Research Article

The Impact of Educational Package of Prevention of Metabolic Syndrome on the Knowledge and Attitudes of Primary School Teachers of Dezful City in 2016

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Abstract

Objectives: This study has been conducted with the objective of investigating the impact of educational packages of prevention of metabolic syndrome on knowledge and attitude of primary school teachers.

Methods: The study is in kind of quasi experimental research. In this study, according to the Cochran formula, sampling was done using easy non-random sampling method from the selected schools of Dezful city. The participants were randomly divided into two experimental (n = 72) and control (n = 72) groups. Division of selected individuals to each studied group was done using block random method and using 6-member blocks. Then, both groups fulfilled the researcher-made questionnaire (knowledge and attitude associated with metabolic syndrome) with previously proved validity and reliability. The experimental group was exposed to educations related to prevention of metabolic syndrome (intervention) through educational package. After that, the intervention group was allowed for 1 month to use new skills. Then, the obtained data were analyzed statistically in SPSS-22.

Results: According to the obtained results, the mean age range of participants in the intervention group is 39.5 and it is equal to 37.5 years old in the control group. A majority of participants were female (intervention: 61.1 and control: 87.5%). In terms of education level, a majority of participants had a post-diploma and BA degree (intervention: 84.7 and control: 74.6%). A majority of sample individuals were married (intervention: 61.1 and control: 69.4%). In terms of job status, a majority of participants were teachers (intervention: 65.3 and control: 61.1%) and a majority of students in this study were in grade 6 of primary school (intervention: 44.4 and control: 48.6%). According to obtained results, the mean value of knowledge of intervention group was significantly higher than their values before the intervention (P < 0.0001); although the values showed no significant difference in the control group (P = 0.083). Moreover, mean values of the attitude of the intervention group was significantly higher than values before intervention (P < 0.0001) and no significant difference was observed in the control group (P = 0.093). Moreover, the mean values of knowledge and attitudes between two intervention and control groups showed significant difference (P < 0.0001). It means that the values of attitude and knowledge in the intervention group increased higher than the control group (P < 0.098).

Conclusions: Teachers and other educational employees facing a wide range of students and their health and promotion of knowledge and attitude towards the health of students through various methods such as educational packages could help modification of behaviors associated with health of students in all dimensions, especially physical dimension.

Keywords: Teachers, Educational Package, Knowledge, Attitude, Metabolic Syndrome

1. Background

Metabolic syndrome, insulin resistance syndrome, or syndrome x refers to a series of metabolic dysfunctions including abdominal obesity, hypertension, increased fasting glucose, and lipid abnormalities in the form of dyslipidemia (high triglycerides) (1). According to the definition of adult treatment panel, if a person has 3 factors of the said factors, the person would be recognized as a patient with metabolic syndrome (2). According to the notification of international diabetes federation, 1/4 of adults in the world suffer from metabolic syndrome and the risk of strokes and heart attack in these individuals is respectively two to three times more than healthy individuals (3). The risk of metabolic syndrome in females is more than males (1). Metabolic syndrome is a very important disease

for many people across the world. Throughout the years, prevalence of metabolic syndrome in children and adolescents has been reported to 34.6% in the majority of countries (4), so that 26.3% in Chile, 24% in Lebanon, 30.7% in Kashmir, India, and 8.7% of Greek adolescents suffer from metabolic syndrome; all of them are obese (2).

The results obtained from a study showed that 21.9% of 7 - 11 year old children of Rafsanjan were exposed to or were suffering from being overweight; 6.4% of children were suffering from stomach obesity and in terms of systolic and diastolic blood pressure, respectively 11.8% and 3.6% of children were suffering from hypertension (5). Moreover, according to a research, systematic review of prevalence of metabolic syndrome in Iranian children, its prevalence was estimated to 3.3% (19.0 - 2). The prevalence of the disease was equal to 11.9% in overweight children and was equal to 29.2% in obese children; this shows that the values are relatively close to universal ratios (6). According to the literature, various factors such as life style, social factors, cultural, and demographic factors could affect metabolic syndrome. In fact, significant correlation was found between social-cultural and economic factors and metabolic syndrome (3).

