SUMMARY & CONCLUSION
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The present project was undertaken at the M.L.B. Medical College, Jhansi, from August, 1981 to February, 1982, with the objective to study the quantitative variations of serum cholinesterase in Bundelkhand Region and the relationship to suxamethonium apnoea. The incidence of various genotypes and the association of abnormalities with regional or religious status were also investigated.

For this purpose, 93 patients belonging to both sexes and various age groups from (0-10) years to (61-70) years were divided into - Control group (26), Anaemia and malnutrition (21), Pregnancy (15), Post-partum (6), Dehydration (9), Malignancy(4), Liver and biliary diseases (3), Mental disorders (3), Thyroid disorders (4), Obesity (2) and Children (6). Due to the presence of multiple factors in some patients they were placed separately under more than one group.

Control cases were also divided according to age, sex, alcohol intake, diet, residential, socioeconomic and smoking status so as to study the influence of these on the enzyme levels.

An elaborate history and details of physical examination were recorded for each case. Blood sample were drawn in each case and serum was separated and stored.

The cases were induced with pentothol followed by
required dose of suxamethonium and apnoea was recorded.

The serum cholinesterase activity, Dibucaine number and fluoride number were estimated by the Steinitz et al. method.

On the basis of the observations made during the present study, the findings can be summarized as follows:

1. The mean serum cholinesterase activity of normal healthy adults (Controls) was $77.84 \pm 8.10$.

2. Statistically, highly significant reductions of the mean enzyme level from the control group was seen in the following conditions or diseases - anaemia and malnutrition, pregnancy, post-partum, dehydration, malignancy and liver and biliary diseases.

3. Statistically significant elevations of the mean enzyme activity above the controls were observed in cases of obesity and thyroid disorders.

4. Variations of the enzyme activity in group of children and mental disorder were not significant.

5. Highest cholinesterase values among the various groups were observed with cases of obesity, while the lowest were recorded with anaemia and malnutrition.

6. The duration of apnoea following a 1 mg./kg. of body weight of suxamethonium ranged from 1.5 minutes in cases of obesity to 9.22 minutes in cases of anaemia and malnutrition.

7. A limited degree of negative correlation was present between the serum cholinesterase activity and the duration of apnoea.
A similar relationship was found when the duration of apnoea was correlated with either Dibucaine number or Fluoride number.

8. Incidence of prolonged apnoea was 4.30% (4 cases).
   Out of these, 3 cases (75%) were of genetic abnormality (two $E^u_1 E^a_1$ and one $E^u_1 E^a_1$), while 1 (25%) was of quantitatively decreased cholinesterase level.

9. The single case of prolonged apnoea with a quantitative decrease of the cholinesterase level was seen to have a 61.46% reduction in comparison to normal healthy controls.

10. In this study 91.40% population was usual homozygote ($E^u_1 E^u_1$), 5.38% was heterozygote for the usual and atypical genes ($E^u_1 E^a_1$), while 2.15% was heterozygote for the usual and fluoride resistant gene ($E^u_1 E^f_1$). Only one atypical homozygote ($E^a_1 E^a_1$) was present constituting 1.08% of the study population.

11. Though a preponderance of Hindus was found among the abnormal genotypes the study could not reflect any significance due to a 10.63 : 1 ratio of Hindus to Muslims in the study population.

12. A higher incidence of prolonged apnoea in cases of heterozygotes was seen in the pregnancy group in comparison to normal subjects (Controls). However, apnoea was not necessarily prolonged in atypical heterozygotes without any other coexisting factor as has been observed with the heterozygotes of control group.
13. The study reflected a raised serum cholinesterase activity in children and old age (above 50 years). However, the findings were statistically inconclusive.

14. A distinct trimodal pattern regarding Dibucaaine number distribution was noted in the study population.

15. Although single variations in the enzyme activity in persons hailing from various areas of Bundelkhand and other regions were noticed, these observation were statistically insignificant.