Schizophrenia Prevalence and Demographic Variables in the United States

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Abstract

In multiple regression analyses with demographic, climatic, and food consumption independent variables, population density was the best predictor of schizophrenia prevalence in the United States. This was discussed in terms of Torrey's conceptualization of schizophrenia as a disease like entity.

In a study involving the 18 countries for which prevalence of schizophrenia figures could be located, January temperature, July temperature, per capita wheat consumption, per capita milk consumption, per capita income, and population density were related to schizophrenia prevalence (Templer and Veleber, 1980). The highest correlations were .534 (p=.01) for milk consumption, -.46 (p=.03) for July temperature, and .38 (p=.06) for wheat consumption. The rationale for the wheat and milk aspects of that study was based upon a diversity of relevant studies such as those reporting schizophrenics placed on wheat free and milk free diets showing considerable improvement

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(Dohan, Grasberger, Lowell, Johnston and Arbegast, 1969; Singh and Kay, 1979). The rationale for the temperature aspect of that research was based upon evidence such as schizophrenics tending to be born in the colder months of the year, with this tendency being significantly greater in colder climates (Templer, 1978).

The present research with the 50 U.S. states was intended to be essentially the same as the Templer and Veleber (1980) study. Average January temperature of the largest city, average July temperature of the largest city, population density, and per capita income were obtained from recent encyclopedia sources, as was done in the 18 nation project. However, there were two differences in regard to the independent variables. 1. Per capita wheat and milk consumption data apparently do not exist for the individual United States. 2. For the 18 nation project the original intention was to include per capita alcohol consumption. This is because in a pictorial map of Torrey (1979) the high schizophrenia countries appeared to the present investigators to be those ordinarily regarded as having high alcoholism rates, e.g., Ireland and the Scandinavian countries. This variable was not

included because alcoholism consumption could not be ascertained for a number of the 18 countries. However, for the 50 states per capita alcohol consumption information obtained from the Rutgers Center of Alcohol Studies (Keller and Curioli, 1976) was used as an independent variable.

Two indices of schizophrenia prevalence for the United States were located. Both were used because of the well known limitations of methods of prevalence estimation. One index was the number of resident schizophrenic patients in the state and county mental hospitals according to the National Institute of Mental Health (1978). This was available for 42 states. The other index was the number of first admissions for schizophrenics in state hospitals (Arieti, 1955). This was available for 47 states. The product-moment correlation coefficient between the two indices for the 40 states they were both available for is .43 ($p<.01$).

Results

Table 1 displays the product-moment correlation coefficients between the independent variables and the two indices of schizophrenia prevalence. In stepwise regression with the resident population criterion, greater population density and lesser income yield a multiple correlation of .62 ($p<.05$). The other variables do not significantly contribute to the regression. For the first admission criterion, the independent variables do not provide a significant increment to population density in the regression.

TABLE 1

CORRELATIONS OF INDEPENDENT VARIABLES WITH SCHIZOPHRENIC FIRST ADMISSIONS AND SCHIZOPHRENICS IN HOSPITALS

	Schizophrenics in Hospitals (N=42)	Schizophrenic First Admissions (N=47)
January temperature	-.18	.06
July temperature	-.02	-.13
Income	-.09	.41*
Population density	.56**	.43*
Alcohol consumption	-.12	.39*

* $p<.01$ ** $p<.001$

Discussion

It is apparent that population density is most strongly and consistently related to schizophrenia prevalence. This is congruent with the contention of Torrey (1980) that schizophrenia is an entity that has disease like properties. Torrey presented evidence that schizophrenia was relatively non-existent prior to about 1800, that it spread around the world, and that it is currently very unevenly geographically distributed and especially rare in remote parts of the world. In fact, Torrey also presented data to show that schizophrenia is more common in higher population density states, although he did not report statistical analysis. Torrey suggested a slow virus etiology. Our finding of income negatively contributing to the resident population multiple regression equation could be viewed as further strengthening a slow virus hypothesis since communicable diseases flourish more in densely populated, economically deprived areas. It is also consistent with the facts, as pointed out by Torrey, that minorities and lower social classes have higher schizophrenia prevalence.

It is quite apparent that there is no relationship between schizophrenia prevalence and January or July temperature of states. This contrasts with the significant negative schizophrenia prevalence—July temperature correlation with the 18 nation project. The reason(s) for this discrepancy are not clear. However, it was found that the tendency for schizophrenics to be born in winter months was stronger in Europe than in the United States (Templer, 1978).

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References

ARIETI, S.: Interpretation of Schizophrenia. New York: Bruner/Mazel, Inc., 1955.

DOHAN, F.C., GRASBERGER, J., LOWELL, F., JOHNSTON, H. and ARBEGAST, A.: Relapsed Szhizophrenics: More Rapid Improvement on a Milk and Cereal Free Diet. Am. J. Psychiatry 115,595-596,1969.

KELLER, M. and GURIOLI, C: Statistics on Consumption of Alcohol and on Alcoholism. New Brunswick, N.J.: Rutgers Center of Alcohol Studies, 1976.

National Institute of Mental Health report "Additions and Resident Patients at End of Year, State and County Mental Hospitals by Age and Diagnosis, by State, United States, 1976." Prepared by Survey and Reports Branch, Division of Biometry and Epidemiology, Rockville, Maryland, Septmber, 1978.

SINGH, M.M. and KAY, S.R.: Wheat Gluten as a Pathological Factor in Schizophrenia. Science 191,400-401,1979.

TEMPLER, D.I.: Month of Conception and Birth of Schizophrenics as Related to the Temperature. Journal of Orthomolecular Psychiatry 7, 231-235,1978.

TEMPLER, D.I. and VELEBER, D.M.: Schizophrenia Prevalence: Wheat, Milk and Temperature. Journal of Orthomolecular Psychiatry 9, 284-286,1980.

TORREY, E.F.: Tracking the Causes of Madness. Psychology Today 12, 78-80,1979.

TORREY, E.F.: Civilization and Schizophrenia. New York: Aronson, 1980.