One of the most common factors causing metabolic syndrome in children is inactivity and obesity. Today, the factors causing inactivity in children could be watching TV and computer (electronic games), which could be the most important factors in reducing physical activity, which is causing overweight and obesity (6). Some studies in the US have shown that unhealthy diets and being overweight have increasing process among children and adolescents (5).

1.1. Review of Literature

Moreover, in the studies conducted in this field, the prevalence of metabolic syndrome among Iranian adolescents is reported to 15.6% (7). The results obtained from a study showed that 21.9% of 7 - 11 year old children in the city of Rafsanjan, Iran, are exposed to or suffer from being overweight; 6.4% of the children suffer from abdominal obesity and in terms of systolic and diastolic hypertension, respectively 11.8% and 3.6% of children suffer from hypertension (8). In addition, according to the results of a systematic review on the prevalence of metabolic syndrome in Iranian children, its prevalence was estimated to 3.3% (-19.02). The prevalence in children who were overweight was equal to 11.9% and 29.2% in obese children; this shows that it is almost close to the world ratios (7).

Some evidence has been obtained in reference to the correlation between unhealthy food diet and obesity, therefore, high consumption of unhealthy foods among families could lead to increased overweight and obesity in

children (6). Moreover, in children, clinically, abdominal obesity is associated with complications such as hypertension, hyperinsulinemia, Type II diabetes, and dyslipidemia, which could pave the way for metabolic syndrome (5). The International Diabetic Federation has introduced abdominal obesity as a main factor causing metabolic syndrome (9). Ram Weiss et al. (10), found that 38.7% to 49.7% of obese children and adolescents were suffering from metabolic syndrome, which showed a significant increase compared to the last decade.

In a study conducted in Italy, it was found that a 30% increase in knowledge of teachers regarding the health issues of students could lead to 63% growth in observance of health issues by the students (11). Moreover, a study in France showed that supplying early education and participation of teachers in health services of schools could play a key role in the enhancement of knowledge of teachers and students (12).

Studies have shown that educated teachers could form a network of educational and health experts to promote the health of schools (13). Moreover, in various studies, different educational methods are used such as educational workshop and lecture for teachers. In all of these methods, the knowledge of studied units has been increased; although the impact on attitude has been different (14). In a study on the effect of education on knowledge and attitude of healthcare givers of public primary schools of Tehran, the author found significant differences in the level of knowledge and attitude of care giving before and after education (15). Moreover, in another study in China, Lo et al. (16), investigated the effect of education and knowledge on health teachers in the field of metabolic syndrome in all grades of primary to secondary school and the results showed that health teachers could provide useful education for children to teach and implement healthy diet concepts and ideal weight index as well as could reduce risk factors of metabolic syndrome in children.

In a study conducted in the field of the effect of education on knowledge and attitude of public health caregivers of Tehran, a significant difference was found between the knowledge and attitude of caregiving before and after education (12). Moreover, in another study done in China, Lo et al. (16), could reduce the risk factors of metabolic syndrome in children. Mohebi et al. (4), conducted a study and could decrease metabolic syndrome risk factors.

2. Methods

The study has been conducted using semi-empirical method. After getting permission from the Ethics Committee and getting an introduction letter from the Research

Deputy of the university, the author referred to the research area (public primary schools for girls and boys in Dezful) and got the agreement of authorities after careful explanation of research objectives. After that, in addition to getting the consent of participants, the author could gain their consent to fulfill the questionnaire. In this study, due to the formula, the sample size was selected as 144 primary school teachers. Sampling was done using a simple non-random sampling method from selected primary schools of Dezful. Then, the participants were divided to two experimental (n = 72) and control (n = 72) groups randomly. Dividing the selected individuals to each group was done using block random sampling and using 6-member blocks. Then, both groups fulfilled the pretest questionnaire. Afterwards, an educational package (booklets and CD) was presented to the experimental group and no intervention was taken for the control group. After that, they had one month to apply new skills; during this period, the author was in contact with them in person or through phone calls. If they had a question, their question was answered. After the end of this period, posttest was implemented. To this end, the posttest questionnaire was fulfilled by both groups and then, the results were analyzed and compared. In this study, the sample size formula is presented as follows:

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 \left(S_1^2 + S_2^2\right)}{\left(\bar{X}_1 - \bar{X}_2\right)^2} \qquad (1)$$

Initial sample size was estimated to 58 individuals. In each group, due to the probability of fall out of 0.25 during the study, final sample size was estimated to 72 people per group (total number of 144 people). Sampling was done using simple unconventional method from the selected schools of Dezful. Division of selected people in each studied group was done using block random sampling and using 5-member blocks.

