

THE UNIVERSITY OF MANITOBA

THE SIGNIFICANCE OF HOUSING
IN THE REHABILITATION OF THE TUBERCULOUS

A Study of the Housing Conditions of a Group of
Indigent Tuberculous Families in Manitoba, and
of the Relationship between these Conditions and
their Rehabilitation.

Being a Thesis submitted in Partial
Fulfilment of the Requirements for
the Degree of Master of Social Work.

by

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Winnipeg, Manitoba

March, 1957.



ABSTRACT

The present study has arisen out of a social worker's interest in the housing needs of special groups within the community. It describes the housing conditions of a group of families in Manitoba rendered indigent because the family head was disabled by tuberculosis, and it examines the relationship between their housing conditions and their success in achieving rehabilitation.

This study accepts the long held theory that housing conditions are one significant factor in mortality from and incidence of tuberculosis. Its focus is rather an attempt to test an assumption that they are also a factor influencing the re-education of the patient to freedom from tuberculosis and ability to re-assume his normal responsibilities.

The test consists of an analysis of information on housing conditions and success in rehabilitation contained in the records of the Manitoba Department of Public Welfare concerning nineteen rural and fifteen urban families who received Mother's Allowance because the family head was disabled by tuberculosis.

The study was limited by gaps and inconsistencies in recorded information, and complicated by the influence of factors other than housing, but it was possible to observe that housing conditions in this group of indigent families were inadequate for their needs during the rehabilitation period following discharge from sanatorium, and that the rural group was generally more poorly housed than the urban group.

The fact that less success in achieving rehabilitation in the rural group was associated with these poorer housing conditions led to the conclusion that housing conditions could be considered one significant factor in the rehabilitation of the tuberculous.

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I

INTRODUCTION

The housing shortage which accumulated in Canada through the depression and war years has created a nation-wide interest during the past decade in more and better housing for the total community. As legislation at the various levels of government has facilitated solution of the largest housing problems, attention has begun to turn to the housing needs of special groups in the community, and particularly of those who, by reason of age or disability, cannot compete economically for housing in the open market.

The present study arose out of the writer's interest in the housing conditions of one of these groups, namely a group of families in which disablement of the head by tuberculosis had resulted in indigency. The special interest of this study is in the problem of whether housing conditions were a factor in the success or failure of these families to achieve rehabilitation, which, in this study, is defined as "freedom of the family from tuberculosis and achievement of full self support by the father".

Many studies have examined the significance of housing as a factor in tuberculosis incidence and mortality. However, so far as could be determined, no Canadian study has been done concerning the importance of housing as a factor in tuberculosis rehabilitation. The rehabilitation aspect of tuberculosis control has become more important in recent years, since new methods of case finding and treatment have reduced the number of deaths from this disease, and thereby increased

the number of patients requiring rehabilitation services.¹ Remarkable results have been achieved in the last few years by the provision of rehabilitation services to disabled persons, in terms of saving large sums of public funds required to support chronically disabled persons and their families, and, more important, saving disabled persons and their families from the debilitating effects of chronic dependency.. It therefore seems useful at this time, while rehabilitation programs are still in the early stages of development, to establish the significance of an assumed rehabilitative need in one group of disabled persons.

One main difficulty in studying the significance of housing in the rehabilitation of the tuberculous is the number of factors, of which housing is only one, which are assumed to influence the patient's success in achieving rehabilitation.² It has been possible to eliminate one important variable - the changing methods of active treatment of this disease - by confining this study to cases in which the patients all received the new forms of treatment, which came into general use in Canada in 1948,³ from the initial diagnosis of disease. However, it is outside the scope of this study to deal with the question of the relative significance of housing and other factors, beyond indicating their presence, acknowledging their possible influence on the present findings,

¹G. J. Wherrett, "Recent Developments in Canada's Tuberculosis Services", Canadian Journal of Public Health, XLVI (March 1955), 97-99.

²Norvin C. Kiefer, Present Concepts of Rehabilitation in Tuberculosis (New York, 1948), pp. 3, 265.

³G. J. Wherrett, loc. cit.

and suggesting them as problems for further study. This study has been limited to an attempt to discover what housing conditions existed in a sample group of tuberculous families and what success in achieving rehabilitation was associated with these conditions.

The cases chosen for this study are all families who were in receipt of Mothers' Allowance in the Province of Manitoba during their rehabilitation period. Mothers' Allowance is a Provincial Government program of financial assistance to families rendered indigent by the death or permanent desertion of the father, or by his disablement for a period longer than three months. Tuberculosis is a disability which usually requires a lengthy period of hospitalization and home convalescence, and the long term loss of earning power often leads to indigency during at least the greater part of the treatment and convalescent periods. As this is one of the situations Mothers' Allowance is provided to meet, the case load of this program of financial assistance always includes a number of tuberculous families, and is, in fact, the source of almost all information available concerning indigent tuberculous families in Manitoba. It was therefore, considered the best possible source of information for the study of the problem at hand, from the point of view of uniformity of information and of providing a representative sample.

Little was known as to how the urban and rural groups of tuberculous families receiving Mothers' Allowance compared in respect to housing conditions and success in achieving rehabilitation. It was therefore, decided to study the urban and rural groups separately, as well as in combination, in order, first, to determine the nature and extent of

the differences, if any, in their housing conditions and rehabilitation success, and second, to prevent differences from leading to invalid conclusions based on the study of the total sample only.

Since this study was concerned only with the rehabilitation aspect of tuberculosis, it was confined to the period in the family's life following the first discharge of the family head from sanatorium. The families chosen for study were those in which this discharge occurred during the four year period 1950 to 1953 inclusive.

In the chapters which follow, the background for the study will be outlined, the development of the method will be described, the data will be analyzed, and the conclusions indicated. The background indicates some of the studies which have been done on the problem of the significance of housing in tuberculosis control in general, and the ways in which housing is assumed by health and housing authorities to influence the patient's recovery following active treatment. The chapter on method is designed to acquaint the reader not only with the method in its final form, but also its development and modification as difficulties were encountered in following the method as it was tentatively planned. The data has been analyzed by descriptive case studies and statistical tables. Verbal interpretation accompanies the statistical analysis throughout, and the extent and degree of overcrowding are represented graphically as well as statistically. The concluding chapter indicates the broad conclusions reached by the present study, the limits within which the conclusions may be considered valid, and areas suggested for further study. The findings of this study concerning the Metis families who formed a large percentage of the total sample have been

placed in an appendix, as it was felt that this might be of interest to those concerned with the general problems of this particular racial group in Canada.

II

THE BACKGROUND OF THE STUDY

Tuberculosis is a communicable disease, transmitted most often by continued close contact with persons already infected with the tubercle bacillus. It can also be transmitted indirectly, by inhalation of dust in which the bacilli have dried, or by use of utensils on which bacilli have been deposited by cough or expectoration of tuberculous persons. In the majority of persons exposed to tuberculosis, bacilli lodge but do not become active. One of the main causes of active tuberculosis is considered to be low bodily resistance, or a poor state of general health.¹ Numerous studies in recent years have added weight to the assumption, hitherto based largely on common sense, that housing conditions have a bearing on general health.² Therefore, insofar as housing conditions contribute to a poor state of general health, they have been assumed significant as a cause of active tuberculosis.

The research done so far specifically on the relationship of housing conditions and tuberculosis has been mainly concerned with determining whether high incidence of and mortality from tuberculosis

¹Daniel H. Harris, "Psychological Aspects of Tuberculosis", Psychological Aspects of Physical Disability, ed. J.F. Garrett (Washington, 1952), pp. 97-98.

²For list of references on this subject which the writer has found helpful, see Bibliography Numbers 1, 3, 8, 9, 11, 13, 15, 21, 22, 23, 29, 30, 34, 35 and 38.

tuberculosis cases in Hartford. Tuberculosis cases from the slums which were associated with generally poor housing conditions, and with housing conditions poor in certain specific ways. The following is a brief description of the conclusions of some of these studies conducted in Great Britain, the United States and Canada within the present century.

In Liverpool, England, in 1902, two areas of the city were chosen for slum clearance because of high general morbidity and tuberculosis mortality rates. The two areas had a population of just under 10,000. In one of them, 70 per cent, and in the other 94 per cent of the displaced families were rehoused over several years. During 1909-1912, the Liverpool Health Officer reported that the tuberculosis death rate had fallen from 4 to 1.2 per 1,000 population.¹

A more recent study, made in 1942-1943 in Newark, New Jersey, compared tuberculosis morbidity rates in three housing projects where slum dwellers were rehoused, and in three city wards where the population was comparable. For persons 15 to 40 years of age, the 1942-1943 average showed morbidity for the white population of 10 per 10,000 in the projects, and 31 in the wards. For the negro population, the rate was 50 per 10,000 in the projects, and 127 in the wards. The conclusion of this study was that better housing, which was the only improved factor in the projects over the city wards, accounted for the considerably lower morbidity rates from tuberculosis. The same study refers to the fact that 51 per cent of the city's

¹Edith Elmer Wood, Introduction to Housing: Facts and Principles (Washington, 1940), p. 50.

tuberculosis cases in Hartford, Connecticut came from the slums which housed one fourth of the city's population, and the tuberculosis death rate in the Detroit slums was found to be six and one-half times the rate of the city as a whole.¹

A number of Scottish studies - Chalmers (1913), Peters (1933), Laidlaw (1933 and 1946), Medical Officer of Health for Glasgow (1932), Tuberculosis Officer for Edinburgh (1938) - indicated that overcrowded housing was associated with high incidence of and mortality from tuberculosis.² However, during the 1930's and 1940's several studies in Great Britain raised doubts concerning this. Russell and Salmon did a study in Wales which showed no correlation between tuberculosis and overcrowding, defined as more than two persons per room. Peters (1933) in Scotland, found correlation between overcrowding and non-pulmonary tuberculosis, but not pulmonary. McKinley (1947) in Scotland, found no correlation between overcrowding and any kind of tuberculosis.³ In 1950 Lilli Stein completed a study in Edinburgh which was aimed at testing the validity of these findings. She compared like with like by considering small, well defined units of one city in a series of individual years, so that, as far as possible, conditions in the units were comparable. When she did this, her

¹Housing Authority of the City of Newark, The Social Effects of Public Housing (Newark, N.J., 1943), pp. 36-37.

²Lilli Stein, "A Study of Respiratory Tuberculosis in Relation to Housing in Edinburgh", British Journal of Social Medicine, IV (1950), 143-144.

³James M. Mackintosh, Housing and Family Life (London, 1952), pp. 84-91.

findings established a clear connection between both mortality and incidence rates of respiratory tuberculosis and housing conditions in Edinburgh.¹ In a second study in Glasgow shortly after, she found that density of dwelling occupation and overcrowding together played a significant part in the excess of deaths from and cases of respiratory tuberculosis in the crowded wards of the city.²

In a summary of the findings of the National Health Survey in the United States in 1935-36, it was shown that a marked increase of the incidence of tuberculosis was associated with an increase in crowding, the rate being almost twice as great in households of more than one and one-half persons per room than the rate in households of one person or less per room.³

In Canada, the Report of the Lieutenant Governor's Committee on Housing in Toronto (1934) showed that the incidence of tuberculosis was 25 per 10,000 population in good housing areas, and 64 in the worst housing areas.⁴

This brief survey indicates that there is ample proof, then, that housing is a significant factor in tuberculosis control.

