

\* . \*\* . \*\*\* . \*\*\* . \*\*\* . \*\*\*

1. ( , 1985; , 1990),  
 (Fava , 1996)  
 3/4 10  
 가 24% 가  
 가 ( , 1992).  
 1995  
 20 4.0% ,  
 2025 5.4% 가 (King, 가  
 Aubert & Hermam, 1998).  
 (1991) 7.9% , 가  
 (1996) 1993 30 , 가  
 7.2% , (1995) (Orem, 1991),  
 10.1% 가 가  
 가 19.2% ,  
 18.5% 가  
 18.8% ( , 1997). ( , 1992; , 1986).  
 가 가 가  
 가 (Cameron & Gregor,  
 1987; Penlrton, house & Parker, 1987)

---

\*  
 \*\*  
 \*\*\*

가

가 ( , 1997; , 1997),  
( , 1998; , 1988; , 1990;  
1994; , 1999; & 2000;  
, 1992) ( , 1996)

1)

2)

3)

가

(  
, 1999).

1.

가

가

가  
( ,  
2000).

가

2

140mg/

( ,

dℓ , 2

140mg/dℓ

2

200mg/dℓ

(30,

60,90 )

200mg/dℓ

( ,

( , 1999).

1992; & , 1998; , 1996).

(type ),

McCaul (1987) , ,

(type )

(malnutrin

, 가 ,

related diabetes mellitus)

(WHO,

Crabtree(1986) , ,

1985), 1997

가

1

2

26%, 35%, 25%

( , & ,

1999).

84%

(Lee , 1984),

가

40

,

가

(Park , 1996). 가 ,

,

,

가

(Park ,

1996).

가

2.

가 가 Triglyceride (very low density lipoprotein: VLDL), (low density lipoprotein: LDL), (high density lipoprotein: HDL) .( , 1995).

가 , 가 , VLDL 가

( , 1990). 가 , HDL

2 , triglyceride . LDL 50%가

(HbA1c) ( , 1985). VLDL 70-80%

가 가 LDL 가

가 가 ( , 1996). LDL 가

가 . HDL VLDL ( , 1996).

가 , VLDL 가, 가, HDL

10-20% LDL 가

2000). ( , (Kim, 1997).

가 가

가 25 30% 2.

(Fredick, 가

1990; Lee , 1993). 가 ( , , 가

(Triglyceride) 1994; , 1990). 가 가

가 (1984)

( , 1992; 65.7%가 ,

, 1990). 가 22.3%

(1998)

(Attia , 1995; Kim, 1997). 3.36(5 ),

(1996) 10-18

3.17

(Bandura, 1977)

Strecher

(1986) ( , , , )

( , 1992; , 1999).

21

가

, Mccaul (1987)

가

( , 2000),

가

가

Littelfield (1992)

(1992)

가

가

( , 2000).

가

(1984,

, 가 ,

1990)

1984

1988

2

52

가

Grossman

가

(1987)

가

가

(1994)

가

가

가

(1976)

가

(1988),

(1982)

, 가

가

가

가

가

1.

( , , & , 1988)

5

가

( &

, 1999).

2.

S

S

< 1 >

|    | 1  | 2 | 3 | 4     | 5 |
|----|----|---|---|-------|---|
| 1. |    |   |   |       |   |
| 2. | 1) |   |   |       |   |
| 3. | 2) |   |   |       |   |
| 4. | 3) |   |   |       |   |
| 5. | 4) | 3 |   | Coach |   |

|    |  |  |  |  |  |
|----|--|--|--|--|--|
| 1. |  |  |  |  |  |
| 2. |  |  |  |  |  |
| 3. |  |  |  |  |  |
| 4. |  |  |  |  |  |
| 5. |  |  |  |  |  |

가 36, 26, 40, 40, 24, 3, 3

3. 1) 가 1 1 2) (1) Coach (1996) Crabtree(1986) (Diabetes Self Efficacy Scale)

23, 6

Cronbach'Alpha 2)

가 0.823

(2)

(FBS), (HBA1c)

(SCL)

3.

