%)	4.6		20.1			
Always	BI	42	20.7	92	43.2	<0.05	98.1
	AI	83	41.1	92	43.0	>0.05	
	EI (%)	98.6		0.5			

* γ2 (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results of Table 3.13 show the change in the compliance with medication regimen of study subjects before and after intervention between the control group and the intervention group. In particular, active compliance (regularly and always) in the intervention group changed more than in the control group. The intervention effectiveness index that changed the most was in the frequency of always complying with the medication regimen at 98.1%.

Table 3.14. Changes in patients' compliance with diabetes follow-up examinations after intervention

Comply with follow-up examinations		Intervention group (n=203)		Control group (n=213)		p*	IE (%)
		No	%	No	%		
Never	BI	6	3.0	2	0.9	>0.05	-44.4
	AI	6	3.0	1	0.5	>0.05	
	EI (%)	0		44.4			
Sometimes	BI	67	33.0	36	16.9	<0.05	8.6
	AI	23	11.4	15	7.3	<0.05	
	EI (%)	65.5		56.8			
Usually	BI	68	33.5	82	38.5	<0.05	-18.3
	AI	76	37.8	104	50.5	<0.05	
	EI (%)	12.8		31.2			
Always	BI	62	30.5	93	43.7	<0.05	52.1
	AI	96	47.8	86	41.7	>0.05	
	EI (%)	56.7		4.6			

* γ2 (Chi-square test)

* BI: Before intervention; AI: After intervention; EI: Effectiveness index

The results show the change in compliance with follow-up examinations of study subjects before and after intervention between the control group and the intervention group. In particular, the active compliance (usually and always) in the intervention group changed more than that in the control group. The intervention effectiveness index changed the most in the frequency of always complying with follow-up examinations at 52.1%.

Chapter 4. DISCUSSIONS

4.1. Some general information and characteristics of research subjects

Our cross-sectional descriptive study on the current status of eye complications in 416 people with type 2 diabetes in 4 communes in Vu Thu district, Thai Binh province showed that the proportion of male type 2 diabetes patients participating in the study was 38.5%; Females accounted for 61.5%. The age group with the highest percentage was 60-69, accounting for 40.1%; The age group 70-79 accounted for 37.7%. The percentage of patients in the remaining age groups accounted for a low proportion. Our results also showed that all 6 illiterate people in the study were women. The proportion of women with primary and secondary education levels was much higher than that of men. On the contrary, at the high school and higher-school levels, the ratio of men and women was equal. The difference in educational level between the two genders is statistically significant with p<0.05. This result reflected the current situation of the characteristics of diabetes commonly found in the elderly, especially over 60 years old. The results also reflected similarities with the suffering duration of type 2 diabetes, in our study subjects, the ratio of patients with the disease for less than 5 years accounted for the highest rate of 41.6%; over 15 years accounted for the lowest rate of 13.0%; from 5 to under 15 years accounts for 45.4%. When comparing our results with the ones of some other authors like Nguyen Ngoc Anh, the average age of patients are 68.2; of which 60% were female patients and 40% were male patients. Thus, our results regarding gender were similar to their study (61.5% and 38.5%). Another characteristic of diabetic patients that we also wanted to analyze was education level. Our research results showed that the highest proportion of people with type 2 diabetes at secondary school level was 53.6%; There were still 18.8% of patients with

primary school education; 6 people (1.4%) were illiterate; The rate with a degree above high school was only 10.1%. This can also be considered a barrier in accessing information, leading to somewhat limited knowledge about disease prevention and treatment, and support services in patient care and disease prevention as well as prevention of general complications and eye complications in diabetes.

Our research results showed that the proportion of patients with eye damage accounted for 77.6%; of which men were 79.4% and women were 76.6%; There was no difference in eye damage in both sexes (p>0.05). When testing eye vision, results showed that 60.6% of patients had vision <3/10. Thus, the proportion of subjects with visual impairment was quite high. This showed the relationship of type 2 diabetes to vision and type 2 diabetes was also a cause of vision loss and blindness. Our study results also showed that the proportion of type 2 diabetic patients with eye complications was as follows: cataracts accounted for 74.5%, of which 76.9% were men and 73.0% were women. Vision damage was 60.6%; of which men were 56.3% and women are 63.3%. Pterygium accounted for 4.8%. Diabetic retinopathy was 28.4%; of which men accounted for 23.1% and women accounted for 31.6%. Other eye diseases accounted for only 6.5%. However, there was a difference in the incidence of eye diseases and complications in the two genders, but it is not statistically significant with p>0.05. In this study, we performed examinations and detected eye diseases and eye complications in people with diabetes. However, we did not categorize eye diseases and eye complications. Because people with diabetes had common complications and eye complications as the duration of the disease increases, and even though the patient has not had it for a long time, but their blood sugar was not controlled and the preventive regimen was not good, they still had the problem. possible early complications.