¹Lilli Stein, op. cit. pp. 143-169.

²Lilli Stein, "Tuberculosis and the Social Complex in Glasgow", British Journal of Social Medicine, VI (January, 1952), 1-48.

³H.H. Britten, J.E. Brown and I. Altman, "Certain Characteristics of Urban Housing and their Relation to Illness and Accidents", Housing for Health (Lancaster, Pa., 1941), p. 174.

⁴Humphrey Carver, Houses for Canadians (Toronto, 1948), Appendix, Table I, p. 129.

However, the more specific question of the significance of housing in tuberculosis rehabilitation did not appear to have been singled out for special study, so far as could be determined.

In Canada, most of the active treatment part of tuberculosis rehabilitation takes place in sanatorium, where the patient is isolated with a view to preventing spread of the disease in the community, and to providing the patient with the best possible treatment facilities. Thus housing is not a factor of any importance during this stage of rehabilitation. However, treatment for tuberculosis usually involves a period of convalescence, or "After Care", following hospitalization, and it is then that housing conditions may become important. During this period of after care, rest which is still the basic treatment for tuberculosis should continue, but with gradual increase in activity under medical supervision. Good general health should be promoted, and there should be freedom from worry and tension in order that bodily resistance to reactivation of the disease may be kept as strong as possible.¹

The American Public Health Association, through its Committee on Hygiene of Housing, has set forth what it considered the basic components of healthful housing² under four main headings which have been most conveniently summarized by Mr. Humphrey Carver in his book

¹Daniel H. Harris, op. cit. p. 100.

²American Public Health Association, Basic Principles of Healthful Housing (2d ed; New York, 1941).

"Houses for Canadians"¹ as follows:-

- (1) Fundamental Physiological Needs
(Temperature, light, quietness, space);
- (2) Fundamental Psychological Needs
(Privacy, social expression, hygiene,
ease of operation);
- (3) Needs for Protection against Contagion
(Sanitation, preservation of food,
separate sleeping accommodation);
- (4) Needs for Protection against Accidents
(Sound Construction, fireproofing,
safety from mechanical and traffic
hazards).

To the extent that the housing conditions of tuberculosis patients during the after care period meet these needs, they contribute to the maintenance of good general health, thus lessening the danger of relapse. It must, therefore, be concluded that housing is a factor which may affect the successful rehabilitation of the patient. When one recalls that the general health of the convalescent tuberculosis patient is in need of strengthening, and that rest is essential, the above listed housing needs assume even greater significance for him than for the person already possessed of good general health. However, it was noted in perusing recent reports of services to the tuberculous across Canada, and particularly of the rehabilitation services, that with one exception no specific mention was made of housing as a rehabilitation need for the tuberculosis convalescent. This one reference was made by the Newfoundland Section of the Canadian Tuberculosis Association in the latter's Annual Report for

¹Humphrey Carver, op. cit. p. 22.

1954,¹ which stated that a housing committee composed of representatives of local service clubs in St. John's had been set up to study ways and means of alleviating the housing problems, as they felt that the local housing shortage was so severe as to provoke relapses and delay satisfactory rehabilitation of tuberculosis convalescents. Direct communication with the executive secretary of the Newfoundland Tuberculosis Association revealed that no research project had been undertaken to describe the housing conditions of ex-tuberculosis patients or to determine the effect of their housing on their rehabilitation. The main concern of the committee was action based on the assumption that housing was a significant factor. On the other hand, the British Columbia Welfare Department, which for a number of years included extra financial assistance to indigent families of tuberculosis patients to ensure provision of adequate housing, was considering discontinuing this allowance. No research as to the kind of housing conditions that existed among these families had been done, and it appeared that the authorities no longer assumed that the housing needs of these families were a matter of special importance. In Manitoba, no research has been done on the housing conditions of tuberculous families in general, nor of the indigent families in particular. This latter group, because of low income, would presumably have the most difficulty in obtaining adequate housing in an area of Canada where low cost housing schemes have not yet developed.

¹Annual Report of the Canadian Tuberculosis Association for 1954 (Ottawa, 1955), p. 92.

In view of the fact that the assumed need for healthful housing for all tuberculous convalescents in the interest of their rehabilitation appeared to be accepted in some quarters, doubted in others, and ignored for the most part, and in view of the fact that no research project had shown the conditions under which any group of tuberculosis convalescents were living, and whether these conditions were associated with more or less success in their achieving rehabilitation, it was felt that this should be the point of departure for the present study - namely, to determine what housing conditions existed in a group of tuberculosis patients in the rehabilitation period following their first discharge from sanatorium, with the purpose of, first, learning to what extent these conditions measured up to standards considered adequate for promotion of health for the tuberculosis convalescent and his family, and second, determining what success in rehabilitation was associated with the housing conditions found.

Since overcrowding was the housing condition most definitely associated by previous studies with mortality from and incidence of tuberculosis, it was decided to study the extent of overcrowding in the sample separately, as well as in combination with general housing conditions, and to determine what relationship existed between various degrees of overcrowding and success in achieving rehabilitation.

The following chapter will discuss the method whereby these broad questions were studied.

III

THE METHOD OF THE STUDY

The method whereby answers to the questions posed by this study were sought evolved through three main stages. A tentative plan was first drawn up, then tested by collecting and analyzing the data from a portion of the sample according to the plan. Difficulties and obstacles were encountered, and the plan was modified to make maximum use of the available data.

1. The Initial Plan

The first step in working out a method of study was to list the questions whereby the broad questions posed by the study could be answered. These questions fell into the broad categories of housing conditions, success in rehabilitation, and the association of the one with the other. These were set out as follows:-

Housing Conditions

1. To what extent did the housing conditions of the total sample, and of the urban and rural sub-groups separately, meet the standards considered necessary for good general health, and for preventing the relapse of a person convalescing from tuberculosis ?
2. Was the urban group better or more poorly housed than the rural group, and in what respects ?

Success in Rehabilitation

1. To what extent did the total sample, and the rural and urban sub-groups separately, achieve rehabilitation, according to certain measures of success ?
2. Was there more or less success in achieving rehabilitation in the urban than in the rural group, and in what respects ?

Association of Housing Conditions and Rehabilitation Success

1. Did the rehabilitation success become progressively better or poorer as the housing conditions became better or poorer, in the total sample, and in the urban and rural sub-groups separately ?
2. Did rehabilitation success become progressively better or poorer in the groups better housed in respect to persons per room, in the total sample and in the urban and rural sub-groups separately ?

The Sample

With these questions in mind the selection of cases on which to base the study became the next step. Since the validity of the conclusions of any study depends on the homogeneity and representativeness of the sample, and the reliability depends on the accuracy of the data, these factors were the main guides in the selection of the cases.

The sample was selected entirely from the Mothers' Allowance case load because it was considered the best available source of information needed for this study in terms of detail, consistency, and objectivity of data on housing conditions, and success in rehabilitation. It was also reasonable to assume that it included a representative group of families rendered indigent by the family head having contracted active tuberculosis. It was known that not all indigent tuberculous families were supported by Mothers' Allowance. The main exclusions were small families in receipt of War Veterans' Allowance, Indian families living on Indian Reserves, and families who could not meet the residence or citizenship requirements of the Mothers' Allowance program. It was not possible, within the time limits of this study, to determine the numbers of families thus excluded from the present sample, but it was considered safe to assume that the numbers were not large. Also, there were no

grounds for assuming that the housing conditions and success in rehabilitation of the excluded families were so consistently different from those of the sample selected, as to render the findings based on this sample an invalid picture of these circumstances among indigent tuberculous families in Manitoba. However, it was felt that this possible limitation as to the representativeness of the sample would need to be kept in mind when drawing conclusions from the data provided by this sample.

In the interests of homogeneity in the sample, cases were selected on the basis of their having received treatment, financial support, and other rehabilitation services, during a specified period of time when no drastic changes were made in the total rehabilitation program. Since new kinds of treatment became generally available in Canada after 1948¹ and other rehabilitation services did not begin to expand until 1955,² cases discharged from sanatorium after their first treatment for active tuberculosis during 1950 to 1953 inclusive could be assumed a homogeneous sample insofar as the rehabilitation services available to them were concerned. It was also considered that the length of the rehabilitation period should be kept constant, but it was not found possible to do this beyond setting a minimum time following discharge from sanatorium for the study of rehabilitation success. Taking into account the opinions of medical authorities as to the length

¹G.J. Wherrett, loc. cit.

²Annual Report of the Canadian Tuberculosis Association for 1954, op. cit. p. 76.

of time required by the average patient to recover completely from tuberculosis, and be considered reasonably unlikely to suffer relapse,^{1,2} it was decided to allow a minimum of two years within which to measure rehabilitation success, and on this basis cases selected were limited to those discharged from sanatorium for the first time prior to the close of the year 1953. However, the rehabilitation period of the families studied varied from two to six years, and this fact had to be taken into account in analyzing the rehabilitation success by showing the length of time taken as well as whether or not the family achieved success.

It was felt that the sample should be selected from the Province of Manitoba as a whole in order to be representative, but that homogeneity might be affected by differences in housing conditions and other factors assumed to have a bearing on rehabilitation success, such as education and employment opportunities prevailing generally in the rural and in the urban areas. For this reason it was decided to include rural and urban cases in the sample, but to analyze them separately as well as jointly, so that the differences due to location could be observed and taken into account when drawing conclusions from the findings of the total sample.

Some thought was given also to the size of the sample. It was felt that the main things to consider were time available for collecting

¹Daniel H. Harris, op. cit. p. 100 .

²R.G. Ferguson, Studies in Tuberculosis (Toronto, 1955), p. 109.

and analyzing the data, and the number of cases that would come within the four year period selected as the time limit for first discharge from sanatorium. It was estimated that approximately one hundred cases would be found within this period, and about one third of these would be urban and two thirds rural. It was therefore tentatively decided, if this estimate proved correct, to collect data on a hundred per cent sample of the urban group and a fifty per cent sample of the rural group in order to make the two groups comparable in size, small enough to be handled within the time available for the study, and large enough to have reasonable meaning when analyzed statistically.

Selection and Classification of Data

The tentative decision as to what data should be gathered was based on what was needed to measure success in rehabilitation, and to measure the extent to which housing conditions measured up to standards assumed necessary for the tuberculosis patient during the after care portion of the rehabilitation period.

Regarding a measure of rehabilitation success, it was discovered by perusal of the results of a survey questionnaire conducted in 1955 by the Canadian Tuberculosis Association among Rehabilitation Officers across Canada that there was no one accepted measure of successful rehabilitation. The definitions ranged from "Satisfactory post-Sanatorium adjustment" in Manitoba, Ontario, Quebec and New Brunswick, through "resumption of a full working day" in Prince Edward Island, and "satisfactorily re-employed for one year" in British Columbia, to "satisfactory post-sanatorium adjustment for five years" in Nova

Scotia.¹ It seemed that a more precise definition was required for the purposes of this study. Having in mind the particular interest of this study in indigent tuberculous families, it was decided to define rehabilitation as "apparent freedom of the family from tuberculosis, and their restoration to full economic support by the family head". The questions whereby this state could be measured were considered to be:-

1. Did any member of the family contract active tuberculosis after the patient's first discharge from sanatorium ?
2. How many times was the patient re-admitted to sanatorium after his first discharge ?
3. How long was the period of after care between first discharge of the family head from sanatorium and his return to full financial support of the family ?