2001 3 12 4 19

1)

2)

3)

1 10-20 Coach 3

4)

4,

1)

SPSS WIN 10.0

2)

3-1> <

3-2>

132.33 ± 14.14mmHg,

1. < 2>

가 55.6%, 가

가 54.5%, 가 46.2%

가

63.75 ± 8.14

64.77 ± 1.54

80.6%, 16.7%, 2.8%

73.1%, 23.1%, 3.8%

38.9%,

38.5% 가

'가 52.8% 가

' ' 53.8% 가

가 50.0%,

가 41.7%,

가 8.3%

가 46.1%,

38.5%, 15.4%

가 41.7% 가

8.3%, 5.6%, 가 2.8%

가 50.0% 가

15.4%, 11.5%, 11.5%, 가

3.8%

, 가

가

< 2>

|       | (N=36)     | (N=26)     |          | <sup>2</sup> or t | p    |
|-------|------------|------------|----------|-------------------|------|
|       | ( )        | ( )        |          |                   |      |
|       | 16(44.4)   | 12(46.2)   | 28(45.2) |                   |      |
|       | 20(55.6)   | 14(54.5)   | 34(54.8) | .018              | .894 |
| 50    | 4(11.1)    | 1( 3.8)    | 5( 8.1)  |                   |      |
| 51-60 | 6(16.7)    | 6(23.1)    | 12(19.4) |                   |      |
| 61-70 | 19(52.8)   | 16(61.5)   | 35(56.5) |                   |      |
| 71    | 7(19.4)    | 3(11.5)    | 10(16.1) |                   |      |
| ±     | 63.75±8.14 | 64.77±1.54 |          | -.494             | .623 |
|       | 29(80.6)   | 19(73.1)   | 48(77.4) |                   |      |
|       | 6(16.7)    | 6(23.1)    | 12(19.4) | .483              | .785 |
|       | 1( 2.8)    | 1( 3.8)    | 2( 3.2)  |                   |      |
|       | 4(11.1)    | 1( 3.8)    | 5( 8.1)  |                   |      |
|       | 14(38.9)   | 10(38.5)   | 24(38.7) |                   |      |
|       | 10(27.8)   | 5(19.2)    | 15(24.2) | 2.998             | .558 |
|       | 7(19.4)    | 8(30.8)    | 15(24.2) |                   |      |
|       | 1( 2.8)    | 2( 7.7)    | 3( 4.8)  |                   |      |
|       | 1( 2.8)    | 1( 3.8)    | 2( 3.2)  |                   |      |
|       | 16(44.4)   | 14(53.8)   | 30(48.4) | .671              | .715 |
|       | 19(52.8)   | 11(42.3)   | 30(48.4) |                   |      |
|       | 3( 8.3)    | 4(15.4)    | 7(11.3)  |                   |      |
|       | 15(41.7)   | 10(38.5)   | 25(40.3) | 2.279             | .517 |
|       | 18(50.0)   | 12(46.1)   | 30(48.4) |                   |      |
|       | 15(41.7)   | 15(50.0)   | 30(48.4) |                   |      |
|       | 15(41.7)   | 4(15.4)    | 19(30.6) |                   |      |
|       | 3( 8.3)    | 3(11.5)    | 6( 9.7)  | 5.088             | .278 |
|       | 2( 5.6)    | 3(11.5)    | 5( 8.1)  |                   |      |
|       | 1( 2.8)    | 1( 3.8)    | 2( 3.2)  |                   |      |

130.58 ± 13.29mmHg  
 83.33 ± 8.28mmHg,  
 80.00 ± 7.62mmHg (WHR)  
 23.59 ± 2.25,  
 .90 ± 2.48  
 가

