

Development of Computer-Aided Medication Education for Drug Abuse Prevention

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Abstract. This paper is focused on the development of computer-aided medication education for drug abuse prevention. The subjects consisted of 302 patients in a general hospital which located in Metropolitan area from September 1, 2011 to December 31, 2012. The present research showed that drug abuse can be reduced to 54.9-67.1% by the computer-aided medication education. This paper presented the satisfaction of 82.2% in evaluation after patients' education. In conclusion, this paper resulted in significant positive effects of drug abuse prevention and its implications could be used as the basic data for developing further systematic materials on computer-aided medication education.

Keywords: Development, Computer-aided health education, Prevention, Drug abuse

1 Introduction

For the last twenty years, the drug abuse has been increasing constantly in Korea. Overall proportion of drug abuse experience in middle school students was over 20 percents. 20.1% of the pain-killers, 1.5% of the stimulants, 1.5% of the narcotics, 1.6% of the cough mixtures[1]. Drug abuse not only makes the psycho-physiological decrease but also self-work and ego developmental problem[2],[3]. Moreover, danger of suicide occurs too. Therefore, drug abuse needs social concern and total countermeasure to prevent it.

In the case of foreign advanced programs, both the parents and their children become the subjects of the programs, and these programs offer not only the various contents of parents training to the parents but also home study to both of them[4],[5]. We don't have any national program at all about it. In order to solve the urgent problem, we should look for the practical plans. There were few studies to deal with computer-aided medication education for drug abuse prevention until present in Korea.

Thus, this paper developed computer-aided medication education for drug abuse prevention and ultimately analyzed the education effect through its application. This will take advantage of basic data for researcher and indicate the direction of their computer-aided medication education in the future.

2 Materials and Methods

2.1 Materials

This survey was conducted with 302 patients who have visited psychiatry of a general hospital which located in Metropolitan area from September 1, 2011 to December 31, 2012. The computer-aided medication education for drug abuse prevention was performed four times for four months using Video, CD-ROM, teaching, case study, discussion, and others by training researchers. And then the education effect was estimated by the reduction of drug abuse after education as compared to before education. In this work, the reduced value of drug abuse after computer-aided medication education was plotted as a function of time elapsed after education by gender ; 30, 60, 90 and 120 days. After education, the researcher implemented the evaluation about computer-aided medication education to each participant.

2.2 Methods

Basic information of study subjects was measured by percentage and number. The pairwise t-test was done to compare the reduced value of drug abuse before and after computer-aided medication education. And then average and standard deviate were obtained. The chi-square test analyzed the differences in the satisfaction between the two genders after computer-aided medication education.

3 Results

3.1 Basic Information of Study Subjects

Table 1 presents basic information of study subjects. Male subjects(51.0%) were higher than female subjects(49.0%). In the examination for classification of religion, subjects who do not a religion are the highest with 40.1%, and then Christians 24.5%, Buddhists 15.9%, in order. From the investigation for information of drug use, it revealed that the most subjects(75.2%) purchased drugs after contact mass-media.

Table 1. Basic Information of Study Subjects

| Variables | N(%) | | Variables | N(%) | |
|----------------|--------------|-----------|------------------|------------------|--------------|
| SGender | Male | 54(51.0) | Buddism | Buddism | 48(15.9) |
| | Female | 48(49.0) | | Catholic | 43(14.2) |
| Age | ≤29 | 31(10.3) | | Others | 16(5.3) |
| | 30-39 | 52(17.2) | Drug information | Mass-media | 227(75.2) |
| | 40-49 | 86(28.5) | | Book | 6(2.0) |
| | 50-59 | 94(31.1) | | Friend/relatives | 41(13.6) |
| | ≥60 | 39(12.9) | | Others | 28(9.3) |
| Marital status | Single | 92(30.5) | | Education | Under middle |
| | Married | 210(69.5) | High school | | 145(48.0) |
| Religion | No religion | 21(40.1) | Over college | | 98(32.5) |
| | Christianity | 74(24.5) | | | |
| Total | 302(100.0) | | Total | 302(100.0) | |

3.2 Information on Drug Abuse of Study Subjects

Table 2 presents information on drug abuse of study subjects. 68.5% of the subjects was current cigarette smokers. 75.8% of the subjects had drinking alcohol. 87.4% of the subjects had taken inhaler such as glue or gas sniffers. 92.7% of the respondents used hallucinogenic drugs. Motives of drug abuse were the highest with 33.0% in curiosity, and then 28.4% in troubles, 22.3% in stress relax, respectively.