It was believed that information was available in the Mothers' Allowance records to answer these questions, and it was therefore decided to use them tentatively as measures of rehabilitation success as defined above.

Measures of the housing conditions were tentatively selected on the basis that they were included in the housing standards set out by the American Public Health Association,² and were also the aspects of housing conditions most significant for the tuberculosis convalescent in enabling him to have the rest and freedom from tension

¹Canadian Tuberculosis Association, Summary of Rehabilitation Questionnaire, 1955. (Mimeographed)

²American Public Health Association, Basic Principles of Healthful Housing. loc. cit.

recommended by medical authorities¹ or had been proven by specific studies to be significant in high tuberculosis mortality and morbidity.^{2,5} These measures were as follows:-

1. Persons per room

One person or less per room.
Over one person per room, but not over two.
Over two persons per room.

2. Sleeping arrangements

Children sleeping in same room as patient.

3. Ventilation

Possibility of cross ventilation.

4. Daylight

Possibility of sunlight penetrating all rooms.

5. Temperature and Humidity

Possibility of keeping these steady and normal.

6. Possibility of Cleanliness

General repair of dwelling.
Toilet facilities private to family and easily accessible to patient.
Water facilities easily accessible and not contaminated.

7. Distance above ground floor level

Amount of stair climbing from outside to dwelling and inside from one part of living quarters to another.

At the outset it was known that a description of each family's

¹D.H. Harris, loc. cit.

²C.F. Brockington, The Health of the Community (London, 1954), p. 262.

³J.M. Mackintosh, loc. cit.

housing was routinely required as part of the social history recorded on the file at the time of the family's enrolment on Mothers' Allowance. Subsequent improvements in the same housing or a change to other housing was noted at the time of its occurrence, and a review of the family's general situation, including their housing, was recorded annually after a special visit for this purpose. It was therefore felt that it might be possible to collect the data from the files for the above tentatively selected measures of housing conditions.

Analysis of Data

It was hoped, if the information contained in the case records permitted the use of these measures, to analyze the data by means of a score. This method was used successfully in several studies in the general field of relationship of housing conditions and tuberculosis incidence.^{1,2}

It was believed that the housing conditions of each family could be scored by a point system, and those within certain scores could be graded as having 'good', 'fair', or 'poor' housing. Following this, the families in each grade could be studied for rehabilitation success according to the measures stated earlier. The data would at this point be classified in such a way that it would be observed whether there was more successful rehabilitation in the better housed groups, and whether progression from 'poor' to 'good' housing

¹H.H. Britten, J.E. Brown, and I. Altman, op. cit. pp. 174, 176.

²D. Rosenbluth and J. Bowlby, "The Social and Psychological Backgrounds of Tuberculous Children", British Medical Journal, No. 4919 (April 1955), 946-949.

was associated with greater rehabilitation success. The same method could be used to study overcrowding in relation to rehabilitation success by using the three groups under the heading "Persons per Room" as signifying 'no overcrowding', 'slight overcrowding' and 'excess overcrowding', and studying each of these groups for rehabilitation success.

2. The Difficulties Encountered.

A test of the suitability of the above outlined method was made by attempting to collect the data using the headings of the tentatively selected measures for rehabilitation success and housing conditions, and the sampling limits described earlier. It then became evident that this method was not feasible for several reasons.

The first difficulty was the actual number of cases which fitted the limits of the sample. It was found that these limits excluded a number of cases, and that the size of the sample was approximately one third of the number originally estimated. This fact eliminated the possibility of grading the cases, because the sub-groups resulting from this process would not be large enough to have any meaning statistically.

The second difficulty was the impossibility of using the housing measures chosen. It was found that the Mothers' Allowance files lacked sufficient detail and consistency in recording for the employment of these measures. Also, the measures themselves were not sufficiently refined, and it was realized that if a score was to be used, it would require testing. This would take more time than was available, and it was therefore decided that scoring would have to be abandoned as a method for this study.

In spite of these difficulties, however, it was felt that some light could be shed on the main question of the study by using the available material. It was noted in the test of the tentative plan that there were slightly over thirty families who came within the limits chosen for the sample, and it was felt that this number was large enough to form the basis of a study, necessarily limited in scope by the time available for its completion. It was noted that sufficient reliable data was available for the use of the measures of rehabilitation success, and that a good deal of interesting information was available on the files concerning the housing conditions in which these families lived, including in almost every case the number of rooms and persons per household, thus making possible a study of overcrowding in particular.

3. The Revised Plan

The Sample

Although the limits set tentatively for the sample reduced the number of cases which could be studied, it was felt that the limits were of value in producing a maximum of homogeneity in the sample, and it was therefore decided to retain them. Two cases were included in the final sample which were not strictly within the time limit of January 1950 and December 1953 for the first discharge of the family head from sanatorium. In one case the discharge occurred in November, 1949 and in the other in October, 1949. These two exceptions were made because they were the only cases so close to the time limit, they had received the same active treatment as the other cases in the sample, and they added to its representativeness by the housing information they

contained. With this minor exception, then, the sample consisted of indigent families on the rolls of the Mothers' Allowance Program of the Manitoba Department of Public Welfare, and residing anywhere within the Province of Manitoba. In addition, these were families where the father was disabled by tuberculosis, and had been treated by methods which came into use in 1948, and had been discharged from active treatment in sanatorium for the first time during the period January, 1950 to December, 1953 inclusive. It was a hundred per cent sample within these limits, and included in addition the two cases specially mentioned, making a total of thirty-four cases studied.

Classification of Data

The data which appeared to be of value in examining the questions raised by the topic chosen for study, and which were found to be available in the case records, fell within four main classifications:-

1. General Characteristics
2. Rehabilitation Success
3. Housing Conditions
4. Factors other than Housing Conditions which appeared to influence rehabilitation.

Under each of these broad classifications, data was recorded in columns under headings which were added to as needed in order to include all useful information found in the records. The final lists of sub-headings in each of the above broad categories were as follows:-

1. General Characteristics
 - a) Racial background, determined through the father.
 - b) Ages of father, mother, and children at time of father's first discharge from sanatorium.

- c) Number of persons per household.
- d) Type and stage of disease at time of first discharge from sanatorium:-
 - i. Pulmonary tuberculosis - far advanced, moderately advanced, or minimal.
 - ii. Other - tuberculosis of bone, tuberculous meningitis, tuberculosis of glands or other internal organs.

The classifications "far advanced", "moderately advanced" and "minimal" were derived from the wording of the diagnosis placed on the medical reports of the patients by the examining physicians. They were assumed to have standard meanings behind them within the medical profession.

2. Rehabilitation Success

The original measures were expanded and defined more specifically as follows:-

- a) Secondary cases of tuberculosis diagnosed active within the family following the father's first discharge from sanatorium.
 - i. Mother.
 - ii. Children, by age and sex.
- b) Number of re-admissions to hospital after first discharge.

Those re-admissions for completion of treatment were included within those due to relapses, but their numbers were noted separately.

- c) If death followed first hospital discharge, length of time between the two events was recorded.
- d) If restoration to self-support followed the first hospital discharge, the period of time required to achieve this was classified as follows:-
 - i. Under 1 year
 - ii. 1 year and under 2 years
 - iii. 2 years and under 3 years

- iv. 3 years and under 4 years
- v. 4 years and over

Those still not self-supporting at the time of the study were classified as such, and the length of time from the first hospital discharge and a prediction as to the probable length of time still needed to achieve full self-support were noted.

3. Housing Conditions

- a) Number of rooms per family unit, not including bathrooms or halls.
- b) Persons per room, classified as follows:-
 - i. One and under one. (Considered "No overcrowding")
 - ii. Over one and not over one and a half. (Considered "Minimal overcrowding")
 - iii. Over one and a half, and not over two. (Considered "Overcrowding")
 - iv. Over two. (Considered "Severe overcrowding")

The above measures of overcrowding were based on one Canadian and one British definition of this term. The Canadian definition considered that "One room per person can be taken as a reasonable dividing line to provide a first-approximation gauge of whether requirements for health, privacy and convenience are met or not."¹ The British definition considered more than two persons per room a very severe standard within which it would be certain overcrowding was present no matter how the people distributed themselves.²

- c) Type of Housing Accommodation
 - i. Log Shack
 - ii. Frame Shack

¹Report of Advisory Committee on Reconstruction, Part IV, Housing and Community Planning (Ottawa, March 24, 1944), p. 92.

²J.M. Mackintosh, op. cit. p. 74.

- iii. Bungalow
- iv. Two Storey House
- v. Rooms in House
- vi. Suite in House or public building such as store, office building, meeting hall, etc.
- vii. Suite in Apartment Block

Bungalow was distinguished from log or frame shack mainly by being built on a regular foundation and having a full or partial basement. Shacks were considered housing structures generally lower in value than \$1,000.00. Both had in common the fact that all living quarters were on a first, or ground floor level.

Rooms in a house were distinguished from a suite in a house by the fact that the suite was a self-contained dwelling unit within a house, whereas rooms in a house involved sharing of kitchen and/or bathroom facilities and in some cases the living room as well.

The suite in a house or public building was distinguished from a suite in an apartment block because of the generally more make-shift facilities and lack of privacy which prevail in the former type of suite than in the latter, which is especially designed as a group of separate dwellings under one roof.

- d) Age of Housing
 - i. Twenty-five years or less
 - ii. Over twenty-five years

This category was included as an added indication of the construction and style of dwelling. In some cases the age was deduced from other facts, rather than from a direct statement, but it was not reported in this study unless it could be deduced with reasonable certainty from the recorded information.

- e) State of Repair of Dwelling
 - i. Defective roof
 - ii. Defective foundation
 - iii. Defective walls

- iv. Defective floors
- v. Defective interior decoration
- vi. Defective exterior

This information was not recorded consistently in all cases, and often not in detail.

- f) Room Size
 - i. Small
 - ii. Medium
 - iii. Large

No objective measurements were given, but the above categories added to the general description of overcrowding when considered in conjunction with the number of persons per room.

- g) Housekeeping Standards

- i. Poor
- ii. Fair
- iii. Good

- h) Furnishings

- i. Adequate
- ii. Meagre

- i) Miscellaneous Impressions and Information

These last four categories contained subjective information based on observations of the social worker during periodic visits to the home. The worker's description no doubt involved his own standards and those generally observed to prevail among the families visited in the course of his work. Also, housekeeping standards could be influenced by the circumstances at the time of the visit, and therefore not be the family's usual standard. On the other hand, the social worker is trained to observe objectively, keep personal bias to a minimum, and to take special circumstances into account, so that the information under these headings was considered reasonably reliable descriptive material for the purpose of this study.

4. Factors other than Housing Conditions which appeared to influence Rehabilitation

It was realized from the beginning of this study that housing was only one of a number of possible influences on rehabilitation success or failure. It was also realized that the relative significance of housing among these factors could not be investigated within the limits of the present study. However, the records contained information as to other factors, that, in the opinion of the social worker, assisted or worked against the patient's rehabilitation.

It was decided to classify these factors as a reminder in this study that housing conditions are not an isolated possible cause of success or failure in achieving rehabilitation from tuberculosis, and also as a means of possibly creating interest in further study.