(BMI)  
 23.21 ± 1.47  
 .87 ± 4.62,  
 가

66.81mg/dℓ,  
 140.88 ± 39.26mg/dℓ,  
 7.95 ± 1.31mg/dℓ,  
 8.19 ±  
 1.57mg/dℓ  
 211.11 ± 41.13mg/dℓ,  
 216.54 ± 65.76  
 178.14 ± 84.29mg/dℓ,  
 150.65 ± 88.74mg/dℓ,  
 135.36 ± 28.54mg/dℓ,  
 138.00 ± 44.81  
 48.19 ± 11.56mg/dℓ,  
 52.80 ± 13.00mg/dℓ  
 87.50 ± 3.83  
 89.50 ± 3.91

3)

< 4>

가

< 3-1> ,

|                       | (N=36)         | (N=26)         | t      | p    |
|-----------------------|----------------|----------------|--------|------|
|                       | Mean ±SD       | Mean ±SD       |        |      |
| (mmHg)                | 133.33 ± 14.14 | 130.58 ± 13.29 | .776   | .441 |
| (mmHg)                | 83.33 ± 8.28   | 80.00 ± 7.62   | 1.617  | .111 |
| (Kg/ m <sup>2</sup> ) | 23.59 ± 2.25   | 23.21 ± 1.47   | .800   | .427 |
| -                     | .87 ± 4.62     | .90 ± 2.48     | -1.366 | .177 |

< 3-2> ,

|       | (N=36)      | (N=26)      | χ <sup>2</sup> or t | p      |
|-------|-------------|-------------|---------------------|--------|
|       | ( )         | ( )         |                     |        |
|       | 5(13.9)     | 3(11.5)     | 8(12.9)             |        |
|       | 31(86.1)    | 23(88.5)    | 54(87.1)            | .074   |
|       | 8(22.2)     | 9(34.6)     | 17(27.4)            |        |
|       | 28(77.8)    | 17(65.4)    | 45(72.6)            | 1.165  |
|       | 22(61.1)    | 14(53.8)    | 54(56.8)            |        |
|       | 14(38.9)    | 12(46.2)    | 41(43.2)            | .327   |
| 12    | 13(25.5)    | 12(27.3)    | 25(26.3)            |        |
| 13-60 | 18(35.3)    | 14(31.8)    | 32(33.7)            |        |
| 61    | 20(39.2)    | 18(40.9)    | 38(40.0)            |        |
| ±     | 5.12 ± 4.74 | 6.51 ± 6.08 |                     | -1.010 |
|       | 3( 8.3)     | 1(3.8)      | 4(6.5)              |        |
|       | 33(91.7)    | 13(96.2)    | 58(93.5)            | .504   |
|       | 10(27.8)    | 13(50.0)    | 23(37.1)            |        |
|       | 26(72.2)    | 13(50.0)    | 39(62.9)            | 3.195  |
|       | 13(36.1)    | 13(50.0)    | 26(41.9)            |        |
|       | 23(63.9)    | 13(50.0)    | 36(28.1)            | 1.196  |
|       | 34(94.4)    | 24(92.3)    | 58(93.5)            |        |
|       | 2( 5.6)     | 2( 7.7)     | 4(6.5)              | .114   |

< 4> ,

|          | (N=36)         | (N=26)         | t      | p    |
|----------|----------------|----------------|--------|------|
|          | Mean ±SD       | Mean ±SD       |        |      |
| (mg/ dℓ) | 163.25 ± 66.81 | 140.88 ± 39.26 | 1.652  | .104 |
| (%HbA1C) | 7.95 ± 1.31    | 8.19 ± 1.57    | -.677  | .501 |
| (mg/ dℓ) | 211.11 ± 41.13 | 216.54 ± 65.76 | -.399  | .691 |
| (mg/ dℓ) | 178.14 ± 84.29 | 150.65 ± 88.74 | 1.239  | .220 |
| (mg/ dℓ) | 135.36 ± 28.54 | 138.00 ± 44.81 | -.264  | .793 |
| (mg/ dℓ) | 48.19 ± 11.56  | 52.80 ± 13.00  | -1.471 | .147 |
|          | 87.50 ± 3.83   | 89.50 ± 3.91   | -.378  | .695 |



(1998)

