

IMPACT OF ASTHMA OCCURRENCE STATE, AGE, SEX AND HEREDITY ON THE LEVEL OF GUILT

Dr. Manoj Kumar Chauhan,

*Assistant Professor, Department of Psychology,
Gurukul Kangri Vishwavidyalaya, Haridwar, [U.K.] - 249407*

ABSTRACT

The present investigation has been conducted to study the impact of asthma occurrence state, age, sex, and heredity on the level of guilt. The study adopted a 2x2x2x2 four-variate factorial design. A total sample of 320 (160 normals & 160 asthma patients) has been randomly drawn from the clinics and hospitals of district Haridwar. Analysis of Variance [ANOVA] has been used to find out significant mean differences and interaction effect among variables. Results show that Asthma occurrence state & Age level promotes guilt in the people. Heredity doesn't relate with asthma occurrence state in general. However, asthmatics have more guilt with non-hereditary effect than hereditary effect. Female asthmatics have more guilt than male asthmatics.

Key words: *Guilt, Asthma, Age, Sex & Heredity*

Asthma is a respiratory disorder involving recurring episodes of impaired breathing when the airways become obstructed. This disease is very prevalent around the world (ALA, 2000). Asthma episodes typically begin when the immune system is activated to react in an allergic manner, producing antibodies that cause the bronchial tubes and other affected body tissues to release a chemical called histamine. This chemical causes irritation to those tissues. In an asthma attack, these events cause the bronchial tubes to become obstructed as their smooth muscles become inflamed, develop spasms, and produce mucus (AAFA, 2000; Evans, 1990).

Guilt is a feeling of culpability arising from behavior or desires contrary to one's ethical principle. It involves both, the self-devaluation & apprehension growing out of fears of punishment. For guilt feeling, the individual is much concerned about his own misdeeds and feels himself regretful. Guilt is likely to be particularly stressful if it seems

that nothing can be done to rectify one's misdeed. Guilt is heavily infused with self-recrimination and anxiety.

In general guilt is the realization that one has transgressed a moral, social or ethical principle associated with lowering of the self esteem and need to make retribution for transgression of all the forms of mental suffering, perhaps none is as pervasive or as intense as the ache of guilt (Gelven, 1973).

If the person realizes that his behavior falls short of group expectations or personal standards, he will have feeling of guilt and his reaction to these feelings will affect his self-concept. Before the age of 5 or 6 years, the child has few if any feelings of guilt, although he may become frightened when caught in a wrong act and try to rationalize his behavior or project the blame on someone else. The older child, however, is deeply concerned about social

disapproval when his behavior falls short of expectations. In self-protection, he tries to find a scapegoat to blame for his misbehavior. Rather than feeling guilt, he feels shame when caught in an act, which he knows is wrong. Only after the person learns to feel personally responsible for controlling his behavior instead of relying on external pressures, such as disapproval, punishment, or threat of punishment, is the capable of experiencing true guilt.

Humans, universally experience a sense of guilt when they violate ethical or moral principles in which they believe— either by doing something they consider wrong or by failing to do something they consider required to be done. Guilt is characterized by a feeling of being bad, evil and unworthy.

Feelings of guilt may lead the person to change his attitude about the “wrongness” of certain behavior. If the person decides not to cheat when tempted to do so, he usually becomes more rigid in his attitude that cheating is wrong. If he decides that will cheat, he is likely to become more tolerant toward cheating. This is a method he uses, unconsciously, to reduce the feelings of guilt, which would otherwise follow his cheating.

Of our various emotions, guilt is one of the most painful, complex and difficult emotions to deal with. It is likely to be particularly stressful when it seems that nothing can be done to rectify the error.

Psychology is the science of behavior and feeling of guilt is directly or indirectly affects the behavior and personality of the individual. A common attempt, which ascribes guilt, is to be alleged “need for punishment”. The need comes about through punishment or some other disapproval we suffer in infancy. Coming to expect punishment for certain acts, we feel distress when we wait for it without getting it over, and the strain and anxiety induced in this way is suppressed and operates subconsciously afterwards to produce the sense of guilt in a matured state.