2.1. Data Collection Instrument

Data collection instrument in this study includes demographic information questionnaire containing items regarding age, gender, marital status, and education level. The knowledge questionnaire contained 23 items with two-option answers (yes and no) (0 - 1) and was related to the field of the knowledge of teachers regarding heath cares and the method of preventing metabolic syndrome. Gaining point (0 - 8) shows weak knowledge, point (9 - 15) shows average knowledge, point (16 - 23) shows good knowledge level. The other questionnaire used in this study is attitude survey questionnaire containing 19 items in form of five-option questions related to the attitude of teachers towards care giving and method of preventing metabolic syndrome. The scoring style in this questionnaire is based on a 5-point Likert scale in form of (agreed: 5), (partially agreed: 4), (no idea: 3), (partially disagreed: 2), and (disagreed: 1). For reverse items, the scoring is as follows: (agreed: 1), (partially agreed: 2), (no idea: 3), (partially disagreed: 4), and (disagreed: 5). Gaining point 54 - 65 shows good attitude, gaining point 44 - 53 shows average attitude, and point 43 and below shows weak attitude.

2.2. Validity and Reliability of Instrument

To determine validity of researcher-made questionnaire, at the first, the questionnaire is tested in terms of content validity, content validity index (CVI), and content validity ratio (CVR) with regard to this issue that the number of evaluator professors is 10 and minimum acceptable CVR and CVI level is equal to CVR > 0.62 and CVI > 0.79. To this end, the said questionnaire was distributed among 10 faculty members of Nursing and Midwifery School of Ahvaz Jundishapur University of Health and Medical Sciences and it was evaluated in terms of necessity, relevance, simplicity, and clearance and the correction comments were applied on the final version. Then, the questionnaire was evaluated in terms of face validity. To this end, the questionnaires were distributed among 10 academic professors and after analysis of significance and the effect of each item using 5-point Likert scale (from totally significant: 5 to totally insignificant: 1), items with the effect point higher than 1.5 were placed in the final questionnaire. In order to determine the reliability of the questionnaire, test-retest method (interval of 10 days) with sample size of 20 people is used and the results were examined using paired t-test. The results were obtained to r = 1.79 for the knowledge questionnaire and to r = 7.86 for attitude questionnaire; this shows high reliability of the instrument. Moreover, to confirm internal consistency of attitude survey questionnaire, Cronbach's alpha is used and is obtained to 0.92, which shows high and favorable internal consistency.

After fulfilling the questionnaires, educational package was provided for the intervention group (in form of booklet and CD) and no intervention was performed for the control group. After that, they took 1 month to use new skills and during this time, the author was in call contact with them and used to answer their questions. After this time interval, posttest is performed and the posttest questionnaire was fulfilled by both groups. Afterwards, the outputs were compared using SPSS-22 and MANCOVA, chi-squared (χ^2), and independent t-test. This study was confirmed by the ethics committee of Ahvaz Jundishapur University of Medical Sciences (IR.AJUMS.REC.1395.823). In this study, the authors have been committed to ethical issues

such as respecting right to voluntary participation, gaining consent for participation and informing the participants about the research purpose.