4.2. Effectiveness of dietary and lifestyle interventions on metabolic syndrome

Our research in the intervention phase was based on the intervention content that was built on the basis of the survey data of phase 1. We conducted the intervention measures for 12 months. Research results indicated changes in knowledge and practice on disease prevention and general complications of the disease and diabetes complications. Our study results showed the intervention effectiveness index on patients' knowledge about complications of diabetes. The highest change was in patients' understanding of kidney complications, stroke and lipid disorders with an intervention effectiveness index of 70.9; 69.5; 86.0, respectively. The change in patient knowledge about diabetes treatment compliance before and after intervention in the 2 groups was not significantly different with the intervention effectiveness index being 11.3; 25.3 and 31.6. In our opinion, the reason was because the patient's knowledge of this content was quite good in the early stages of the investigation, the rate was quite high, so after the intervention, those who lacked knowledge about treatment compliance already improved their owns.

The change in knowledge of research subjects about eye complications in patients with type 2 diabetes varied greatly. In our study, there was the most obvious change in patients' knowledge of retinal damage complications of diabetes, with an intervention effectiveness index of 1426.5%; Next was the blurred vision complication of type 2 diabetes with an intervention effectiveness index of 1203.8%. The reason for this very high intervention effectiveness index was that before the intervention, knowledge about eye complications of type 2 diabetes was very little known to patients. This may be because in the past, the media only focused on propagandizing cardiovascular, kidney, and brain complications of people with diabetes and eye complications were often given little attention, mainly just general propaganda about eye diseases, with little mention of specific eye diseases.

Compliance with the diet, with the exercise regimen, and with the medication regimen in people with type 2 diabetes were like three legs of a stirrup, with which any leg missing or one leg being too short or too long are not possible. Complying well with these 3 regimens would help people with type 2 diabetes prevent complications effectively. Our study results showed that active compliance (regularly and always) in the intervention group changed more than in the control group. The intervention effectiveness index changed the most in the frequency of always complying with the medication regimen at 98.1%.

Compliance with follow-up examinations was also a mandatory requirement for people with type 2 diabetes. Our study results showed that the proportion of people with type 2 diabetes who always have timely follow-up visits after intervention in the intervention group was 47.8%; the rate in the control group was 41.7% with an intervention effectiveness index of 52.1%. Type 2 diabetes was a chronic disease that requires medication to be used regularly, continuouNoy, and on time for a long time, so it is difficult to avoid the situation where patients sometimes forget to inject or take medication. When blood sugar levels in the body fluctuate, it can cause many negative effects on the patient's health, so regularly checking blood sugar levels is very important for people with diabetes. In addition to complying with follow-up visits, having a healthy lifestyle and diet is very closely related to blood sugar control. During the process of managing people with diabetes, medical staff need to increase consultation and recommend support measures to ensure patient compliance with treatment.

CONCLUSIONS

1. Current status of eye complications, knowledge and practice of people with type 2 diabetes on disease prevention and complication prevention

- 38.5% of research subjects were men; 61.5% are female. The highest age group is 60-69 years old, accounting for 40.1%. Education level is secondary school, accounting for 53.6%.

- The rate of patients with eye complications is 77.6%. In eye diseases, the rate of patients with reduced vision is 60.6% (<3/10), those with cataract accounts for 74.5%; vision damage is 60.6%; and those with diabetic retinopathy is 28.4%. There is no difference in the incidence of eye diseases in men and women ($p>0.05$)

2. Effectiveness of community intervention measures to improve patients' knowledge and practice on disease prevention and prevention of common complications and eye complications in diabetes

- The intervention effectiveness in changing knowledge about eye complications reached quite high rate from 107.7% and the highest rate was 1426.5%.

- The intervention effectiveness in diet compliance achieved from 22.1% to 89.7%.

- The intervention effectiveness in complying with the physical exercise regimen achieved the highest intervention effectiveness in always complying with a rate of 85.5%.

- The Intervention effectiveness in medication regimen compliance reached 98.1%.

- The effectiveness of intervention in compliance with follow-up examinations reached 52.1%.

RECOMMENDATIONS

1. People with diabetes need to have regular eye exams to detect early and promptly treat eye complications.

2. Local health and media agencies need to maintain communication articles about diabetes, complications and eye complications of diabetes so that patients and their family members comply with diabetes treatment measures to prevent possible complications.