To understand feelings of guilt it is useful to note that (a) various value assumptions concerning right and wrong are learned and accepted; (b) these

value assumptions are then applied to the appraisal of one’s own behavior; and (c) It is learned, often by hard experience, that wrongdoing leads to punishment. Thus behaving in ways that one considers immoral leads to both self-devaluation and apprehension. Because of the orientation, depressed persons commonly search back through past events, locating and exaggerating misdeeds that have presumably led to present difficulties.

Boss (1963) states this great dilemma that faces every person in the following words “...man is primarily guilty. His primary guilt starts at the birth. For it is then he begins to be in debt to his Casein, insofar as carrying out all the possibilities for living of which he is capable is concerned. Throughout his life, man remain guilty in this sense, i.e., indebted to all the requests that his future keeps in store for him until he breaths his lasts...every act, every decision, every choice, involves the rejection of all the other possibilities which also belong to a human being at a given moment... Man’s existential guilt consists in his failing to carry out the mandate to fulfill all his possibilities.”

Kelly, G.A. (1955) suggested that “guilt results from a discrepancy between one’s ideal self and one’s actions. Thus one suffers guilt when doing things are discrepant with the kind of person he thinks he would like to be”. He suggested, “Guilt is the disturbed feeling resulting from the knowledge that one has violated personal or cultural principles of behavior.” He defined guilt as the, “Perception of one’s apparent dislodgement from his core role structure”. Core role structure refers to the ways a person understands his or her relationship significant other people, significant therefore, guilt exist when one perceives that he or she has violated an important role relationship as per expectations. In general, guilt is the realization that one has transgressed a moral, social or ethical principle associated with lowering of self-esteem and a need to make retribution for transgression.

The purpose of guilt is to stop that behavior that violates a norm and causes embarrassment before family or social standard. Feeling guilty, is a

normal thing. If we break a rule that we or society holds precious, our conscience would most likely act on us. A most constructive attitude would be to channel our negative feelings of guilt into positive self improvement. Living with guilt is a painful and self-destructive experience. The presence of guilt is not always healthy. Often it brings suffering and tragedy to the individual. Guilt can cause emotional imbalances such as frustration, melancholia, persistent agony, mental instability, uncontrolled anger, inferiority complex, anxiety, obsessive compulsive thoughts, phobia etc. which, ultimately, may culminate in mental disorders.

According to Freud (1923) feelings which are result of a conflict between the super ego and ego in which the super ego as the internal authority, punishes the ego in the form of feeling of low self esteem and guilt for allowing the expression or existence of unacceptable impulses. The guilt feeling or moral anxiety in the extreme form becomes a fear of annihilation and panic that affection and narcissistic supplies will be withdrawn.

A person is considered as guilty if he has broken a law or does not live up to the justified expectation of others. In this sense guilt often is used as legal term. In Mental Health Field, one is particularly concerned about guilt feelings and their appropriateness to a person's life situation. One may fail to show guilt feeling over for actions, which everyone else would consider wrongdoing.

Guilt may be defined, as "Guilt is sense of wrong doing, as an emotional attitude, generally involving emotional conflict, arising out of real or imagined contravention of moral or social standards, in acts or thoughts".

Behaviorist theories view guilt as a conditioned emotional response to action that in the past have lead to punishment.

Existentialist theories conceive of guilt as a reaction to behavior that impedes the realization of one's full potential; however that potential is defined biologically, socially or spiritually.

Mowrer, et al. (1975) does not believe that guilt necessarily involves some highly immoral behavior, such as intense hostility or vile impulses, but rather could be the accumulation of many ordinary sins.

Occasional feelings of mild guilt are not likely to have a permanent effect on the self-concept. They may make the person ashamed of himself and more realistic about the standards he sets for his behavior. Frequent feelings of guilt, however, resulting from recurring failure to live up to one's standards, are damaging to the self-concept. They make the person lose confidence in his ability to achieve what he sets out to do, even though no one but himself may know of his failure.