3. Results

In this study, the age of teachers in both intervention and control group was respectively equal to 39.5 ± 1.92 and 37.5 ± 2.57. In terms of gender, 49 individuals (68.1%) of teachers in the intervention group and 63 individuals (87.5%) in control group were female. In this study, a significant difference was observed between two groups in terms of age and gender of teachers (P = 0.005). Hence, to eliminate the effect of the difference and to obtain the effect of intervention using analysis of covariance, the difference between base values was omitted. Moreover, in terms of education, a majority of people to 61 people (84.7%) in intervention group and 58 people (74.6%) in control group had a post-diploma and BA degree. Among the teachers in the intervention group, 44 (61.1%) were married and among the control group teachers 69.4% were married. Moreover, in terms of jobs, 47 people (65.3%) in intervention group and 44 people (61.1%) in control group were teachers. A majority of teachers to 32 people (44.4%) in the intervention group and 35 people (48.6%) in control group were active in grade 6 of educational level. According to the chi-squared (χ^2) test, the two groups were not significantly different in terms of education, marital status, and educational grade of students (P > 0.05) (Tables 1 - 4).

Table 1. Comparing Frequency Distribution and Frequency Percent of Education Level of Teachers in Two Intervention and Control Groups

Education Level	Intervention, No. (%)	Control, No. (%)	P-Value
Post-diploma and BA	61 (84.7)	58 (74.6)	0.33
MA and PhD	11 (15.3)	14 (19.4)	

Table 2. Comparing Frequency Distribution and Frequency Percent of Marital Status of Teachers between Intervention and Control Groups

Marital status	Intervention, No. (%)	Control, No. (%)	P-Value
Single	21 (29.2)	17 (23.6)	
Married	44 (61.1)	50 (69.4)	0.641
Divorced	5 (6.9)	3 (4.2)	
Widow	2 (2.8)	2 (2.8)	

To compare mean values before and after intervention of scores of knowledge in each intervention and control groups, paired t-test is used. In the intervention group, the

Table 3. Comparing Frequency Distribution and Frequency Percent of Job Status of Teachers in Intervention and Control Groups

Job Status	Intervention, No. (%)	Control, No. (%)	P-Value
Teacher	47 (65.3)	44 (61.1)	
Moderator	47 (65.3)	44 (61.1)	
Principal	7 (9.7)	7 (9.7)	0.988
Health teacher	6 (8.3)	7 (9.7)	
Educator	6 (8.3)	7 (9.7)	

Table 4. Comparing Frequency Distribution and Frequency Percent of Educational Grade of Students in Intervention and Control Groups

Educational Grade	Intervention, No. (%)	Control, No. (%)	P-Value
First grade	8 (11.1)	8 (11.1)	
Second grade	8 (11.1)	8 (11.1)	
Third grade	8 (11.1)	7 (9.7)	0.997
Fourth grade	8 (11.1)	7 (9.7)	
Fifth grade	8 (11.1)	7 (9.7)	
Sixth grade	32 (44.4)	35 (48.6)	

posttest values were significantly higher than pretest values. P-value is lower than 0.0001. However, in the control group, the posttest vales showed no significant difference (P = 0.083) (Table 5).

In order to compare mean values before and after interventions in terms of vales of attitude in each intervention and control group, paired t-test is used. In the intervention group, the posttest values were significantly higher than pretest values. P-value is lower than 0.0001. However, in the control group, the posttest values showed no significant difference (P = 0.093) (Table 6).

To compare the effect of intervention and mean variances of scores of knowledge and attitude between two intervention and control groups, independent t-test was used. Two groups showed a significant difference. It means that both values of knowledge and attitude in the intervention groups were higher than the control group, respectively to P < 0.0001 and P < 0.098 (Table 7).

4. Discussion

According to the results obtained from this study, the values obtained from testing measurement values showed that after implementation of the intervention in whole study, the knowledge and attitude in the intervention group was higher than control group.