2. 7.7% 3 7.0% ,  
6 6.6%  
1) 가 , Mount (1991)  
Gruessr (1993)  
가  
t- < 5> .  
26.58 ± 51.74 12.35 ± 2) )  
35.25 가 ( , , ,  
(t = -3.317, p = .002) )  
0.61 ± 0.82 , 0.41 ± 0.76 ) t-  
가 < 6> .  
(t = -4.956, p = .000) .  
0.92 ± 21.22  
(1996) 2.88 ± 43.13 가  
Anderson (1989), Delamater (1990),  
Allen, Delong Feussner(1990) 가  
가 18.19 ± 54.45  
26.76 ± 111.06 가  
(t = -.2108, p = .039).  
( , 1998 ;  
, 1993; , 1990; , 1988; ,  
1990), 10.56 ± 21.84 ,  
0.61 ± 29.00 가  
,  
3.59 ± 9.18 가  
1.46 ± 12.26  
, 3  
Coach , ,  
가 .  
(1999) 가 (1998) ,  
가 (1989) , 가  
(1990) , 가  
가 12 , 가

< 5>

|          | (N = 36)       | (N = 26)      | t      | p    |
|----------|----------------|---------------|--------|------|
|          | Mean ± SD      | Mean ± SD     |        |      |
| (mg/dl)  | -26.58 ± 51.74 | 12.35 ± 35.25 | -3.317 | .002 |
| (%HbA1C) | -.61 ± .82     | .41 ± .76     | -4.956 | .000 |

< 6 >

|         | (N=36)          | (N=26)         | t       | p    |
|---------|-----------------|----------------|---------|------|
|         | Mean ± SD       | Mean ± SD      |         |      |
| (mg/dℓ) | - .92 ± 21.22   | 2.88 ± 43.13   | - .415  | .681 |
| (mg/dℓ) | - 18.19 ± 54.45 | 26.76 ± 111.06 | - 2.108 | .039 |
| (mg/dℓ) | - 10.56 ± 21.84 | .61 ± 29.00    | - 1.540 | .129 |
| (mg/dℓ) | 3.59 ± 9.18     | - 1.46 ± 12.26 | 1.857   | .068 |

< 7 >

|  | (N=36)        | (N=26)         | t     | p    |
|--|---------------|----------------|-------|------|
|  | Mean ± SD     | Mean ± SD      |       |      |
|  | 20.02 ± 34.80 | - 5.52 ± 30.27 | 4.651 | .000 |

가

(1994)

가

5

가

3)

t-

< 7 >

20.02 ± 34.80 가 5.52 ± 5 2001 3 12 4 19  
 30.27 가 S  
 (t=4.651, p=.000) 36 , 26 3 60  
 가 가 1 20 5

( , 1992; , 1996; , 1996; , 1996; , 1994; , 1996). Strecher, DeVellis, Becker, Rosenstork (1986)

21

SPSS WIN 10.0

가

Chi-square test t-test

가 ( )  
 , , , , )  
 , t-test .  
 가  
 가

1)  
 26.58 ± 51.74  
 12.35 ± 35.25 가  
 (t = -3.317, p = .002)  
 0.61 ± 0.82 ,  
 0.41 ± 0.76 가  
 (t = -4.956, p = .000)  
 ,  
 .

2)  
 .  
 0.92 ± 21.22  
 2.88 ± 43.13 가  
 ,  
 18.19 ± 54.45  
 26.76 ± 111.06 가  
 (t = -2.108,  
 p = .039). 10.56  
 ± 21.84 , 0.61 ±  
 29.00 가  
 ,  
 3.59 ± 9.18 가 1.46 ±  
 12.26

3)  
 가 20.02 ± 34.80 가  
 5.52 ± 30.27  
 (t = 4.651, p = .000)  
 가 가  
 .  
 .