Guilt for the most part is very constructive. It is the feeling of self-criticism that is born of one's conscience. It is born of the capacity to judge oneself in terms of interiorized moral values, an important civilizing influence that keeps people from hurting, distressing or disappointing others. In mentally healthy person they come as an automatic consequence to wrong actions, both with respect to commission and omission of what should have been done. They lead to remorse and restitution and are an important part regulating healthy conduct.

Healthy, useful guilt is the feeling we have when we do something we rationally judge to be morally wrong or unfair. Just having the thought or urge to do something bad can cause guilt. That's good if it keeps us from doing something inconsiderate. Healthy guilt is our reasonable, fair conscience. But there is unhealthy guilt too. That is when we establish unreasonable standards for ourselves i.e., we expect perfection, we feel responsible for misfortunes in other people's lives, we believe we are good only if we faithfully follow all the rules and do more than our duty. The unhealthy guilt does not allow for mistakes; we expect too much from others and ourselves. This unhealthy guilt is very stressful which can weaken the human immune system and make the individual more susceptible to illness.

In the present research effect of asthma occurrence state, age, sex and heredity on the level of guilt have been examined and discussed.

OBJECTIVES OF THE STUDY

The following objectives are set to achieve in the present investigation.

1. To visualize the impact of asthma occurrence state, age, sex, and heredity effect (ancestral) on the level of guilt.
2. To assess the interacting effects of age, sex, heredity and asthmatic state in relation to guilt.

METHOD

Sample

A total sample of 320 subjects (160 normal people and 160 asthma patients) has been randomly drawn from different clinics and hospitals of district Haridwar. Age range of the patients was 30 to 75 years in two groups with an onset of asthma ranging from 5-10 years for each group. During sampling it had been considered that only those patients were taken into account whose disease was not triggered through the allergic cause and any infection and was not suffering with any potential symptoms of a disorder other than asthma. Data were collected in the fair climate mainly in summer season to control the effect of weather conditions.

Tool

Guilt is measured through standardized tool of Eight State Questionnaire [Hindi Version, Indian adaptation] developed by Kapoor and Bhargava (1990). This tool is highly reliable, valid and published by the Psycho-Centre, T-22, Green Park, New Delhi.

Design

The study adopted a 2×2×2×2 four-variate Ex-Post-Facto factorial design in natural setting of the

variables to operate, providing an opportunity to study the interaction among the independent variables influencing the dependent measure in the study.

Variables

- **Independent Variables:** Study operates with passive manipulation through selection of asthma occurrence state at normal & asthmatic state; hereditary existence at two levels in males and females of two age groups 30-40 & 55-75 yrs.
- **Dependent Variable:** Guilt is measured as dependent measure.

Control

To minimize the effects of extraneous variables on the research study following variables were controlled.

1. Only those normal people were taken into account as control group who were physically and mentally fit & healthy.
2. Age range of the respondents was 30 to 75 years in two groups e.g., 30-40 yrs & 55-75 yrs. Asthmatics were suffering with an onset of asthma ranging from 5-10 years for each group.
3. Asthmatics were not bearing any other physical and mental ailments.
4. Respondents were approached for the purpose of data collection during fine weather days for a span of 4-6 days. No data were collected during the months of changing seasons as November to December in winter and March to April in summer.
5. All respondents of the study were literate and of middle socio-economic status from urban areas.

Hypotheses

Due to inclusion "2×2×2×2" four-variate factorial design, fifteen null hypotheses could only be framed as under.

1. Asthma occurrence state will not affect guilt.
2. Sex will not affect guilt.
3. Heredity will not affect guilt.
4. Age will not affect guilt.
5. Asthma occurrence state and sex will not interact in the set.
6. Asthma occurrence state and heredity will not interact in the set.
7. Asthma occurrence state and age will not interact in the set.
8. Sex and heredity will not interact in the set.
9. Sex and age will not interact in the set.
10. Heredity and age will not interact in the set.
11. Asthma occurrence state, sex and heredity will not interact in the set.
12. Asthma occurrence state, sex and age will not interact in the set.
13. Asthmatic occurrence state, heredity and age will not interact in the set.
14. Sex, heredity and age will not interact in the set.
15. Asthmatic occurrence state, sex, heredity and age will not interact in the set.

