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## Effects of Exposure to Formaldehyde in Anatomy Dissection Hall.

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### ABSTRACT

Career of a medical student begins with anatomy dissection. Formaldehyde is widely used in anatomy department. It is used to preserve the biological specimens and cadavers. Exposure to formaldehyde causes sick house syndrome or sick building syndrome which is characterized by non specific complaints of mucosal irritation, head ache, nausea and chest symptoms. The present study was undertaken to observe effects of exposure to anatomy laboratory on first year college students and to suggest use of an alternative chemical with less hazard potential. The present study gives additional evidence that use of formaldehyde causes discomfort for the college students. Teaching anatomy without dissection is difficult and at the same time importance must be given to the health and comfort of students. So it is need of time to replace formaldehyde with an alternative and less hazardous.

**Keywords:** College students, Formaldehyde.

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## INTRODUCTION

Career of a medical student begins with anatomy dissection. Dissection (from Latin dissecare "to cut to pieces. Formaldehyde is widely used in anatomy department. Dissection teaches us the value of human life [6]. In anatomy department it is used to preserve the biological specimens and cadavers. Exposure to formaldehyde causes sick house syndrome or sick building syndrome which is characterized by non specific complaints of mucosal irritation, head ache, nausea and chest symptoms [1]. Chronic exposure to formaldehyde may cause bronchitis, pneumonia. It was also reported that formaldehyde is a potential carcinogen [2]. The present study was undertaken to observe effects of exposure to anatomy laboratory on first year college students and to suggest use of an alternative chemical with less hazard potential.

## MATERIALS AND METHODS

### Subjects

Present study was conducted at Department of physiology Little Flower Institute of Medical Sciences and Research, Angamaly. A total of 60 healthy male and female first year students with mean age  $18.55 \pm 0.78$  years were included in the study after obtaining written, free, voluntary informed consent.

### Inclusion criteria

Willing, regular Participants with direct contact with the cadavers for 6 months (formalin must be used as cadaver preservative), were included in the study.

### Exclusion criteria

Participants suffering from diagnosed cardiovascular diseases, respiratory diseases, anxiety disorders, hypertensive's, smokers, obese and un willing, students absent for classes continuously for 7 or more days were excluded from the study.

### Methods

A questionnaire relating to symptoms that developed following exposure to formalin fixed cadavers was given to willing participants [3] The questionnaire is a self administered and it consists of general symptoms that are experienced by exposure to formaldehyde. The students have to mark yes or no.

### Data analysis

Data analyzed by using SPSS 20.0.

## RESULTS

Results were presented in table no 1 and 2. Table no 1 consists of demographic data and table no 2 consists of effects of formalin.

**Table 1: Demographic data of college students**

Characterestic	n=60
Age (years)	$18.55 \pm 0.78$
Height (Cms)	$159.83 \pm 6.42834$
Weight (kgs)	$59.166 \pm 7.95761$

Data presented are mean $\pm$ SD.

**Table 2: Effects of formalin on first year students**

Sl. No	Symptoms	Number of students affected out of 60	Percentage (%)
1	Unpleasant smell	20	33.33
2	Irritation and watering of eyes	35	58.33
3	Sore throat	13	21.66
4	Running or congested nose	17	28.33
5	Skin problem eg. Itching, sore skin on hands, burning sensation	5	8.33
6	Lack of concentration	10	16.66
7	Headache	8	13.33
8	Disturbance of sleep	12	20.0
9	Disturbance of sight	2	3.33
10	Unusual tiredness or dizziness	18	30.0
11	Nausea	2	3.33
12	Gastrointestinal disturbances	3	5.0

### DISCUSSION

It was reported that formaldehyde causes degenerative, inflammatory and hyper plastic changes in the mucosa of the target organ. It causes death of the cells. Formaldehyde may forms neo-antigens which lead to respiratory disorders such as asthma, bronchitis [2]. Many studies reported that majority of students reported irritation of eyes [4]. We agree with these studies as we also observed that majority of students reported irritation of eyes. The discomfort caused by exposure to formaldehyde may discourage students to attend to dissection hours [5].

### CONCLUSION

The present study gives additional evidence that use of formaldehyde causes discomfort for the college students. Teaching anatomy without dissection is difficult and at the same time importance must be given to the health and comfort of students. So it is need of time to replace formaldehyde with an alternative and less hazardous.

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