With these considerations in mind, the following classification of these factors was made:-

a) Factors Assisting Rehabilitation

- i. Physical condition restored to normal by medical treatment.
- ii. Age of patient under fifty years. (This appeared to influence the chance of re-employment.)
- iii. Vocational training provided.
- iv. Former occupation suited to physical capacity.
- v. Motivation to work strong.

b) Factors Hindering Rehabilitation

- i. Physical condition only partially restored to normal by medical treatment.
- ii. Age of patient over fifty years.
- iii. Non-co-operation of the patient in treatment.
- iv. Basic education too limited to permit vocational training.
- v. Employment opportunities lacking.

- vi. Presence of other disability.
- vii. Too early return to employment.
- viii. Negative motivation to work.

It should be noted that the above categories were based on factors mentioned in the records studied. They should not be considered factors proven to be significant, nor an exhaustive list of all possible factors that might have a bearing on a patient's rehabilitation. It is, however, interesting to note the particular factors that seemed to be operating for the families in this sample of the tuberculous population.

The accuracy of the data collected under all the above headings was checked insofar as possible by reading the records available on the rural cases in the present sample at the Central Tuberculosis Clinic and kept by Public Health Nurses who followed up the patients and their families during the active treatment and after care periods of the patient's rehabilitation. No information from the Mother's Allowance records was found to conflict with that on the Clinic records.

Analysis of Data

On the basis of the foregoing classifications of available data, it was felt that the following questions could be answered, and in doing so the main questions posed by this study could be answered within certain limits:-

1. What housing conditions were present in the total sample, and in the urban and rural sub-groups separately ?
2. What was the extent of overcrowding in the total sample, and in the urban and rural sub-groups separately ?
3. Was the housing generally poorer in the one sub-group than in the other, and, if so, in what respects ?
4. What success in rehabilitation was present in the total sample, and in the urban and rural sub-groups separately ?

5. Was there more success in rehabilitation in one sub-group than in the other, and in what respects ?
6. Was there more success in rehabilitation in the sub-group that showed the better housing conditions ?
7. Was there more success in rehabilitation in the sub-group that showed the least overcrowding ?

The central aim of the analysis of the data was to answer these questions. Two methods were employed in analyzing the data, namely, statistical tables and descriptive case histories. In addition, the number of persons per room was represented graphically.

The statistical tables show in numbers and percentages the distribution of the total sample and of the urban and rural sub-groups in the various categories under the broad headings of "general characteristics", "housing conditions", "measures of rehabilitation success" and "other factors influencing rehabilitation" already described. All calculations were double checked for accuracy, and verbal explanations and comments interpret the tables and indicate the limits within which conclusions based on the tables may be considered valid.

The case studies were used particularly in connection with the description of housing conditions. The over-all picture of housing conditions was found difficult to describe statistically because of the gaps and inconsistency in the housing information recorded in the case files. It was therefore decided to present a general description of the housing conditions of six of the families, three of whom were located in the rural area and three in the urban area. In each area a very good, an average, and a poor set of housing conditions were

selected in order to give, insofar as possible, a balanced over-all impression of housing conditions within the total sample. The grades "very good", "average", and "poor" represent the best, the average and the worst housing found in the sample studied rather than measurement by some objective standard, applicable to general community housing conditions.

IV

THE FINDINGS OF THE STUDY

1. GENERAL CHARACTERISTICS OF THE SAMPLE

It was felt that an analysis of general characteristics would be helpful in interpreting the data specifically related to the subject of this study, and in describing the setting within which the conclusions were reached. The following results were obtained from tabulation of this general information:-

TABLE 1. - DISTRIBUTION BY ORIGIN

Origin	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
British	4	11.8	5	20.0	1	5.3
European (other than French)	17	50.0	11	73.3	6	31.6
French	2	5.9	-	-	2	10.5
Metis ^X	11	32.3	1	6.7	10	52.6
Total	34	100.0	15	100.0	19	100.0

^XPersons of mixed North American, Indian and white parentage.

This table shows that approximately one-half of the rural subgroup and one-third of the total group were of Metis origin. The 1941 Dominion Census, which was the last to show this origin in a separate category, revealed that the Metis population in Manitoba was 8,692, or 1.05 per cent of the total population of Manitoba. Only 657 or 7.56

per cent of this number was located in Winnipeg.¹ The small percentage of the Metis population located in the main urban area of the Province no doubt accounted for the small percentage of Metis families in the urban sub-group of the present sample. However, the startling difference between the percentage of Metis in the general population (1.05) and in the present sample of indigent tuberculous families (32.3 in the total group and 52.6 in the rural sub-group) indicated a group, particularly in the rural area, in special need of attention by those interested in tuberculosis control.

It will also be observed that there was a high percentage of families of European origin (other than French) in the total sample (50.0) and particularly in the urban sub-group (73.3). It was felt that the reason for this, while outside the scope of this study to investigate, might be interesting to know, since it might reveal other areas of special need.

Table 2 indicates that the sample shows much the same picture as do statistics for the general population, namely, that the greatest percentage of tuberculosis incidence occurs in the young adult years of life.²

It is also noted that approximately 60 per cent of the family heads in this sample were between 20 and 35 years of age, and this held

¹Dominion Bureau of Statistics, Eighth Census of Canada: 1941. Population (Ottawa, 1943), IV, pp. 2, 540.

²Department of National Health and Welfare, Memorandum No. 11. Tuberculosis Services in Canada (Ottawa, 1955), Chart 3, opp. p. 4.

TABLE 2. - AGES OF FAMILY HEADS AT TIME OF FIRST DISCHARGE FROM HOSPITAL

Age	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
20, under 25	4	11.8	3	20.0	1	5.3
25, " 30	8	23.5	3	20.0	5	26.3
30, " 35	8	23.5	3	20.0	5	26.3
35, " 40	5	14.7	3	20.0	2	10.5
40, " 45	3	8.8	3	20.0	-	-
45, " 50	4	11.8	-	-	4	21.1
50, " 55	1	2.9	-	-	1	5.2
55, " 60	-	-	-	-	-	-
60, " 65	1	3.0	-	-	1	5.3
Total	34	100.0	15	100.0	19	100.0

true for the urban and rural sub-groups as well as for the total group. However, the rural group showed a greater percentage in the age range over 45 years, and it is wondered whether this was one of the factors contributing to the difference in rehabilitation success between the two sub-groups observed later in this study.

Tables 3 and 4 show that approximately 75 per cent of the urban families had three children or less, whereas only 50 per cent of the rural families had these numbers of children. Also, 87 per cent of the urban households were composed of six persons or less, whereas only 58 per cent of the rural households were in this size range. This would

TABLE 5. - NUMBER OF CHILDREN PER FAMILY

No. of Children	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
1	6	17.6	4	26.6	2	10.5
2	9	26.4	5	33.3	4	21.0
3	6	17.6	2	13.3	4	21.0
4	4	11.8	3	20.0	1	5.5
5	5	14.7	1	6.8	4	21.1
6	2	5.9	-	-	2	10.5
7	1	3.0	-	-	1	5.3
8	1	3.0	-	-	1	5.3
Total	34	100.0	15	100.0	19	100.0

indicate a greater need for larger houses as to number of rooms in the rural than in the urban group if both were to be equally well housed so far as space and privacy were concerned.

The figures in table 5 indicate a higher percentage of simple pulmonary cases in the urban than in the rural group, and a higher proportion among these pulmonary cases of moderately advanced and minimal cases in the urban group. If, as the literature on tuberculosis has indicated, the stage and complexity of the disease partially determines the prospect of total recovery, these findings would indicate a slightly poorer prospect of rehabilitation for the rural group, other things being equal. The fact that sixty-two per

TABLE 4. - NUMBER OF PERSONS PER HOUSEHOLD

No. of Persons	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
3	5	14.7	3	20.0	2	10.5
4	8	23.5	4	26.6	4	21.0
5	6	17.7	2	13.5	4	21.0
6	5	14.7	4	26.6	1	5.3
7	6	17.7	2	13.5	4	21.1
8	1	2.9	-	-	1	5.3
9	2	5.9	-	-	2	10.5
10	1	2.9	-	-	1	5.3
Total	34	100.0	15	100.0	19	100.0

cent of the total group were moderately advanced or minimal cases of simple pulmonary tuberculosis, however, indicates that this group could be expected to benefit from rehabilitation services to a large extent.

Summary of General Characteristics

To summarize these findings one might say that the main characteristics of the total sample were a predominance of European and Metis racial backgrounds, an age range for the tuberculous family heads from twenty to sixty years, but largely under thirty-five years, and a predominance of moderately advanced or minimal cases of pulmonary tuberculosis. The families ranged in size from three to ten persons, with three to six person households predominating. The majority of

TABLE 5. - TYPES OF TUBERCULOSIS AT TIME OF FIRST DISCHARGE FROM HOSPITAL

Type of Tuberculosis	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
<u>Pulmonary only</u>						
Far advanced	3	8.8	1	6.7	2	10.5
Mod. "	15	44.1	7	46.6	8	42.1
Minimal	6	17.7	3	20.0	3	15.8
Unknown	1	2.9	1	6.7	-	-
<u>Other Organs</u>	6	17.7	2	13.3	4	21.1
<u>Pulmonary and Other Organs</u>	3	8.8	1	6.7	2	10.5
Total	34	100.0	15	100.0	19	100.0

families had one to four children, but the maximum number was eight. The general impression was of a group of families who, from the point of view of their degree of disability, age and size of family, could benefit from a maximum use of rehabilitation services, and in so doing save society large financial assistance costs in the future.

The significant differences in the rural and urban groups appeared to be that the rural group was of predominantly Metis racial background, family heads were older and more seriously disabled by more advanced or more complex forms of tuberculosis, households were larger, and the number of children per family higher than in the urban group. All these facts indicated a poorer prospect for successful rehabilitation

in the rural group than in the urban group, even though the same rehabilitation services were provided, and a greater need for larger houses in respect to number of rooms in the rural group.

2. THE HOUSING CONDITIONS OF THE SAMPLE

The over-all picture of housing conditions in the sample is shown by the following case studies, each of which represents a group of cases where conditions were similar.

URBAN CASE STUDIES

Family A - Example of Very Good Housing

This was an Icelandic family, consisting of husband, wife, one child two years old, and the wife's mother. They occupied a frame cottage-type house, built by the wife's father fifty years ago and purchased by this couple from the parents in 1941. The home was built on a fifty foot lot, was twenty-four by thirty feet in over-all dimensions, had a full basement, and a porch at the back for use in summer. The rooms, all on ground floor level, consisted of living room, dining room, kitchen, two bedrooms and bathroom, all small in size. Walls were plastered and wall-papered. The basement walls were cracked, shingles were twenty-five years old, and there was a slight leak in the roof. The furnace was almost burnt out, but still usable. Furniture was old, but well kept. The housekeeping was good and the home had a comfortable, lived-in appearance. Market value of the house was estimated in 1954 at \$3,000.00

Family B - Example of Average Housing

This Ukrainian family, consisting of husband, wife, girl two years old and boy one year old, occupied one room in an old family

dwelling when the husband was first discharged from hospital. Their six year old daughter was with relatives because of lack of space. The husband and wife slept on a lumpy couch, the baby in the carriage, and the two year old in a crib, all in the one room. They shared kitchen and bathroom privileges with the landlord. Seven months later they were granted accommodation in a City Emergency Housing Unit and took their oldest child with them. The housing then consisted of two rooms and kitchenette in a converted army hut. They shared the bathroom with one other family. Six months after this move, the husband returned to hospital for an extended period. After three years in this housing, it was closed down and the family were moved to a new City Emergency Housing Unit. This was one of a group of single family cottage-type units, inexpensively constructed with no basement, but new and equipped with running water in kitchen area and in the bathroom. The rooms were an L-shaped living-dining-kitchen area, two bedrooms and a bathroom, all small in size. Heating was by means of stove and heater, and laundry was dried all winter in the living area. Rent was \$27.00 per month. Housekeeping was good, and the home had a generally neat and clean appearance.