Procedure

First of all, the purpose of study was explained which helped to establish a proper rapport. The test was administered individually at clinics or their homes, as the subjects felt comfortable. Respondents were asked to fill the questionnaire according to the instructions. They were requested to respond truly as they feel in their present state and were assured that their responses would be kept confidential.

RESULTS

Details of Significant Results: (Ref. Table No. 1)

1. The retained H_0 s (Nos. 3, 8, 11, 13 & 14) show that main effect (Heredity) and bivariate interaction (Sex × Heredity) and trivariate interactions (Asth.S. × Sex × Heredity, Asth.S. × Heredity × Age & Sex × Heredity × Age) are not significant.
2. The rejected H_0 s may be detailed as given below:
 - a) **H_0 1. Asthma Occurrence State is rejected at 0.01 ls.**
Asthmatic state promotes guilt in the people.
 - b) **H_0 2. Sex is rejected at 0.01 ls.**
Males have more guilt than females.
 - c) **H_0 4. Age is rejected at 0.01 ls.**
Age level promotes guilt in people.
 - d) **H_0 5. Asthma Occurrence State × Sex is rejected at 0.01 ls.**
Female asthmatics have more guilt than male asthmatics.
 - e) **H_0 6. Asthma Occurrence State × Heredity is rejected at 0.05 ls.**
Asthmatics have more guilt with non-hereditary effect than hereditary effect.
Independent of asthma occurrence state, people with non-hereditary effect have more guilt than people with hereditary effect.
 - f) **H_0 7. Asthma Occurrence State × Age is rejected at 0.01 ls.**
Asthmatics have more guilt in old age level (55-75 yrs) than in young level (30-40 yrs).
People have more guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).
 - g) **H_0 9. Sex × Age is rejected at 0.01 ls.**

Independent of age effect, males have more guilt than females.

Males of old age level (55-75 yrs) have more guilt than males of young age level (30-40 yrs).

Females of old age level (55-75 yrs) have more guilt than females of young age level (30-40 yrs).

h) H_0 10. Heredity \times Age is rejected at 0.01 ls.

Independent of age effect, people with nonhereditary effect have more guilt than with hereditary effect.

i) H_0 12. Asthma Occurrence State \times Sex \times Age is rejected at 0.01 ls.

(Table-3 shows these results.)

(II) Normal: (Sex \times Age) $P < .01$

Normal females have high guilt in old age level (55-75 yrs) in comparison to young age level (30-40 yrs).

In young age level (30-40 yrs) normal males have more guilt than normal females.

(III) Male: (Asthma Occurrence State \times Age) $P < .01$

Male asthmatics have more guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).

In young age level (30-40 yrs) male asthmatics have more guilt than normal males.

In old age level (55-75 yrs) male asthmatics have more guilt than normal males.

(V) Young Age Level: (Asthma Occurrence State \times Sex) $P < .01$

In young age level (30-40 yrs), normal males have higher guilt than normal females.

In young age level (30-40 yrs), male asthmatics have more guilt than normal males.

In young age level (30-40 yrs), female asthmatics have more guilt than normal females.

j) H_0 15. Asthma Occurrence State \times Sex \times Heredity \times Age is rejected at 0.05 ls.

(Table-4 shows these results.)

(IV) Normal-Female: (Heredity \times Age) $P < .01$

Normal females with non-hereditary effect have more guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).

In young age level (30-40 yrs), normal females have more guilt with hereditary effect than with non-hereditary effect.

(VIII) Normal-Non Hereditary: (Sex \times Age) $P < .01$

Normal females with non-hereditary effect have high guilt in old age level (55-75 yrs) in comparison to young age level (30-40 yrs).

In young age level (30-40 yrs) normal males with non-hereditary effect have more guilt than normal females.

(XI) Normal-Young Age Level: (Sex \times Heredity) $P < .01$

Normal females in young age level (30-40 yrs) have higher guilt with hereditary effect than with non-hereditary effect.