Table 2. Information on drug abuse of study subjects

| Variables | | N(%) | Variables | | N(%) |
|--------------------|-------------------|------------|-----------------------|-------------------|------------|
| Cigarette smoking | Smoking | 207(68.5) | Hallucinogenic Agent | Yes | 280(92.7) |
| | Non-smoking | 95(31.5) | | No | 22(7.3) |
| Alcohol Drinking | Yes | 229(75.8) | Hypnotic | Yes | 293(97.0) |
| | No | 73(24.2) | | No | 9(3.0) |
| Motives of Smoking | Urging by friends | 62(30.0) | Motives of drug abuse | Urging by Friends | 24(9.1) |
| | Troubles | 7(3.4) | | Troubles | 75(28.4) |
| | Stress relax | 34(16.4) | | Stress relax | 59(22.3) |
| | Curiosity | 89(43.0) | | Curiosity | 87(33.0) |
| | Others | 15(7.2) | | Others | 19(7.2) |
| Inhaler | Yes | 264(87.4) | | | |
| | No | 38(12.6) | | | |
| Total | | 302(100.0) | Total | | 302(100.0) |

3.3 Comparison of the Drug Use Before and After Computer-Aided Education

Table 3 was compared the drug use before and after computer-aided medication education. The results verified the significance of medication education on the subjects' inhaler after education as compared before education ($t = -27.94$, $p = .004$). The attitudes of the subjects who used drugs changed markedly more after the medication education.

Table 3. Comparison of the Drug Use Before and After Computer-Aided Education

| | Before education | | After education | | t | p |
|-------------------|------------------|-----------|-----------------|-----------|--------|------|
| | Mean±S.D. | Mean±S.D. | Mean±S.D. | Mean±S.D. | | |
| Inhaler | 1.34±1.27 | 2.79±0.63 | 2.79±0.63 | 2.79±0.63 | -27.94 | .004 |
| Hallucinogen | 0.98±0.94 | 2.51±0.64 | 2.51±0.64 | 2.51±0.64 | -21.57 | .008 |
| Hypnotic | 0.71±0.91 | 2.68±0.59 | 2.68±0.59 | 2.68±0.59 | -30.82 | .006 |
| Cigarette smoking | 1.50±0.95 | 2.74±0.52 | 2.74±0.52 | 2.74±0.52 | -19.66 | .005 |
| Alcohol drinking | 1.69±0.87 | 2.82±0.49 | 2.82±0.49 | 2.82±0.49 | -18.75 | .008 |

3.4 Comparison of the Drug Use by Gender

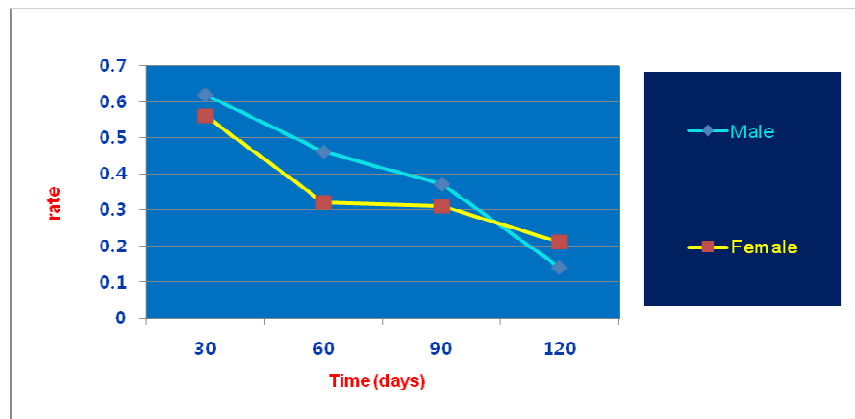
Table 4 was done to compare the drug use by gender. The result comparing the mean scores of female with 2.27 point was higher than male with 1.87 point in hypnotic and revealed the significant difference ($t = -271$, $p = 0.03$). However, male (1.49 ± 1.35) was more to take a drug than female (1.43 ± 1.16) in Hallucinogen.

Table 4. Comparison of the Drug Use by Gender

| Variables | Male | Female | t | P |
|-------------------|-----------|-----------|-------|------|
| | Mean±S.D. | Mean±S.D. | | |
| Inhaler | 1.62±1.19 | 1.95±1.07 | 0.06 | 0.08 |
| Hallucinogen | 1.49±1.35 | 1.43±1.16 | 0.09 | 0.10 |
| Hypnotic | 1.87±1.64 | 2.27±1.09 | -2.71 | 0.03 |
| Cigarette smoking | 1.29±1.17 | 1.45±0.96 | -1.54 | 0.07 |
| Alcohol drinking | 1.50±1.33 | 1.68±1.24 | -1.62 | 0.09 |

3.5 Durability of Education Effect After Computer-aided Medication Education

Fig. 1 was done to compare the durability of education effect as a function of time elapsed after computer-aided medication education in two gender. It was investigated that the education effect was higher in male than female after the lapse of 30 days since the computer-based medication education. However, the education effect was lower in male than female after the lapse of 90 days since the education.