Family C - Example of Poor Housing

This was a Metis family consisting of husband, wife, two boys, two and three years of age respectively, a girl one year old, and twin baby girls born during the period following the husband's discharge from hospital. Housing was located in the Metis settlement on the outskirts of the city. It consisted of a three room, unpainted, frame

building with a small lean-to attached. It contained a kitchen and two bedrooms. The house was poorly constructed, and run down in appearance. The furniture was poor and inadequate, untidy and soiled. The wife explained that it was very hard for her to keep things clean, as there was no running water in the home and she had to carry water from a pump five or six blocks away. This was a rented house, and the landlord, when approached about repairs, said he would do something when he had some time.

RURAL CASE STUDIES

Family D - Example of Very Good Housing

This was a French family located in south eastern Manitoba, and consisted of husband, wife, two boys eleven and nine years old respectively, and a girl four years old. They owned their two storey frame home which consisted of kitchen and living room on the main floor and three bedrooms on the second floor. All rooms were spacious, furnishings were the bare necessities, but all were kept very neat and clean. The exterior was nicely painted. The house was heated by a heater in the living room and a kitchen stove. In 1950 this home was flooded up to two feet of water in the main floor, and with help from the Flood Relief Fund they were able to repair the basement and foundation and put in a new first floor and plasterboard walls, all of which put the house in a good state of repair.

Family E - Example of Average Housing

This was a Ukrainian family located in the northern farming area of Manitoba, and consisted of husband, wife, a girl two and a boy

six years of age. They owned their house and farm. The house consisted of three rooms, only two of which were usable all year round. A bedroom and living room were used in the winter, and a lean-to kitchen provided extra space in summer. The frame siding on the outside of the house was unpainted, but inside walls were painted Ten Test material. Ceilings were low, the kitchen was eight by eleven feet, the living room eleven by fourteen feet and bedroom nine feet six inches by eleven feet six inches. There was a small dug out for a basement. The general state of repair was fair, but the structure was considered not worth repairing if and when major repairs became necessary.

Family F - Example of Poor Housing

This was a Metis family living in northern Manitoba. The wife had two daughters by a former marriage, who contracted tuberculosis after their mother had remarried. They were placed at times with other relatives, but also lived at times with the husband, wife and five other children. Their first housing, for eight persons, was a small, log, clay packed structure in poor condition. It had only one room, fairly large in size, clean and well kept, but furnished only with two double beds, a couch, table, cupboard and old cook stove. Later, both parents went into sanatorium and the children were placed in foster homes. When the family came together again, they bought a one room log house for \$65.00 and had it moved to a suitable location. It was made livable with window glass, putty and roof filler. By this time a new baby was added to the household, making a total of nine persons occupying this housing.

STATISTICAL ANALYSIS OF HOUSING CONDITIONS

In addition to the foregoing case studies, the data which could be classified was analyzed statistically and the results are shown in the tables which follow.

TABLE 6. - TYPES OF HOUSING ACCOMMODATION

Type of Housing	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Log Shack	9	26.5	-	-	9	47.4
Frame Shack	8	23.5	5	33.3	3	15.8
Bungalow	5	14.7	3	20.0	2	10.5
Two Storey Frame	4	11.8	-	-	4	21.0
Rooms in House	6	17.6	5	33.3	1	5.3
Suite in House or Public Building	2	5.9	2	13.4	-	-
Suite in Apartment Block	-	-	-	-	-	-
Total	34	100.0	15	100.0	19	100.0

This table indicates that fifty per cent of the families studied were living in dwellings of the cheapest type of construction, namely, the frame or log shack. The most common type of housing in the rural group was the log shack, whereas in the urban group the largest number of families occupied frame shacks and rooms in larger houses. Only fourteen per cent of the total group occupied an average kind of private

family dwelling, namely, the one storey bungalow type of house. The urban group had almost twice the percentage of families occupying this type of dwelling. However, the urban group had a greater percentage of families occupying part of a house or public building, while the rural group showed a greater percentage of two storey houses occupied by one family. This would seem to indicate that the rural group lived in more privacy as a family than the urban group, regardless of whether individuals within the family units had more or less privacy.

It was wondered whether types of dwellings found in the present sample were related to racial background, and examination of this showed that the log shacks were occupied in eight out of the nine cases by Metis families, whereas the other types of dwellings were all occupied by various other racial backgrounds. It would have been interesting to know whether the general Metis population was housed in the same way as the indigent tuberculous group studied here. If so, one wonders how suitable this type of housing was to them, and whether other types of housing could be developed. If this type of housing is peculiar only to the indigent tuberculous families, one wonders whether the housing is a cause or an effect of indigency and disease. However, it was beyond the scope of this present study to investigate these questions.

As no comments were made in the records on the age of most of the rural dwellings, no comparisons could be made between rural and urban housing in this respect. However, indications were that in both areas the families studied were occupying the older types of dwellings, and generally had not benefited directly from new housing made available to Canadians since the close of World War II.

TABLE 7. - AGE OF DWELLINGS

Age of Dwelling	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
25 years or less	4	11.8	2	13.3	2	10.5
Over 25 years	17	50.0	13	86.7	4	21.1
Not Known	13	38.2	-	-	13	68.4
Total	34	100.0	15	100.0	19	100.0

TABLE 8. - STATE OF REPAIR OF DWELLINGS^x

Area of Defect	Total Group (34)		Urban Group (15)		Rural Group (19)	
	No.	Per cent	No.	Per cent	No.	Per cent
Roof	2	5.9	1	6.7	2	10.5
Foundation	3	8.8	-	-	3	15.8
Walls	4	11.8	-	-	4	21.1
Floors	5	14.7	-	-	5	26.3
Interior Decoration	7	20.6	3	20.0	4	21.1
Exterior "	7	20.6	3	20.0	4	21.1
None specified	19	55.9	10	66.7	9	47.4

^xAs reflected in request for repairs.

Here again, the information was not sufficient to give any complete picture. Defects were usually mentioned in the records only when families asked for assistance in making repairs, and this type of help was given only to families who owned or were purchasing their housing. Since most of the urban families were renting their housing, and most of the rural families were not, repairs were given more attention in the rural cases. Thus the lack of recorded defects in the urban area cannot be taken to mean for certain that the housing in that location was in a better state of repair, and the picture shown here for the whole sample can be considered a minimum rather than a maximum estimate of housing defects in the sample.

TABLE 9. - ADEQUACY OF FURNISHINGS

Furnishings ^x	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Meagre	16	47.1	7	46.6	9	47.4
Adequate	11	32.3	7	45.6	4	21.0
No Information	7	20.6	1	6.8	6	31.6
Total	34	100.0	15	100.0	19	100.0

^xFor basis of classification see p. 23 (final paragraph).

Generally, the urban group appeared more adequately equipped than the rural group, and the total group showed more families poorly equipped than adequately equipped, in the opinion of the social workers who visited the homes.

TABLE 10. - HOUSEKEEPING STANDARDS

Housekeeping ^x	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Poor	5	14.7	3	20.0	2	10.5
Fair	4	11.8	2	13.3	2	10.5
Good	20	58.8	9	60.0	11	57.9
No Information	5	14.7	1	6.7	4	21.1
Total	34	100.0	15	100.0	19	100.0

^xFor basis of classification see p. 28 (final paragraph).

This table indicates that the majority of families in both rural and urban groups were making the best of the housing they occupied.

TABLE 11. - SIZE OF ROOMS

Room Size	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Small	14	41.2	9	60.0	5	26.3
Medium	6	17.6	3	20.0	3	15.8
Large	7	20.6	2	13.3	5	26.3
No Information	7	20.6	1	6.7	6	31.6
Total	34	100.0	15	100.0	19	100.0

The classifications used in table 11 were not based on exact room measurements, but rather on the impression of the social worker who visited the home, and in some cases, no clue was given as to room size at all. However, it is clear that spacious rooms were in the minority in the sample as a whole, and it appeared that, for the most part, rural housing was more spacious than urban, insofar as room size was concerned.

TABLE 12. - NUMBER OF ROOMS PER DWELLING

Number of Rooms	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
1	6 ^x	17.6	2 ^x	13.4	4	21.1
2	8	23.5	2	13.4	6	31.6
3	7	20.6	4	26.6	3	15.8
4	7	20.6	4	26.6	3	15.8
5	5	14.7	3	20.0	2	10.5
Not Known	1	3.0	-	-	1	5.2
Total	34 ^x	100.0	15 ^x	100.0	19	100.0

^xTwo of these moved to four rooms during after care.

This table gives a more accurate picture than the preceding ones because exact information was available for all but one rural family. It shows that no family occupied more than five rooms, and the majority of families had two to four rooms. However, there was a significant

differences between the urban and rural sub-groups in this respect. Fifty per cent of the families in the urban group occupied three or four room dwellings, whereas fifty per cent of the rural group occupied one and two room dwellings.

When one considers, in addition, that eighty-six per cent of the urban households consisted of six or less persons, as compared with fifty-eight per cent of the rural families (see table 4), the picture is one of a good deal more overcrowding in the rural than in the urban housing conditions. Table 13 shows this picture statistically, and it is further illustrated by figure 1, (page 51).

It will be recalled that the intervals used in table 13 were considered various degrees of overcrowding as defined by recognized authorities.¹ The first interval indicates "no overcrowding", the second interval indicates "minimal overcrowding", the third interval indicates "overcrowding" and the fourth interval indicates "severe overcrowding".

This table shows that sixty-seven per cent of the urban families lived in conditions of no or minimal overcrowding, whereas only eleven per cent of the rural families were found in these categories. Severe overcrowding existed in thirty-five per cent of the total group and in forty-seven per cent of the rural group, but in only twenty per cent of the urban group. As pointed out earlier, this condition was caused by the combination of two factors, namely, larger families and smaller

¹Chapter III, p. 26.