Normal males with non-hereditary effect in young age level (30-40 yrs) have higher guilt than normal females.

(XIII) Male-Hereditary: (Asthmatic State \times Age) $P < .01$

Male asthmatics with hereditary effect have high guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).

In young age level (30-40 yrs), male asthmatics with hereditary effect have more guilt than male normals with hereditary effect.

In old age level (55-75 yrs), male asthmatics with hereditary effect have more guilt than male normals with hereditary effect.

(XIV) Male-Non hereditary: (Asthmatic State \times Age) $P < .01$

Male asthmatics with non-hereditary effect have high guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).

In young age level (30-40 yrs), male asthmatics with non-hereditary effect have more guilt than male normals with non-hereditary effect.

In old age level (55-75 yrs), male asthmatics with non-hereditary effect have more guilt than male normals with non-hereditary effect.

(XV) Female-Hereditary: (Asthmatic State × Age)
***P* < .01**

Female asthmatics with hereditary effect have high guilt in old age level (55-75 yrs) than in young age level (30-40 yrs).

In young age level (30-40 yrs), female asthmatics with hereditary effect have more guilt than female normals with hereditary effect.

In old age level (55-75 yrs), female asthmatics with hereditary effect have more guilt than female normals with hereditary effect.

(XIX) Female-Young Age Level: (Asthmatic State × Heredity) *P* < .01

Female asthmatics with hereditary effect in young age level (30-40 yrs) have more guilt than female normals.

Female asthmatics with non-hereditary effect in young age level (30-40 yrs) have more guilt than female normals.

Female asthmatics in young age level (30-40 yrs) have more guilt with non-hereditary effect than with hereditary effect.

(XXIII) Non hereditary-Young Age Level: (Asthmatic State × Sex) *P* < .01

Male asthmatics with non-hereditary effect in young age level (30-40 yrs) have more guilt than male normals.

Female asthmatics with non-hereditary effect in young age level (30-40 yrs) have more guilt than female normals.

Female asthmatics with non-hereditary effect in young age level (30-40 yrs) have more guilt than male asthmatics.

DISCUSSION

The significant results of this research reveal that asthmatic state promotes guilt in the people ($M_{\text{asthmatic}} = 20.86$ & $M_{\text{normal}} = 14.12$). Asthmatics feel a lot of pressure, frustration, experiencing great strain and lots of demands which may produce much guilt in them. They are unable to take time off and relax constantly on the go. Many people with asthma report that the triggers of their attacks often involve their emotional states, such as being worried, angry, or excited (Janson-Bjerklie, Carrieri, and Hudes, 1986). Freud (1930) states that, "The sense of guilt is the most important problem in the development of civilization." There is a loss of happiness through the heightening of the sense of guilt.

In the present investigation, main effects of the result show that male respondents ($M = 17.85$) have more guilt than female respondents ($M = 17.13$) in general. But the significant bivariate interaction effect (Asthma Occurrence State × Sex) in this research states that female asthmatics ($M = 20.98$) have more guilt than male asthmatics ($M = 20.73$). As seen by the time of interview during data collection, it may be possible that the female asthmatics have a tendency to bear high level of guilt due to unsatisfied and disturbed life. Since, they face more challenging situations because of rising burden of dual responsibility, the house hold work and job responsibility outside the home. While struggling in life the female asthmatics feel more negativity owing to their imbalanced bodily fitness and suffering as well as lack of resilience against hassles. The weaker status of women in the society may generate extreme guilt due to emotional disturbances they face. Low attention to the women's problems in the family and faulty intolerable job situations of which

women face from the beginning of his life may also be a relevant factor responsible for higher incidence of asthma in women due to morbidity to high arousal in comparison to male asthmatics. The results of Klass Ellen T.S (1987) study reveal a positive correlation between guilt feeling and psychological problems of women. Women experience more guilt because of their emotionality and an account their sensitivity to those issues which ordinarily do not disturb their counterparts.