(2000). 3  
 WORKSHOP.  
 (1992). \_\_\_\_\_  
 \_\_\_\_\_.  
 (1996).  
 -  
 -. \_\_\_\_\_, 26(2), 413-  
 427.  
 , , (1994). 가  
 가  
 \_\_\_\_\_, 18(3), 235-241.  
 (1985). \_\_\_\_\_.  
 , (1976).  
 \_\_\_\_\_, 30(1), 76-86.  
 (1992).  
 \_\_\_\_\_, 9(1), 1-3.  
 (1991).  
 (1996). 가 \_\_\_\_\_  
 \_\_\_\_\_, 17, 1044-1058.  
 (1989). 2  
 \_\_\_\_\_ 4  
 \_\_\_\_\_, 54.  
 (1996).  
 -  
 - \_\_\_\_\_, 28(1),  
 132-142.  
 , (1999).  
 \_\_\_\_\_, 11(3), 477-483.  
 (1990). \_\_\_\_\_.  
 (1999). \_\_\_\_\_.

(1984). 가  
 (1986).  
 (1988). , 18  
 (30), 281-288.  
 (1996). , 20, 14.  
 (2000). 3  
 (1988). 가  
 , 12, 79.  
 (1998). , 10(3), 480  
 -491.  
 (2000). 가 ( ).  
 (1992).  
 (2000). 2 , 7(3),  
 453-465.  
 (1994). 가  
 (1995). , 48(6).  
 (1990). 2  
 (1990). 2  
 (2000). 2  
 (1982). 가  
 , 14,  
 321-327.  
 (1996). 가

, 26(1),  
 127-137.  
 (1999). , 가  
 (1997).  
 (2001). 2001  
 , P24.  
 (1985). , 9(1), 5-9.  
 (1995). ;  
 Anderson, B. J., Wolf, F. M., Burkhart, M. T.,  
 Cornell, R. G. & Bacon, G. E. (1989).  
 Effects of Peer-Group Intervention on  
 Metabolic Control of Adolescents With  
 IDDM. Diabetes Care, 12(3), 179-183.  
 Allen, B. T., DeLong E. R. & Feussner, J. R.  
 (1990). Impact of Glucose Self-Monitoring on  
 Non-Insulin - Treated Patients with type  
 Diabetes Mellitus, Diabetes Care, 13(10),  
 1044-1050.  
 Attia, N., Durlach, V., Paul T. L., Soni, T.,  
 Betoule, D. & Girard Gbba A. (1995).  
 Modulation of low density lipoprotein  
 subclasses by alimentary lipidemia in control  
 and normotriglyceridemic non-insulin dependent  
 diabetic subjects. Atherosclerosis, 113, 197-  
 209.  
 Bandura, A. A. (1982). Self-Efficacy mechanism  
 in Human Agency. American Psychologist,  
 37, 122-147.  
 Bandura A. (1977). Self-efficacy ; Toward a  
 unifying theroy of behavioral change.  
Psychologocal Review, 84, 191- 215.  
 Cameron, K. & Gregor, F. (1987). Chronic  
 Illness and Compliance. Journal of Advanced  
 Nursing, 12, 671-676.  
 Crabtree, M. L. (1986). Self-efficacy and social  
 support as predictors of diabetic self care  
 Unpublished doctoral dissertation. University  
 of California, San francisco.