TABLE 13. - NUMBER OF PERSONS PER ROOM

Persons per Room	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
(1) 1 & under 1	4	11.8	3	20.0	1	5.3
(2) Over 1 to $1\frac{1}{2}$	8	23.5	7	46.7	1	5.3
(3) Over $1\frac{1}{2}$ to 2	9	26.5	2	13.3	7	36.8
(4) Over 2	12 ^X	35.3	3 ^X	20.0	9 ^{XX}	47.4
(5) Not Known	1	2.9	-	-	1	5.2
Total	34 ^X	100.0	15 ^X	100.0	19 ^{XX}	100.0

^XTwo of these moved during after care to Class (2)

^{XX}The rural families in Class (4) showed the following number of persons per room:-

Over 2, not over 3..... 3
 Over 3, not over 4..... 4
 Over 4, not over 5..... 1
 9 persons..... 1

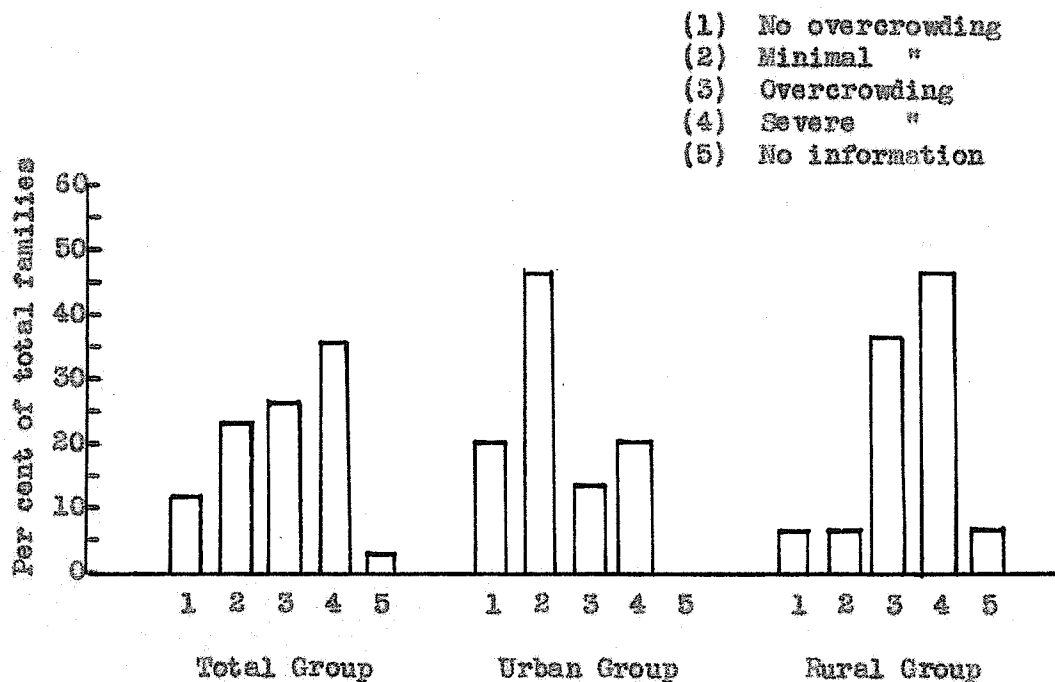
Total 9

homes in the rural area than in the urban area.

It was wondered whether the nine severely overcrowded families in the rural area had anything in common, and it was found that eight of the nine were of Metis racial background. It will be recalled that the families of Metis background accounted for fifty-three per cent of the rural sample of indigent tuberculous families in Manitoba, and it is now noted that almost one hundred per cent of the severe overcrowding in this rural sample is found in the Metis group. Even though it must

FIGURE 1

EXTENT OF OVERCROWDING



not be forgotten that housing is only one of a number of factors which can contribute to tuberculosis incidence, it does seem a significant fact that severely overcrowded housing was associated in this study with high incidence of tuberculosis in the Metis group, and it is wondered whether improvement of the housing conditions of the Metis population of Manitoba would contribute to a lowering of the incidence of tuberculosis in the rural areas of the Province.

While the Metis families dominated the picture of severe overcrowding in the total sample and in the rural sub-group, it is nevertheless noted that overcrowding was not confined to these families. It seems a matter of significance that thirty-seven per cent of the rural families, thirteen per cent of the urban families, and twenty-six

per cent of the total sample were overcrowded to the extent of having more than one and one-half to two persons per room. These figures also remind us that, excluding the Metis families, the rural families were considerably more overcrowded as to persons per room than the urban families.

Summary of Housing Conditions in the Total Group

In the total sample of indigent tuberculous families studied, the housing conditions during the after care period of the patient's rehabilitation might be summarized as follows:-

Family Composition - The most frequent size of household was four persons (approximately twenty-five per cent of the sample), with five and seven persons next in frequency (seventeen per cent each).

Number of Rooms per Family - Eighty-two per cent of the families lived in dwellings consisting of one to four rooms, the most frequent being the two room dwelling (twenty-three per cent of the sample).

Persons per Room - Twelve per cent of the families had one person or less per room (no overcrowding), and thirty-five per cent had more than two persons per room (severe overcrowding).

Size of Rooms - A known forty-one per cent of the families had small rooms and an unknown number of the twenty-one per cent not reported would make the actual percentage slightly higher.

Type of Dwellings - Fifty per cent of the families lived in frame or log shacks, and fourteen per cent in a better type of one storey private dwelling. Approximately eighty per cent of the families

occupied detached dwellings as single family units.

Age of Dwellings - A known fifty per cent plus an unknown portion of the twenty-one per cent not reported lived in dwellings over twenty-five years old.

State of Repair of Dwellings - Interior and exterior decoration were mentioned most frequently as being defective.

Furnishings - a known forty-seven per cent plus an unknown portion of the fifteen per cent not reported had meagre furnishings.

Housekeeping Standards - These were reported good in almost sixty per cent of the cases. Fifteen per cent were unreported.

These figures indicate that dwellings were predominantly old, cheaply constructed, and often in poor repair. While the majority of families had the advantage of privacy as a family unit, and ground floor level living quarters, the privacy within the families was hampered by small rooms and too few rooms for the sizes of households.

When one thinks of this description in terms of the housing needs of tuberculous families outlined in Chapter II of this study, the housing for this group is in some respects definitely lacking. The good features are the relatively few families living at close quarters with their neighbours, the generally good housekeeping standards, and the lack of need for stair climbing. The poorest feature is the lack of space, both in room size and in number of rooms for the size of household, since these imply lack of privacy for proper rest and for preventing spread of disease within the household. The meagre furnishings and dismal decorating would add little to the building of

the patient's morale, and the other defects such as leaking roof, poor floors, foundation and walls suggest poor protection against dampness and uneven temperatures considered important to the convalescing tuberculosis patient.

Summary of Housing Conditions in the Rural and Urban Groups.

The significant features of housing conditions in the rural and urban groups appeared to be as follows:-

1. The urban families were generally smaller than the rural, and their housing, while generally smaller as to room size, was better adapted to the size of the household.

2. The Metis population in the rural area accounted for almost all the severe overcrowding in that area. However, when the severely overcrowded group was eliminated, the overcrowding in lesser degrees was still more prevalent in the rural than in the urban area.

3. Housekeeping standards appeared equally good in both groups, but the furnishings were generally more adequate in the urban than in the rural group.

4. Approximately fifty per cent of the urban families occupied rooms or suites in larger houses or public buildings, and the other fifty per cent occupied small, one storey, single family dwellings. Almost the entire rural group occupied single family dwellings of the log or frame shack type. This meant that the rural group was somewhat better off than the urban in respect to family privacy and ease in getting about.

5. The urban group appeared to have housing in a better state of repair than the rural group, but this could not be concluded as a

certainty, because of the inconsistent reporting contained in the records. Lack of information for both groups prevented any accurate estimate of state of repair, but interior and exterior decorating were most often mentioned defects in both groups, with floors the most commonly defective item in the rural group alone.

6. The whole over-all impression was one of poorer housing in the rural group than in the urban group, and particularly in respect to persons per room, or overcrowding.

3. THE REHABILITATION SUCCESS OF THE SAMPLE

To describe the extent of success in achieving rehabilitation, the measures stated in Chapter III (page 25) were used with the following results:-

Measure No.1. - Secondary Cases of Tuberculosis in Families

In answering the question "Did any member of the family contract tuberculosis during the period of after care of the patient under study?", the information contained in table 14 was obtained.

In the one rural family where the disease was spread within the family, the mother and the only child, a girl six years of age, became active cases. In one other rural case, not shown in this table, the mother and two daughters of a former marriage contracted the disease prior to the father; also a baby, born during the rehabilitation period of the father, was suspected of having the disease. However, it was not definitely diagnosed, and could not be specifically associated with the father's case, and therefore was not mentioned statistically. Both of these families were of Metis racial background.

TABLE 14. - NUMBER OF SECONDARY CASES OF TUBERCULOSIS DIAGNOSED DURING AFTER CARE PERIOD

	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Secondary Cases	1	2.9	-	-	1	5.3
Total Sample	34	100.0	15	100.0	19	100.0

So far as this measure of rehabilitation success was concerned, it appeared that success was achieved in all but three per cent of the total cases, in all of the urban cases, and in all but five per cent of the rural cases. While these figures could be taken to indicate that environmental conditions have very little, if anything, to do with the spread of tuberculosis within families, it is felt that caution should be used in making such a generalization, because of the small number of cases studied and because secondary cases may not become active until a longer period has elapsed than it was possible to observe in this study. Also, the fact that patients could be rendered non-infectious by use of the new drugs, and the fact that they were not ordinarily left in the home in an infectious state might have been sufficient means of counteracting the ill effects of environment, so that secondary cases did not show up in such a small sample as the present one.

Measure No. 2 - Readmissions to Hospital or Deaths

The second measure of success in rehabilitation was considered to be the question "How many times was the patient readmitted to

hospital after first discharge?". It was found in studying this question that in some cases the patient died following first discharge, and, as this was conclusive evidence of rehabilitation failure, the number of cases in which this occurred were tabulated as part of this measure.

TABLE 15. - NUMBER OF DEATHS DURING AFTER CARE PERIOD

	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Deaths	2	5.9	-	-	2	10.5
Total Sample	34	100.0	15	100.0	19	100.0

Tables 15 and 16 indicate more deaths and more frequent re-admissions to hospital in the rural group than in the urban group, but the fairly small percentage of these occurrences throughout - six per cent for deaths and thirty-six per cent for readmissions in the total group - indicates a considerable degree of successful rehabilitation according to this measure.

Measure No. 3 - Length of Time Required to Achieve Self Support

The third measure of success in achieving rehabilitation was considered to be the question "How long was the period of after care between first discharge from hospital of the family head until his return to full self support?". The answer to this question was not easily stated statistically because some families became ineligible for

TABLE 16. - NUMBER OF READMISSIONS TO HOSPITAL FOLLOWING FIRST DISCHARGE

Number of Times Readmitted to Hospital	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
0	22	64.7	11	73.3	11	57.9
1	6	17.6	3 ^X	20.0	3	15.8
2	2	5.9	1	6.7	1	5.3
3	-	-	-	-	-	-
4	3	8.8	-	-	3 ^{XX}	15.8
5	-	-	-	-	-	-
6	1	3.0	-	-	1 ^{XX}	5.2
Total	34	100.0	15 ^X	100.0	19 ^{XX}	100.0

^X1 case returned for surgery

^{XX}4 cases returned for further treatment

Mothers' Allowance before the patient became able to support them.

Among the reasons for ineligibility were support of the family by the mother, the desertion of the family by the patient, or his being declared medically fit for self support but for some other reason not working.