Other studies conducted to find the effect of sex upon asthma show that the asthma is more common in the males than the females. However, in adolescence stage, girls are more prone to asthma than boys, Sweeting (1995).

The significant main effect (Age) in this research shows that age promotes guilt in people in general. The present research enumerates the amount of guilt in the asthma patients of two different age levels namely young age level [30-40 yrs] and old age level [55-75 yrs]. The significant bivariate interaction effect (Asthma Occurrence State \times Age) shows that age level promotes guilt in asthma patients. The guilt level in old age asthmatics ($M= 18.66$) have been found more than the young age asthmatics ($M= 16.32$), however, asthma patients in old age are more prone to the severity of the disease since they reduce the bodily resistance power to fight safely with the disease.

A number of biological factors have been implicated in psychosomatic disorders like asthma the problem of the present research. The important biological factors are genetic factors, differences in autonomic reactivity, somatic weakness, and alteration in corticovisceral control mechanisms. Here, only the genetic factors with respect to hereditary factors in the asthma disease are concerned. Increased frequencies of asthma have also been reported for close relatives, and these frequencies are specific to given reaction—that is, the relatives of bronchial asthma cases show an increased frequency of bronchial asthma but not of other psychosomatic disorders, Coleman.J.C, (1988). It has been also proposed by some other researchers

that asthma has a strong genetic component inducing hereditary effects and so psychological factors alone are not sufficient enough to cause the disease. The people inherited with hyper reactive air sacs, stress and emotional factors may precipitate asthma attacks or make them more severe, Sarson & Sarson (1998).

There is another hypothesis for hereditary susceptibility for increased frequencies of asthma patients in families. Where the parental or ancestral member is an asthma sufferer another member may imitate of parental activities and learning. But the hypothesis is turndown by several other researches as the autonomic nervous system was presumably much less vulnerable to conditioning and learning than the cerebrospinal system. However, more recent studies of learning in the autonomic system indicate that increased incidence of specific psychosomatic conditions in particular families could result from common experience and learning. Further research evidence is needed, but genetic factors should not be ruled out—particularly in such disorders as bronchial asthma, Coleman. J. C. (1988). However, present study does not support the above-mentioned hypothesis and found that the asthmatic patients have high guilt with non-hereditary effect ($M= 17.59$) in comparison to hereditary effect ($M= 17.39$). However, the present investigation shows that heredity doesn't relate with asthma occurrence state in general.

In the light of the results of the study it might be concluded that the propensity of being asthmatic due to the emotional factors is high in those persons who have the family background with non-hereditary effect. It implies that there is higher risk to be affected with the asthma even without any high guilt state in those persons who belong to the family background with hereditary effect. There may be some other biological factors like somatic weakness, difference in autonomic reactivity, inadequate corticovisceral control mechanisms that may play a significant role in the precipitation of asthma symptoms in the individuals with hereditary family back ground but guilt as triggering agent is not found to be inherited in asthma people while it

may appear due to the experience of asthma attacks.

Table-1 : Guilt: Research Paradigm

		HEREDITARY		NON-HEREDITARY		Σ
		30-40 YRS	55-75 YRS	30-40 YRS	55-75 YRS	
ASTHMATIC	MALE	375	440	377	467	1659
	FEMALE	372	453	391	463	1679
NORMAL	MALE	304	284	309	300	1197
	FEMALE	274	281	210	298	1063
Σ		1325	1458	1287	1528	5598

Table-2 : Guilt: The ANOVA Summary [2×2×2×2 Factorial Design]

Source of Variance	S.S.	Df	M.S.	F	P
Treatment	4608.99	15	307.27		
Asthmatic State	3631.51	1	3631.51	650.81	< .01
Sex	40.61	1	40.61	7.28	< .01
Heredity	3.20	1	3.20	0.57	
Age	437.11	1	437.11	78.34	< .01
Asth. S. × Sex	74.11	1	74.11	13.28	< .01
Asth. S. × Heredity	22.05	1	22.05	3.95	< .05
Asth. S. × Age	183.01	1	183.01	32.80	< .01
Sex × Heredity	14.45	1	14.45	2.59	
Sex × Age	46.51	1	46.51	8.34	< .01
Heredity × Age	36.45	1	36.45	6.53	< .05