According to obtained results, mean value of knowledge of teachers in the intervention group before and after

Table 5 . Comparing Knowledge Scores of Teachers Before and After Intervention in Two Intervention and Control Groups

Variable	Intervention			Control		
	Before	After	P-Value	Before	After	P-Value
Teachers' knowledge	29.75 ± 3.25	33.68 ± 4.34	< 0.0001	29.97 ± 3.63	30.44 ± 3.48	0.083

Table 6. Comparing Values of Teachers' Attitude Before and After Intervention in Two Intervention and Control Groups

Variable	Intervention			Control		
	Before	After	P-Value	Before	After	P-Value
Teachers' attitude	66.16 ± 9.66	70.63 ± 7.45	< 0.0001	68.13 ± 10.10	67.61 ± 9.91	-0.093

Table 7. Comparing Mean Variances Before and After Intervention in Values of Knowledge and Attitude of Teachers between Two Intervention and Control Groups

Difference	Intervention, (n = 72) Mean $\pm$ SD	Control, (n = 72) Mean $\pm$ SD	P-Value
Knowledge value	3.93 (4.09)	2.27 (0.472)	< 0.0001
Attitude value	4.47 (8.05)	2.59 (0.527)	< 0.098

intervention has been statistically significant (P < 0.0001); although, no significant difference was observed in the control group in terms of teachers' knowledge before and after intervention (P = 0.083). This shows the effect of educational packages on improvement of knowledge of teachers in the field of metabolic syndrome. Scholars believe that in all educations, the aim by knowledge is intellectual abilities and knowledge regarding a special field. Promotion of knowledge of teachers with emphasis on education and promotion of their knowledge in field of preventive cares of metabolic syndrome in primary school students seems necessary. Being informed of the physical status of status by teachers could be effective in on-time diagnosis, prevention, and treatment of some diseases such as metabolic syndrome, which could even be hidden from looks of families of students. It could also help the health promotion of students and society as well as improve educational quality (15). According to the findings of Malekshahi et al. (17), with the aim of investigating the impact of educational plan of preventing risk behaviors on knowledge and attitude of health teachers of primary schools of Khoramabad, it could be found that using educational packages had increased knowledge of teachers in intervention group (P < 0.001). Moreover, the difference of mean value of attitude of teachers in intervention group before and after intervention was significant statistically (P < 0.0001); although, no statistically significant difference was observed in the control group in terms of attitude of teachers in comparison to before and after intervention (P = 0.093). This shows the impact of educational packages in improving the attitude of teachers in the field of metabolic syndrome.

In relation to metabolic syndrome, increased knowledge and positive attitude of teachers towards modification of lifestyle of students with metabolic syndrome through reducing or omitting some wrong life habits and offering some positive habits causing reduction of risk of metabolic syndrome could lead to prevention and control of metabolic syndrome. Therefore, increase in knowledge and positive attitude of teachers and educators could be the most important factor considered by scholars in educational interventions.

In the field of comparing mean variances of students and attitude of teachers between two intervention and control groups, the values of attitude and knowledge in the intervention group was significantly higher than control group (P < 0.0001). In this field, the findings of Shojaeizadeh et al. (18), in the field of the effect of education using educational packages on attitude and knowledge of students regarding the AIDS diseases, showed that there is significant difference between knowledge values, increased values of knowledge, and attitude after the intervention compared to values before that (P < 0.05). The results of the study were in consistence with findings of the present study. The reason for such consistency is that the studied groups are in the same age range and this could be explained according to the effect of function of teacher in educational environment.

4.1. Conclusion

If the teachers have high attitude and knowledge, they would become sensitive to the weaknesses in primary schools as places for physical and social development as well as growth of students. In addition, they would play a key role in promotion of their health status through notifying it to relevant authorities. Lack of knowledge regarding the favorable status of health behaviors of students at

school could lead to unconscious acceptance of disorganizations and could deprive schools from underlying role of teachers to improve its quality. Hence, the most important advantages of educational packages and plans for teachers could be promotion of knowledge and awareness of students. With an increase in their knowledge regarding the metabolic syndrome, individuals could be helped to prevent and control their disease and promote physical and mental health.

The main limitations in this study could be the way of inference of respondents from the items in questionnaire, which was different in different individuals, which was out of the control of the author. Moreover, emotional status of participants while fulfilling the questionnaire could affect the outputs, which was also out of the control of the author. For further studies, the suggestion is to analyze the effect of educational packages and attitude of teachers with larger sample size, effect of educational packages on knowledge and attitude of families of children with metabolic syndrome, and analysis of factors affecting promotion of knowledge and attitude of teachers in relation to metabolic syndrome.

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