Another difficulty lay in the fact that some families were still not self-supporting at the time the study was completed, and it was difficult to predict in some of these cases how much longer their rehabilitation might take. It was decided to state the number and percentage of cases in which full self support was achieved within two years following the date of the patient's first discharge from hospital, and then to tabulate any

facts stated in the records which indicated what happened to the others or the reason for their failure. By this method the following information was obtained:-

TABLE 17. - FAMILIES WHO ACHIEVED SELF SUPPORT WITHIN TWO YEARS AFTER FIRST DISCHARGE FROM HOSPITAL OF FAMILY HEAD

	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Self supporting within two years of first hospital discharge	11	32.5	8	53.3	3	15.8
Total Sample	34	100.0	15	100.0	19	100.0

The poor success in rehabilitation shown by the use of this measure was rather surprising, following, as it did, the positive results in the other two measures. It indicated to the writer that either the measure used here was an unrealistic one in terms of time in which to expect full self support, or that other factors besides the physical disability of the patient were hindering his rehabilitation. The fact that only 23.5 per cent of the total sample were found in the "Still under Treatment" category in Table 18, whereas 32.5 per cent were found in the category "Self Supporting within Two Years" in table 17, would indicate that two years was not too unrealistic. However, the most significant fact revealed by these two tables was that self support was less frequent and took longer to achieve in the rural group

TABLE 18. - FACTORS RELATED TO FAILURE TO ACHIEVE SELF SUPPORT WITHIN TWO YEARS OF FIRST HOSPITAL DISCHARGE

Factor Related to Failure	Total Group (34)		Urban Group (15)		Rural Group (19)	
	No.	Per cent	No.	Per cent	No.	Per cent
Considered permanently disabled	5	14.7	1	6.7	4	21.1
Death	2	5.9	-	-	2	10.5
Disease cured but not working	2	5.9	1	6.7	1	5.3
Still under treatment	8	23.5	2	13.3	6	31.6
Self supporting after more than two years	4	11.8	2	13.3 ^X	2	10.5 ^{XX}
No information	2	5.9	1	6.7	1	5.3
Total	25	67.7	7	46.7 ^X	16	84.5 ^{XX}

^X1 case took 2 - 3 years to self support
 1 case took 4 - 5 " " " "

^{XX}2 cases took 3 - 4 years to self support

than in the urban group.

SUMMARY OF REHABILITATION SUCCESS

As a means of seeing the picture of rehabilitation success when all three measures were combined, an analysis was made in table 19.

Since no studies appeared to have been made of rehabilitation success among tuberculosis patients in general, it was not known at the time of this study whether thirty-five per cent success achieved in the

TABLE 19. - SUCCESS IN REHABILITATION

Degree of Success	Total Group		Urban Group		Rural Group	
	No.	Per cent	No.	Per cent	No.	Per cent
Good ^X	12	35.3	9	60.0	3	15.8
Fair ^{XX}	9	26.5	2	13.3	7	36.8
Poor ^{XXX}	13	38.2	4	26.7	9	47.4
Total	34	100.0	15	100.0	19	100.0

^XNo relapse and under 2 years to self support and no secondary cases.

^{XX}No relapse and over 2 years to self support and no secondary cases.

^{XXX}Relapse and over 2 years to self support and secondary cases. Also included were those who failed to attain self support.

total sample was a high, low, or average percentage of what it is possible to achieve in rehabilitation success. However, this figure does indicate that there was plenty of room for improvement of rehabilitation services in an effort to achieve greater success among indigent tuberculous families, and the small percentage of success in the rural families indicated the direction in which rehabilitation services should be concentrated. It was not the purpose of this study to determine what services were most needed, but it would appear that further study of this problem is indicated.

It was wondered, as in the analysis of the housing conditions, whether the large group (47.4 per cent) who showed poor success in

achieving rehabilitation in the rural area had anything in common that might account for their failure, and it was noted again that six of the nine cases were of Metis racial background. However, even when these cases were eliminated, the rural group showed poorer success in rehabilitation than the urban group, which suggests that the problem was not confined to the Metis group, but appeared to be a problem in the rural group as a whole.

In summary, it appears from this study that the spread of tuberculosis to other members of the family during the patient's after care period was negligible. Sixty-five per cent of the total group required no further hospital treatment after their first discharge, and another eighteen per cent required only one further period of treatment. However, only thirty-two per cent of the total group achieved self support within two years of their first discharge from hospital. Six per cent of the total group died of tuberculosis after their first discharge from hospital. Finally, in every respect, the success in achieving rehabilitation according to the measures chosen for this study, was better in the urban than in the rural group.

4. THE SIGNIFICANCE OF OVERCROWDED HOUSING AS A FACTOR IN REHABILITATION SUCCESS

For purposes of showing the significance of over-crowded housing conditions as a factor in rehabilitation, it was decided to analyze how the various degrees of overcrowding used in table 13 (page 50) and figure 1 (page 51) related to the degrees of rehabilitation success used in table 19 (page 61). For each of the grades of rehabilitation

success "good", "fair", and "poor", a plus (+) was given to each case in the grade which showed "no overcrowding" or "minimal overcrowding" (not over $1\frac{1}{2}$ persons per room). A minus (-) was given to each case in the grade which showed "overcrowding" or "severe overcrowding" (over $1\frac{1}{2}$ persons per room). The result of this classification is shown in the following table:-

TABLE 20. - ASSOCIATION OF OVERCROWDING AND REHABILITATION SUCCESS

Rehabilitation Success	Total Group				Urban Group				Rural Group			
	Overcrowding				Overcrowding				Overcrowding			
	+	-	?	Total	+	-	?	Total	+	-	?	Total
Good	8	4	0	12	8	1	0	9	0	3	0	3
Fair	1	8	0	9	0	2	0	2	1	6	0	7
Poor	4	8	1	13	3	1	0	4	1	7	1	9
Total				34				15				19

Table 20 shows that, in the total group, rehabilitation success became poorer as housing became more overcrowded. However, this same progression was not observed in the urban and rural sub-groups. In fact, in the rural sub-group, the exact opposite was true.

In looking for a reason for these results, the total history of the family in the rural group which showed no overcrowding and fair success in achieving rehabilitation was examined. It was found that the family head, disabled by tuberculosis, was forty-eight years of age,

had another disabling disease, and had limited opportunities for suitable employment. The housing was not overcrowded because a deliberate improvement had been made in the housing while the patient was under treatment in hospital. However, this improvement alone was not sufficient to offset the other negative factors.

The findings in this one example led to an analysis of factors other than housing mentioned in the records of the whole sample, and which, in the opinion of the social worker, assisted or hindered the patient's success in achieving rehabilitation. The results of this analysis are shown in tables 21 and 22. It should be noted that in these two tables the categories are not mutually exclusive, and a patient might therefore be counted in several categories. No attempt is made here to interpret the significance of these figures since they cannot be considered an accurate picture of all the factors that may have been operating in any one case, or consistently recorded from case to case. Also, they do not indicate how many positive and negative factors were present in each case. However, the number of positive and negative factors other than housing, and their frequencies in this sample, indicate one reason why overcrowding was not consistently associated with poor success in rehabilitation.

The facts shown in these last three tables serve to remind the reader that successful rehabilitation is a product of the combination of physiological, psychological, and environmental conditions. They do not point to a conclusion that overcrowding has no significance, but rather that some factors may be more significant than others. The

relative significance of all factors, however, would require a separate study.

TABLE 21. - FACTORS OTHER THAN HOUSING WHICH APPEARED TO ASSIST THE REHABILITATION OF THE PATIENT

Assisting Factor	Total Group (54)	Urban Group (15)	Rural Group (19)
	Number	Number	Number
Age under 50 years	32	15	17
Occupation suited to disability	6	3	3
Physical condition fully restored	14	11	3
Positive motivation towards work	9	9	-
Retrained for suitable occupation	3	3	-

SUMMARY OF HOUSING CONDITIONS, REHABILITATION SUCCESS, AND THEIR RELATIONSHIP

In looking at the over-all picture of housing conditions, rehabilitation success, and their relationship to each other, this study has indicated the following facts:-

1. Housing conditions were poorer generally, and in respect to overcrowding specifically, in the rural group than in the urban group.
2. Success of the families in achieving rehabilitation was poorer in the rural group than in the urban group.

TABLE 22. - FACTORS OTHER THAN HOUSING WHICH APPEARED TO HINDER THE REHABILITATION OF THE PATIENT

Hindering Factor	Total Group (34)	Urban Group (15)	Rural Group (19)
	Number	Number	Number
Age over 50 years	2	-	2
Disease not cured	8	2	6
Limited employment opportunities	7	1	6
Limited education	12	7	5
Negative motivation towards work	6	3	3
Non-co-operation in treatment	5	1	4
Other chronic disease	5	2	3
Returned to work too soon	3	2	1

3. In the total group:-

(a) Thirty-five per cent of the families showed no or minimal overcrowding, and sixty-five per cent showed overcrowding or severe overcrowding.

(b) Thirty-five per cent of the families achieved self support within two years after the patient's first discharge from hospital, with no relapse or secondary case of tuberculosis in the family, while sixty-five per cent took longer than two years or failed

entirely to achieve self support. This latter group also contained all the relapses and secondary cases that occurred.

(c) Sixty-seven per cent of the cases who achieved good rehabilitation success showed no or minimal overcrowding, while twenty-three per cent of those who achieved fair or poor rehabilitation success showed no or minimal overcrowding.

4. Nine of the eleven Metis families showed severe overcrowding. This housing picture was associated with poor success in rehabilitation in seven cases, fair success in three cases, and good success in one case.

These facts indicated that the best housing conditions, both generally and in respect to overcrowding specifically, were associated with the greatest success in achieving rehabilitation from tuberculosis.

CONCLUSION

It is the purpose of this concluding chapter to draw together the conclusions reached and stated as the analysis of the data was made, to remind the reader of the limitations of the present study, and to indicate, for convenience, the areas of further study suggested in various places in the foregoing chapters either by gaps in information which limited the scope of this study or by facts brought out in the process of the present study.

THE LIMITATIONS OF THE STUDY

The limits within which generalizations may be made from the conclusions reached in this study are the validity of the sample, the reliability of the data, the suitability of the methods used to describe housing conditions and to measure rehabilitation success, and finally the influences of factors other than housing conditions on the rehabilitation success.

The Validity of the Sample appeared to be limited by two main factors:

1. The exclusion of an unknown number of indigent families in which the family head had tuberculosis. It will be recalled that certain families such as Indian families living on Reserves, small families on War Veterans Allowance and families without residence qualifications might be indigent and tuberculous but excluded from the present sample because of ineligibility for Mother's Allowance. While it was not believed that the number of families thus excluded was large

or that their housing conditions and rehabilitation success differed greatly from those of the families in the sample, this could not be proved without further study, and the extent of this difference is a possible limit for the conclusions of this study.

2. The inclusion of families of Metis racial background, who proved to dominate the rural sub-group in numbers and to have housing problems common to their group which differed in degree rather than in kind from the rest of the sample. It was felt here that more information was needed about Metis tuberculous families in general including their housing conditions and rehabilitation problems. However, it was also felt that they nevertheless qualified for inclusion in the sample and therefore did not destroy its validity but rather pointed clearly to important conclusions in the present study.

The Reliability of the Data and Suitability of Measures. The reliability of the data was limited to some extent by inconsistency in recording and subjective observation. However, the data with respect to general family characteristics, overcrowding, and rehabilitation success was objective and was considered sufficiently accurate and consistent to lead to reliable conclusions. Housing conditions other than persons per room were much less reliable bases for conclusions, but even here it was felt that the broad picture was not unreliable. The measures of overcrowding and success in rehabilitation were the best that could be devised within the time available for the study. More pertinent and more exact measures might be devised by further study, but until this is done the reliability of the present conclusions rests on the particular measures chosen and defined in Chapter III.