Asth. S. × Sex × Heredity	14.44	1	14.44	2.59	
Asth. S. × Sex × Age	49.61	1	49.61	8.90	< .01
Asth. S. × Heredity × Age	18.04	1	18.04	3.23	
Sex × Heredity × Age	4.04	1	4.04	0.72	
Asth. S. × Sex × Heredity × Age	33.85	1	33.85	6.07	< .01
ERROR	1697.00	304	5.58		
TOTAL	6305.99	319	19.78		

$$F_{0.05}(1, 304) = 3.86; F_{0.01}(1, 304) = 6.70$$

Table-3 : Break up of 2 × 2 × 2 tri-variate Interaction (Asthma Occurrence State × Sex × Age)

Source of Variance	S.S.	Df	M.S.	F	P
I. Asthmatic : Sex × Age	0.025	1	0.025	0.005	
II. Normal : Sex × Age	96.10	1	96.10	17.22	< .01
III. Male : Asth.S. × Age	211.60	1	211.60	37.92	< .01
IV. Female : Asth.S. × Age	21.03	1	21.03	3.77	
V. Young Age Level : Asth.S. × Sex	122.50	1	122.50	21.95	< .01
VI. Old Age Level : Asth.S. × Sex	1.23	1	1.23	0.22	

Table-4: Break up of 2 × 2 × 2 × 2 four-variate Interaction (Asthma Occurrence State × Sex × Heredity × Age)

Source of Variance	S.S.	df	M.S.	F	P
I. Asthmatic-Male : Heredity × Age	7.81	1	7.81	1.39	
II. Asthmatic-Female : Heredity × Age	1.01	1	1.01	0.18	
III. Normal-Male : Heredity × Age	1.51	1	1.51	0.27	
IV. Normal-Female : Heredity × Age	82.01	1	82.01	14.70	< .01
V. Asthmatic-Hereditary : Sex × Age	3.2	1	3.2	0.57	

VI. Asthmatic-Non-Hereditary	:	Sex × Age	4.05	1	4.05	0.73	
VII. Normal-Hereditary	:	Sex × Age	9.11	1	9.11	1.63	
VIII. Normal-Non-Hereditary	:	Sex × Age	117.6	1	117.6	21.08	< .01
IX. Asthmatic-Young Age	:	Sex × Heredity	3.61	1	3.61	0.65	
X. Asthmatic-Old Age	:	Sex × Heredity	3.61	1	3.61	0.65	
XI. Normal-Young age	:	Sex × Heredity	59.51	1	59.51	10.67	< .01
XII. Normal-Old Age	:	Sex × Heredity	0.01	1	0.01	0.002	
XIII. Male-Hereditary	:	Asth.S. × Age	90.31	1	90.31	16.19	< .01
XIV. Male-Non-Hereditary	:	Asth.S. × Age	122.51	1	122.51	22.00	< .01
XV. Female-Hereditary	:	Asth.S. × Age	68.45	1	68.45	12.27	< .01
XVI. Female-Non-Hereditary	:	Asth.S. × Age	3.2	1	3.2	0.57	
XVII. Male-Young Age	:	Asth.S. × Heredity	0.11	1	0.11	0.02	
XVIII. Male-Old Age	:	Asth.S. × Heredity	1.51	1	1.51	0.27	
XIX. Female-Young Age	:	Asth.S. × Heredity	86.11	1	86.11	15.43	< .01
XX. Female-Old Age	:	Asth.S. × Heredity	0.61	1	0.61	0.11	
XXI. Hereditary-Young Age	:	Asth.S. × Sex	9.11	1	9.11	1.63	
XXII. Hereditary-Old Age	:	Asth.S. × Sex	3.2	1	3.2	0.57	
XXIII. Non-Hereditary-Young Age	:	Asth.S. × Sex	159.61	1	159.61	28.60	< .01
XXIV. Non-Hereditary-Old Age	:	Asth.S. × Sex	0.05	1	0.05	0.009	

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