

THE EFFECT OF HUMOR ON SECRETORY IMMUNOGLOBULIN A LEVELS IN SCHOOL-AGED CHILDREN

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ABSTRACT

Although research on adult subjects has demonstrated a positive correlation between humor and increased concentrations of secretory immunoglobulin A, the literature has not addressed whether humor might have a similar effect on children. Fifth grade student volunteers (n=190) at elementary schools in Hamadan were randomly assigned to treatment and control groups. The study compared secretory immunoglobulin A levels collected before and after the treatment group subjects (n=105) participated in a humorous program and the control group subjects (n=85) participated in an educational non-humorous presentation. Concentrations of immunoglobulin A were increased in those who observed a humorous presentation.

INTRODUCTION

The use of humor as a primary prevention method for communicable infections is a new subject in the field of prevention. Research has shown that humor has an effect on physical and psychological health. IgA is the secretion of a class of antibodies present in all bodily fluids and promotes the body's defense against various infections.^{5,6} Three separate researches have shown a positive correlation between humor and increased levels of secretory immunoglobulin A (S-IgA) in adults.

In 1990, Labott and colleagues measured the levels of S-IgA in 30 university psychology students. They determined the level of IgA after students viewed comedy and dreary video tapes. They repeatedly assessed the effects of laughter and weeping on the levels of S-IgA. The mean age of the university students was 21.6 years in this research. They showed that weeping acts as an immuno-suppressor whereas the levels of S-IgA in

subjects who viewed comedy films had significantly increased.¹

It is true that the research showed a positive correlation between humor and increased S-IgA levels, but the important fact was that the subjects were all healthy adults. Such a correlation between S-IgA levels and humor was not established for children through this research. In a research performed by Lambert on 39 school-aged children in Kansas, the students were separated into control and experimental groups. The levels of S-IgA were measured in both groups. Following that one group viewed a comedy and the other viewed an educational video. Levels of S-IgA were measured in both groups after they viewed tapes. A positive correlation was shown between S-IgA and humor in this research as well.² If humor actually has such an effect, using it as a prevention method for infectious diseases in school-aged children will be a further step toward the promotion of health and the prevention of infectious diseases.

The main objective of this research was to determine the effect of humorous films on the levels

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of S-IgA in school-aged children.

MATERIALS AND METHODS

This is a quasi-experimental design in which the statistical group consists of school-aged children studying in Hamadan province schools. They were selected from students between nine to eleven years of age. The minimum number of subjects, 190, was determined using EPI-INFO software. Using available means, the subjects were divided into control and experimental groups.

Following the acquisition of permits from the Managerial of the Office of Education and Iran's Broadcasting Company in Hamadan for the duplication of humorous and educational videos, students were selected on a random basis.

Subjects were divided into control and experimental groups. Pre-tests were performed on the levels of S-IgA for each group. One group (n=105) was subjected to a humorous video tape and the other to an educational film. Post-tests were conducted on the saliva of both groups after 10 minutes of watching the respective videos. To be noted is that factors that affected the dependent variable in any way, such as having poor IgA levels, rheumatic fever, inflammatory digestive tract infections, various infections, carcinoma, any type of immune deficiency, those vaccinated in the 6 months prior to the experiment or any condition requiring treatment with gammaglobulin, hydralazine,

72 hours after sampling, the diameter of the precipitate of the standard samples was measured using a special ruler and for drawing a standard curve, the samples were measured using a mg/dL scale.

RESULTS

From a total of 190 students, 52% were nine, 35.8% were 10, and 11.5% were 11 years of age. 53.2% were male and 46.8% were female. 55.2% were in the humor group and 44.8% were in the educational group. 49.5% of the females were in the humor group and 43.5% in the educational group.

The mean level of the secretion of immunoglobulin in the subjects under study indicates that there is a significant difference between the levels prior to and after viewing humorous and educational films ($p = 0.000026$ and $p = 0.000001$, respectively), therefore showing that viewing humorous videos has a significant effect on the level of S-IgA (Table II).

In order to establish the significance of the difference between the means prior and after viewing the film in both groups, a co-variance analysis was completed, after which significant co-variance was detected (Table I).

DISCUSSION

Based on the results of the experiments, and following

Table I. Analysis of covariance.

SOURCE	DF	SS	Mean Squares	F	p
BETWEEN SUBJECTS	189	1587208			
PRE-TEST	1	3784.46	3784.46	88.3	0.001
GROUP	1	4694.94	4694.94	109.5	0.001
ERROR	187	8011.86	42.87		

isoniazid, famotidine, procainamide, chemotherapy, steroids or antitoxins were excluded from the experimental data.

Noteworthy is that subjects refrained from drinking, eating or chewing gum 30 minutes prior to the test and up to its completion. Considering the time lapse between sampling and experimentation, the samples were kept at 20 degrees Celsius.

Measurement of IgA was performed using single radial immuno-diffusion (SRID). In order to draw the curve, standard dishes were prepared using saline solution and uncertain samples from both pre- and post tests prepared using Milton syringes.

Table II. Means of S-IgA concentration (mg/dL).

Group	Mean±SD		P Value
	Pre	Post	
Humor	9.3 ± 7.1	18.1 ± 12	0.000026 0.000001
Control	17.5 ± 9	16.4 ± 9	

the results listed in Table II, it is assumed that the levels of secretory immunoglobulin A in the saliva of children exposed to humorous programs is more than that of those exposed to educational situations. The results of this experiment are confirmed indirectly through previous experi-

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ments completed on the effects of humor on the levels of S-IgA in adults performed by Labott et al. in 1990.¹ The results indicated that humor increased immunity in school-aged children and may protect them against illness, even though further experimentation is required to establish the relationship between humor and increased levels of S-IgA in children of all age groups and with different health statuses.

Solomon once said: 'A cheerful heart is a good medicine, but a downcast spirit dries up the bones'. If humor is to be prescribed, further research in this area must be completed in the following fields: A-Humorous topics which can be used, B-Degree of humor, C-Time limit, D-Appropriate format, E-Illnesses to be tested.

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