The Significance of Factors Other Than Housing. It was

recognized at the beginning of the study that housing was only one of a number of factors which might influence rehabilitation success. The determination of the relative significance of these factors was outside the scope of this study, but it was felt that until some light was shed on this question the full significance of the housing factor would not be determined. It has only been possible in this study to show the association of poor housing with poor rehabilitation success and better housing with more rehabilitation success. In some individual cases, the presence of other factors such as age, stage of disease when treated, educational background, employment opportunities, etc. appeared to outweigh the housing conditions. However, when the total urban and total rural groups were compared, there appeared to be association of poor housing with poor rehabilitation success, and from this it was concluded that housing had some importance in the total rehabilitation picture. The possibility remains, of course, that other factors were more significant in creating the lesser rehabilitation success in the rural group. It cannot, therefore, be concluded on the basis of this study that improvement of housing conditions alone would lead to better rehabilitation success. Nevertheless, the conclusion that healthful housing is a necessary part of the total rehabilitation program for tuberculous families does seem valid.

THE CONCLUSIONS OF THE STUDY

Within the limits discussed above, the following conclusions were reached in the process of this study:-

Housing Conditions

1. Housing conditions among indigent tuberculous families in Manitoba were poor in respect to overcrowding, construction, and, insofar as could be determined, with respect to general state of repair, but, on the whole, they allowed for family privacy and ease in getting about for the convalescent patient.

2. The urban group was better housed than the rural group with respect to overcrowding within the family unit and to general comfort, but not so well with respect to privacy from neighbours and ease in getting about.

Rehabilitation Success

1. The total group, and the rural and urban sub-groups separately, were largely composed of families where the head was young and not too seriously disabled, which suggested that this was a group for whom rehabilitation services would have real value.

2. In the total group, rehabilitation success was good in respect to no spread of disease to other members of the family and in respect to few relapses, but not in respect to the family achieving self support within two years of the patient's first discharge from hospital.

3. The urban group achieved more success in rehabilitation than the rural group in all respects, but were somewhat better prospects for success in respect to age and degree of disability.

Relationship between Housing Conditions and Rehabilitation Success

1. The urban group showed better general housing conditions, less overcrowding, and better success in rehabilitation than the rural group.

2. The Metis group within the total sample showed the most severe overcrowding, and this was associated with fair or poor rehabilitation success in all but one case.

General Conclusions

1. Housing conditions among indigent tuberculous families in Manitoba, and particularly in the rural area, did not meet standards considered by health authorities to be necessary for good health, particularly in respect to numbers of rooms for the size of the family, size of rooms and construction conducive to even and normal temperature, absence of excessive dampness, and general comfort.

2. Housing conditions appeared to be one significant factor in the total rehabilitation services needed by tuberculous families.

SUBJECTS FOR FURTHER STUDY

A number of times throughout this study, mention has been made of the gaps in information, some of which limited the scope of this study, and others of which limited the validity and reliability of the present conclusions. The main areas for further study are therefore set out below as a conclusion to this study, in the hope that interest may be stimulated in exploring what appear to be aspects of this subject on which information is most needed.

1. The validity of the conclusions reached in this present study would be increased by study of indigent tuberculous families in Manitoba not supported by Mothers' Allowance, but by other financial assistance programs, and by study of similar groups in other parts of Canada.

2. A study of the over-all rehabilitation problems of the Metis tuberculous population is indicated, as it may be found that a special type of rehabilitation service, including improvement of housing conditions, is required for them as a racial group if the struggle to eradicate tuberculosis is to be won.

3. The relative significance of housing conditions among all the possible factors which contribute to success or failure in rehabilitation of the tuberculous is a wide field for further study, but it seems that it is of some importance if rehabilitation programs are to be developed gradually, with the most important factors being given priority.

4. From the point of view of solving the housing problems of the economically disadvantaged groups in Canada, this study has indicated one area of need. The ways of meeting this need have not been touched upon in this study, but it is hoped that the description of housing conditions in one of these groups, set forth in this study, will stimulate others to seek solutions to this problem.

APPENDIX A

HOUSING CONDITIONS AND REHABILITATION SUCCESS OF ELEVEN METIS
FAMILIES

I. Housing Conditions

TABLE 23. - TYPE OF CONSTRUCTION

Construction	Number of Families
Log Shack	8
Frame Shack	2
Two Storey Frame	1
Total	11

TABLE 24. - HOUSEKEEPING STANDARDS

Standard	Number of Families
Good	7
Fair	1
Poor	2
Unknown	1
Total	11

TABLE 25. - STANDARD OF FURNISHINGS

Standard	Number of Families
Adequate	0
Meagre	5
Unknown	6
Total	11

TABLE 26. - SIZE OF ROOMS

Size	Number of Families
Small	3
Medium	1
Large	1
Unknown	6
Total	11

TABLE 27. - NUMBER OF ROOMS PER FAMILY UNIT AND NUMBER IN FAMILY

Number of Rooms	Number of Families	Number in Families
1 Room	4	3, 4, 5 and 9
2 Rooms	3	4, 5 and 7
3 Rooms	3	7, 9 and 10
4 Rooms or over	0	--
Unknown	1	3 plus ?
Total	11	

TABLE 28. - PERSONS PER ROOM

Persons per Room	Number of Families
Under 2 (no overcrowding)	0
2 (overcrowding)	1
Over 2 (severe overcrowding)	9
Unknown	1
Total	11

II. Rehabilitation Success

TABLE 29. - REHABILITATION SUCCESS

Degree of Success	Number of Families
Good	1
Fair	3
Poor	7
Total	11

Summary

These figures show that the Metis families in the sample used for this study were generally poorly housed and particularly with respect to overcrowding. This poor housing was associated with poor success in achieving rehabilitation in the majority of cases.

BIBLIOGRAPHY

Books and Pamphlets

1. Brockington, C. Fraser. The Health of the Community. London: J. & A. Churchill, Ltd., 1954.
2. Canadian Institute of International Affairs. Homes orhovels. "Behind the Headlines" Series, Vol.3, No.5. Toronto, 1943.
3. Carver, Humphrey. Houses for Canadians. Toronto: University of Toronto Press, 1948.
4. Clark, R.L. Jr., and Cumley, R.W. The Book of Health. Houston, N.Y.: Elsevier Press Inc., 1953.
5. Elledge, Caroline H. Social Case Work in Medicine. U.S.A.: J.B. Lippincott Co., 1948.
6. Ferguson, R.G. Studies in Tuberculosis. Toronto: University of Toronto Press, 1955.
7. Harris, Daniel H. Psychological Aspects of Tuberculosis. Part of Psychological Aspects of Physical Disability. Edited by James F. Garrett. Federal Security Agency, Office of Vocational Rehabilitation. Rehabilitation Service Series No. 210. Washington: U.S. Government Printing Office, 1952.
8. Hatfield, W.H. Handbook on Tuberculosis. Victoria: Provincial Board of Health of the Province of British Columbia, 1944.
9. Hodgson, Violet H. Handbook on Tuberculosis for Public Health Nurses. New York: National Tuberculosis Association, 1939.
10. Kiefer, Norvin C. Present Concepts of Rehabilitation in Tuberculosis. New York: National Tuberculosis Association, 1948.
11. Mackintosh, James M. Housing and Family Life. London: Cassell, 1952.
12. Patteson, H.A. Rehabilitation of the Tuberculous. Livingston, N.Y.: Livingston Press, 1942.
13. South, Jean. Tuberculosis Handbook for Public Health Nurses. Edited by the National Tuberculosis Association. Livingston, N.Y.: Livingston Press, 1950.

14. Tuberculosis Services in Canada. Compiled by the Department of National Health and Welfare, Research Division. Memorandum No. 11, General Series. Ottawa, August, 1955.
15. Wood, Edith Elmer. Introduction to Housing: Facts and Principles. Washington: Federal Works Agency, U.S. Housing Authority, 1940.

Reports and Public Documents

16. Advisory Committee on Reconstruction. IV. Housing and Community Planning. Final Report of the Subcommittee. Ottawa: King's Printer, March 24, 1944.
17. Annual Reports of Tuberculosis Institutions in Canada for the Years 1953 and 1954. Ottawa: Dominion Bureau of Statistics.
18. Annual Reports of the Department of Health and Public Welfare of the Province of Manitoba for the Years 1948-1954. Winnipeg: King's Printer.
19. Annual Reports of the Canadian Tuberculosis Association for the Years 1954 and 1955. Ottawa: Canadian Tuberculosis Association.
20. Annual Report of the Sanatorium Board of Manitoba for the Year 1954. Winnipeg, 1955.
21. Basic Principles of Healthful Housing. Prepared by the Committee on the Hygiene of Housing. 2nd ed. New York: American Public Health Association, 1941.
22. Britten, Rollo H., Brown, J.E., and Altman, I. "Certain Characteristics of Urban Housing and their Relation to Illness and Accidents", Housing for Health. Report of the Committee on the Hygiene of Housing, American Public Health Association. Lancaster, Pa.: Science Press Printing Co., 1941.
23. Control of Communicable Diseases in Man. An Official Report of the American Public Health Association. New York, 1955.
24. Courage, William. A Report on Housing: Population, Income, and Housing Characteristics in Winnipeg. Winnipeg: City of Winnipeg, Emergency Housing Department, June 28, 1954.
25. ----- Report of Housing Survey of the Central Area of Winnipeg. Winnipeg: City of Winnipeg, Emergency Housing Department, August 10, 1955.

26. Dominion Bureau of Statistics. Eighth Census of Canada: 1941. Population, Vol. IV, Tables 1, 22. Ottawa: King's Printer, 1943.
27. Parsons, Jack R. "Social Welfare Agencies". Part of "Social Work Practice in the Field of Tuberculosis". Symposium Proceedings, 1953, School of Social Work, University of Pittsburgh, edited by Eleanor E. Cockerill. Pittsburgh, 1954.
28. Problems of the Metis in Manitoba. A Study by the Canadian Association of Social Workers, Manitoba Branch. Winnipeg, October, 1948. (mimeographed).
29. The Social Effects of Public Housing. Survey Report of the Housing Authority of the City of Newark. Newark, N.J., 1946.

Articles

30. Britten, Hollo H. "New Light on the Relation of Housing to Health", American Journal of Public Health, Vol. 32, No. 2, February, 1942.
31. Page, Harry O., and Axelrod, S.J. "Community Teamwork by Public Health and Welfare", Public Welfare, April, 1955.
32. Rosenbluth, Dina, and Bowlby, John. "The Social and Psychological Backgrounds of Tuberculous Children", British Medical Journal, No. 4919, April 16, 1955.
33. Shepard, W.P. "Some Unmet Needs in Tuberculosis Control, a Challenge for the Future", American Journal of Public Health, No. 38, October, 1948.
34. Stein, Lilli. "A Study of Respiratory Tuberculosis in Relation to Housing Conditions in Edinburgh. I - The Pre-War Period", British Journal of Social Medicine, Vol. 4, 1950. 143-169.
35. ----- "Tuberculosis and the 'Social Complex' in Glasgow", British Journal of Social Medicine, Vol. 6, No. 1, 1952. 1-48.
36. "The Changing Picture in Tuberculosis", British Columbia Government News, Vol. 3, No. 3, March-April, 1955.
37. "The Place of Rehabilitation in the Public Welfare Program", Public Welfare, April, 1955.
38. "Tuberculosis Rides with Poverty", American Journal of Public Health, Vol. 38, May, 1948.

39. Wherrett, G.J. "Recent Developments in Canada's Tuberculosis Services", Canadian Journal of Public Health, Vol. 46, March, 1955.

Unpublished Material

40. Summary of Rehabilitation Questionnaire conducted by the Rehabilitation Section of the Canadian Tuberculosis Association prior to the Annual Meeting, 1955.