

# CLINICAL BLOOD-PRESSURE IN ANXIETY

By

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THAT variations of blood-pressure are found in states of emotion is common-place knowledge; that rises may take place with temporary fear and anxiety is also well known, but that anxiety occurs with a reduced or normal blood-pressure is not perhaps so well appreciated.

The purpose of the present investigation was to determine whether the blood-pressure remains high when the patient with anxiety is in a state of overt placidity and calmness.

## METHOD

By recording, under similar conditions, the blood-pressure of cases with overt anxiety and of those without, comparison of findings can be made with a control series. In this investigation, the 310 subjects investigated were female in-patients admitted to a nursing home, those without diagnosed anxiety forming the control series. No selection of cases was made.

## TECHNIQUE

The blood-pressure readings were recorded by one observer, the writer, by means of the auscultatory method, a mercurial manometer being used. The systolic and diastolic pressures were taken more than once, the process being continued, without removal of the armlet, until the lowest level had been attained. The recordings were made with the patients lying supine in bed on the morning following their admissions to Mount Pleasant, a nursing home for psychiatric cases. The patients were in bed from the time of admission until after the blood-pressure recording, a period varying from 17 to 24 hours.

Tables I and II show that the mean systolic pressures were, although not statistically significantly so, in each age-group lower amongst the cases showing overt anxiety than in those not showing it. The mean diastolic pressures, although again the differences are not statistically significant, do not show this difference in each age-group, being lower only in the age-groups 70-79 and 80-89 years.

In no case of any age-group was the maximum systolic pressure higher amongst the anxiety cases than amongst those not showing this condition.

TABLE I

### *Systolic Pressures*

Series	No Anxiety		No Anxiety		No Anxiety		No Anxiety	
	10-59	60-69	70-79	80-89	10-59	60-69	70-79	80-89
No.	33	97	18	27	32	43	37	23
Mean	131.0	117.9	162.0	159.9	161.3	145.3	154.8	149.96
S.E.	±4.41	±2.76	±8.28	±6.35	±5.83	±4.04	±5.93	±5.88
S.D.	25.33	27.17	35.11	33.01	32.99	26.50	36.04	28.21
Range	92-240	80-200	94-225	100-210	115-230	90-230	90-240	110-240

TABLE II

*Diastolic Pressures*

Series	No		No		No		No	
	Anxiety	Anxiety	Anxiety	Anxiety	Anxiety	Anxiety	Anxiety	Anxiety
Ages ..	10-59		60-69		70-79		80-89	
No. ..	33	97	18	27	32	43	37	23
Mean ..	76.9	82.8	86.87	93.50	87.4	82.4	100.6	83.7
S.E. ..	±3.95	±1.63	±4.35	±3.14	±2.98	±2.52	±4.11	±3.24
S.D. ..	22.69	16.08	18.52	16.32	16.84	16.54	24.98	15.55
Range ..	40-150	32-170	60-142	60-125	60-120	40-130	60-150	50-110

The maximum diastolic readings did not show this same difference in each age-group. The cases without overt anxiety showed greater variability than those with it, as in all age-groups the S.D.s of the systolic and diastolic readings were greater amongst the cases without anxiety, although in the age-group of 70-79 years, diastolic, the difference is slight.

Psychoneurotics under stress conditions have been shown by Malmo and Shagass (1952) to show consistently higher systolic pressures than normal controls. Consequently, the lower mean pressures of the anxiety cases in this investigation is evidence of the patients being under no direct stress situation at the time of the recordings.

The possibility exists that amongst the cases of this investigation which showed no overt anxiety symptoms, anxiety was nevertheless present. Dogs, during early training, although apparently without fear, have been shown to have very high blood-pressures (Wilhelmj *et al.*, 1953), although later in training the pressure falls. Although these dogs showed no signs of apprehension if strangers entered the laboratory, marked and approximately equal rises of systolic and diastolic pressures occurred. The more highly trained dogs showed much greater blood-pressure responses to trivial environmental changes than did those less well trained. Wilhelmj and his co-workers suggest that frequent daily repetitions of emotional states over years may lead to persistent elevation of blood-pressure, and that the degree of restraint and conditioning characteristic of the average person may produce a state of irritability of the vasomotor centres, so that minor tensions may lead to hypertensive states. Although the last part of this sentence could be regarded as confirmed by the present investigation as regards the systolic pressure, it tending to be higher in those persons not showing overt signs of anxiety, the first part is certainly not so confirmed. The patients who were undergoing emotional reactions of an anxiety type did not show higher systolic readings, and in only two age-groups did they show higher diastolic records.

This investigation appears to show definitely that overt anxiety does not produce a hypertensive state which persists during periods of placidity.

## SUMMARY

The systolic and diastolic pressures were recorded under standard clinical conditions in 120 females not showing overt anxiety and in 190 females showing this state. All were relatively calm externally at the time of examination.

The means of the control series and of the anxiety cases showed no statistical differences in any age-group from 10 to 89 years, but in each age-group the means of the systolic pressures of the anxiety cases were lower than those of the control series. The means of the diastolic pressures did not show this relationship in two of the four age-groups.

Overt anxiety did not produce a state of hypertension persisting during periods of placidity.

## REFERENCES

- MALMO, R. B., and SHAGASS, C., *Psychosom. med.*, 1952, 14, 82.  
 WILHELMJ, C. M., MCGUIRE, T. F., McDONOUGH, J., WALDMANN, E. B., and MCCARTHY, H. H., *Psychosom. med.*, 1953, 15, 390.