- Daneman, D., Siminerio, L., Transue, D., Betschart, J., Drash, A. & Becker, D. (1985). The Role of Self-Monitoring of Blood Glucose in The Routine Management of Children with Insulin-dependent Diabetes Mellitus. Diabetes Care, 8(1), 1-4.
- Delamater, A. M., Bubb, J., Davie, S. G., Smith, J. A., Schmidt, L., White, N. H. & Santiago, J. V. (1990). Randomized Prospective Study of Self-Management Training With Newly Diagnosed Diabetic Children. Diabetes Care, 13(5), 492-498.
- Fava, S., Aquilina, O., Azzopardi, J., Muscat, H. A. & Fenech, F. F. (1996). The prognostic value of blood glucose in diabetic patients with acute myocardial infarction. Diabetes Medicine, 13, 80-83.
- Fredrick, L. D. (1990). Hyperlipidemia in diabetes mellitus. Diabetes & Metabolism Reviews, 6, 47-61.
- Grossman, H. Y., et al. (1987). Self-Efficacy in Adolescent Girls and Boys with Insulin-Dependent Diabetes Mellitus. Diabetes Care, 10(3), 324-329
- Kim, Y. S. (1997). Serum triglyceride levels in CVD patients. Korean J of Lipidology, 7(2) S169-S174.
- King, H., Aubert, R. E., & Herman, W. H. (1998). Global burden of diabetes, 1995-2025; Pervallence, numerical estimates and projection. Diabetes Care, 21(9), 1414-1431.
- Lee, K. W., Shon, B. H., Kang, S. K., Park, B. K., Park, D. H., Min, B. S., Song, H. Y. (1984). Epidemiological study for diabetes in 1821 koreans. Diabetes, 8, 5-14.
- Lee, K. Y., Chei, S. J., Park, J. Y., Kim, K. S. & Lee, M. H. (1993). The effects of AcipiMox(Olbetam) on hyperlipidemic patients with type diabetes mellitus. Diabetes, 17(1), 105-110.
- Littelfield, C. H., Daneman, D., Craven, J. L., Murray, M. A., & Rydall, A. C. (1992). Relationship of self efficacy and binging to adherence to diadete regimen among adolescents. Diabetes care, 15(1), 90-94.
- McCaul, K. D., Glasgow, R. E., & Schafer, L. C. (1987). Diabetes Regimen Behavior. Medical care, 25(9), 219-228.
- Orem, D. E. (1991). Nursing ; Concepts of Practice(4th ed). St. Louis ; Mosby - Year Book Inc.
- Park, Y. S., Lee, H. K., Kim, S. Y., K. O. C. S., Min, H. K., Lee, C. K., Ahan, M. Y., Kim, Y. I. & Shin, Y. S. (1996). Analysis of risk factors in NIDDM. Diabetes, 20(1), 14-24.
- Penlrton, L., house, W. C. & Parker, L. E. (1987). "Physicis" and "patients" views of Problems of Compliance with Diabetes Regimens. Public Health Reports, 102(1), 21-26.
- Stephen Clemat (1995). Diabetes Self-Management Education. Diabetes Care, 18(8), 1204-1214.
- Strecher, V. J., De vellis, B. M., Becker, M. H. & Rosenstock, I. M. (1986). The role of self efficacy in achieving health behavior change. Health Education Quarterly, 13(1) 73-91.
- WHO (1985). Expert Committe in Diabetes Mellitus. WHO Technical Report Series, 727.

- Abstract -

Key concept : NIDDM(Non-Insulin Dependent Diabetes Mellitus), Glucose Metabolism, Lipid Metabolism, Self-efficacy, Diabetes Education program

### Effect of Diabetes Education Program on Glucose Metabolism and Lipid Metabolism, Self-efficacy in NIDDM Patients

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*Choi, Youn Ok \*\*\**, *Bae, Eun Suk \*\*\**

*Na, Jung Hyun \*\*\**, *Kim, Mi Sook \*\*\**

The purpose of this study is to determine the effect of diabetes education program on Glucose Metabolism(blood sugar, HbA1c) and Lipid Metabolism(total cholesterol, triglyceride, low density lipoprotein, high density lipoprotein), Self-efficacy in non-insulin independent diabetes mellitus.

The study design was a non equivalent control group pre-test post-test design. Data for the study were collected from March 12 to June 19, 2001. Sixty-two research subjects were assigned to experimental(36) and control(26) groups.

The collected data was analyzed using the Chi-Square test, t-test by spsswin program

The results are as follows :

1. Experimental group had higher level of glucose metabolism than control group(FBS;  $t=-3.317$ ,  $p=.002$ , HbA1c;  $t=-4.956$ ,  $p=.000$ ).
2. Level of lipid metabolism were partly a significant different between experimental group and control group(Triglyceride ;  $t=-2.108$ ,  $p=.039$ ).
3. Experimental group had higher efficacy score than control group( $t=4.651$ ,  $p=.000$ ).

In conclusion, the study supported the effects of diabetes education program to increase metabolism and self-efficacy. Further study with a longitudinal design is suggested to verify the effect of diabetes education program in NIDDM and standardized diabetes education program.

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