*Slope = $\frac{\Delta Y}{\Delta X}$ Where ΔX : time interval
 ΔY : variation of education effect

*Ratio = $\frac{\Delta Y_a}{\Delta Y_b}$ Where ΔY_b : the rate of drug abuse prevention before education
 ΔY_a : the rate of drug abuse prevention after computer-aided medication education

Fig. 1. Durability of Education Effect After Computer-aided Medication Education

3.6 Evaluation of the Satisfaction After Computer-Aided Education by Gender

Table 5 presents the evaluation of the satisfaction after computer-aided medication education by gender. 38.3% of male answered very sufficient for time assigned for education while 43.2 % of female was sufficient for it. On the other hand, for methods

for drug abuse prevention, 42.9% of male answered the most an appropriate education for subjects while 53.4% of female was the highest the emphasis on health importance. There was a significant difference between two groups($\chi^2=9.38$, $p<.05$).

Table 5. Evaluation of the Satisfaction After Computer-Aided Education by Gender

| Variables | Gender | | Total | χ^2 |
|--|-------------------|---------------------|-------------------|----------|
| | Male Mean±S.D. | Female Mean±S.D. | | |
| Appropriateness of teaching method | | | | |
| Very high | 58(37.7) | 64(43.2) | 122(40.4) | 7.62 |
| High | 60(39.0) | 47(31.8) | 107(35.4) | |
| Fair | 25(16.2) | 21(14.2) | 46(15.2) | |
| Low | 7(4.5) | 9(6.1) | 16(5.3) | |
| Very low | 4(2.6) | 7(4.7) | 11(3.6) | |
| Time assigned for education | | | | |
| Very sufficient | 59(38.3) | 48(32.4) | 107(35.4) | 12.45 |
| Sufficient | 37(24.0) | 64(43.2) | 101(33.4) | |
| Fair | 42(27.3) | 29(19.6) | 71(23.5) | |
| Insufficient | 11(7.1) | 6(4.1) | 17(5.6) | |
| Very insufficient | 5(3.2) | 1(0.7) | 6(2.0) | |
| Understanding of education contents | | | | |
| Very high | 71(46.1) | 86(58.1) | 157(52.0) | 10.28 |
| High | 48(31.2) | 39(26.4) | 87(28.8) | |
| Fair | 25(16.2) | 17(11.5) | 42(13.9) | |
| Low | 7(4.5) | 4(2.7) | 11(3.6) | |
| Very low | 3(1.9) | 2(1.4) | 5(1.7) | |
| Methods for drug abuse prevention | | | | |
| Emphasis on health importance | 49(31.9) | 79(53.4) | 128(42.4) | 9.38* |
| Appropriate education for subjects | 66(42.9) | 35(23.6) | 101(33.4) | |
| Adoption of evaluation system | 18(11.7) | 20(13.5) | 38(12.6) | |
| Others | 21(13.6) | 14(9.5) | 35(11.6) | |
| Total | 154(100.0) | 148(100.0) | 302(100.0) | |

* $p<.05$

4 Discussion

This paper was aimed to evaluate the education effects of drug abuse of patients. This experimental research has been conducted to find out the actual status of drug abuse by the patients, and then to draw up plans for preventive and recuperation from the addicted condition to improve quality of life.

The result of this paper, for motives of drug abuse was the highest in curiosity. The significance of computer-aided medication education of the subjects' inhaler showed after education as compared before education. The finding was consistent with the result of earlier researches[6],[7]. Therefore, it needs to perform systematic medication education. That is, there is a need for a separate program to be implemented on the groups who characterize having lower levels of health knowledge and health promotion behavior

The present research was estimated that the education effect was higher at male than female after the lapse of 30 days since the education. However, the education effect was lower at male than at female after the lapse of 90 days since the education. Thus, year-based education should be performed more often male than female. The present research showed that drug abuse can be reduced to 54.9-67.1 by the education, which is similar to data reported in the previous studies[8],[9]. However, it should be noted that the education effect does not maintain for so long. In order to maintain the education effect well, it is very important to determine adequate education period and perform various programs in consideration of patient circumstances. The objective measurement on the changes of the behaviors of the patients would be more valuable than mere abstract testimonies that are only response to the questions provided by the subjects.

The present work elucidated throughout the statistical analysis how effectively the synthetic and systematic education contributes to improve quality of life through drug abuse prevention. The future work should focus on the study of the education effect as a classification of patient throughout more prolonged research based on a larger data base.

5 Conclusion

In conclusion, this paper identified positive effects of medication education for the drug abuse prevention. The computer-aided medication education can be used as an effective method to improve medication knowledge and to reduce medication misuse and abuse.

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