Chapter - 4

Methodology
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4.1. Aim of the Present Investigation:

The present investigation has been designed to probe on a group of inhabitants living in high-rise buildings located in the Kolkata city with a view to aim at studying significant psychological and social problems due to continuous living in such buildings. In other words, it has been planned to see whether psychological and social problems vary due to living in high-rise and low-rise buildings. Thus the study is a comparative one as well as exploratory in nature. It is, indeed, a colossal task to identify all such possible problems by an individual researcher through studying some selected housing units of certain regions of a particular city like Kolkata but it may be considered as the initiation of such a large probe and/or may function as a part of the whole. However, considering the limited resources, opportunities and time the present investigation has the following aims:

1. To study the relationship between high-rise living and perceived congeniality/uncongeniality of the environment by the adult dwellers;
2. To determine the probable relationship between high-rise living conditions and physical health of the inhabitants;
3. To determine the probable relationship between high-rise living conditions and mental health of the inhabitants;
4. To study whether high-rise living conditions generate depression among the adult dwellers;
5. To study whether high-rise living conditions generate any feeling of loneliness among the adult dwellers;
6. To study whether high-rise living conditions affect the nature of social interactions of the adult dwellers, and finally,

7. To study the nature of adjustment of adolescents with special reference to family, community and society at large.

4.2. Operational Definition of Term:

High-rise building: The principal defining characteristic of a high-rise building is naturally its height. However, the specificity of the definition varies greatly depending on the source. In the present study the building nine storied or greater in height, which is divided at regular intervals into occupiable levels with an edifice based on solid ground, and fabricated along its full height through deliberate processes as opposed to naturally occurring formations has been considered as a high-rise building.

4.3. Hypotheses:

1. High-rise dwellers perceive their housing environment as unfavourable while comparing with non-high-rise dwellers.

2. High-rise dwellers perceive their physical health status as poorer while comparing with non-high-rise dwellers.

3. High-rise dwellers perceive their mental health status as poorer while comparing with non-high-rise dwellers.

4. Inhabitants of high-rise buildings feel depressed while comparing with non-high-rise dwellers.
5. High-rise dwellers feel themselves as lonely while comparing with non-high-rise dwellers.

6. Social interaction pattern of the high-rise dwellers is poorer while comparing with non-high-rise dwellers.

7. Adjustment pattern of high-rise dwelling adolescents is poorer while comparing with non-high-rise dwellers.

4.4. Tools used in the Study:

In order to verify the hypotheses the following tools were used:

(i) General Questionnaire (related to housing);

(ii) Housing Environment Perception Inventory — Part 1, developed by the present investigator; and Part-2, developed by Dasgupta and Nandi (1988).

(iii) Depression Scale (Taken from the adapted Bengali version (Dutta and Dasgupta, 2002) of the M.M.P.I.-2;

(iv) Loneliness Scale developed by the present investigator;

(v) Life-Environment Integration Inventory (Dasgupta and Bose, 1984);

(i) General Questionnaire (GQ) (related to housing):

This questionnaire contained items like name, sex, age, address, education, occupation, family size, monthly family income, no. of rooms, floor no. and no. of years the respondent had been living in the present dwelling unit. It also contained questions on satisfaction/dissatisfaction with the present residence and the reason thereof, no. of members in the family suffering from significant physical/mental ailment, type of
physical/mental diseases or disorders from which the members were suffering and the nature of relationship with the neighbours.

All items of the General Questionnaire along with the necessary instructions to the subject were presented to a group of three experts who adjudged the suitability of the items in the present investigation. Some modifications were made according to the suggestions given by the experts.

(ii) Housing Environment Perception Inventory (H.E.P):

The inventory consisted of two Parts, 1 and 2, where the Part-1 contained 48 Likert-type items on a 5-point scale designed to objectively assess the perception of housing environment by the concerned residents. Theoretically, the psychological impact of any physical setting is mediated, by and large, through the perceptual process which according to cognitive psychology, interrelates the two independent realms, namely, the physical world and the psychological world. The assumption here is that the physically deteriorated environment may or may not be perceived by the subject, depending on his or her personal antecedents. Excepting certain rare situations most physical environmental properties affect human behaviour through the perceptual mechanism. Being guided by the above rationale only those items were considered which had the special relevance to the present study. Such relevance was further adjudged by a group of three experts. The statements in the Inventory centered around the variables (i.e., lack of provisions for social interaction, recreational facilities and open spaces such as, community hall for cultural functions and festivals, children play areas etc; inadequate existing infrastructural facilities and services related to vertical transportation, parking areas, sufficient provisions for meeting fire hazards, as well as limited measures for minimizing noise, glare and adverse wind effects, building vibration and so on) concerning problems of high-rise living.

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In order to develop the scale, a group of high-rise residents were interviewed and altogether 55 items (face validity being studied by a group of three experts), in Bengali language, were prepared for a try-out study on a group of 100 randomly selected subjects. On the basis of the result of item analysis, 7 items were excluded and altogether 48 items were retained to form the final questionnaire.

For quantification, all items were assumed to carry equal weightage. Thus, each item was scored ‘0’ to ‘4’ or ‘4’ to ‘0’ depending on the nature of the item, whether positive or negative, where ‘0’ indicated the relative inapplicability of the item for the concerned resident, ‘1’ indicated the presence of the problem mentioned in the concerned item to the maximum extent, and ‘4’ indicated the absence of the problem. Total score, therefore, meant the level and nature (either favourable or unfavourable) of housing environment perception, the maximum possible score being 192. Odd-even split-half reliability coefficient and item-total correlation of the inventory were observed to be pretty high (0.91 and 0.85 respectively).

The Housing Environment Perception Inventory — Part-2 consisted of 25 bipolar adjectives having 9-point scale continuum. The Scale was developed by Dasgupta and Nandi (1988). In order to develop the scale, Kasmer’s Lexicon of Environmental Descriptors (Kasmer, 1970) and Semantic Differential Scales (Dasgupta and Banerjee, 1985) were consulted mainly and altogether 32 items (face validity being checked by a group of three experts), in Bengali language, were prepared for a try-out study on a group of 120 randomly selected subjects (from different types of dwelling units, namely, slums, single-room flats and high-rise buildings). The result of item analysis by applying t-test, provided 25 statistically significant items (p<0.01). Those items, in the final form, were
arranged in order of the magnitudes of such t values. Odd-even split-half correlation and subsequent application of the Spearman-Brown formula showed that the reliability coefficient of the Part-2 of the scale was 0.84. Item-total correlation was also observed to be pretty high, that is, 0.69.

No item was intended to be taken as a separate variable since the objective was to consider the total score on 25 items to assess the environmental perception of the respondents.

(iii) Depression Scale:

This is the adapted Bengali version (Dutta and Dasgupta, 2002) of D-scale of the M.M.P.I-2 (Hathaway and McKinley, 1991) which consists of 57 items that reflect not only the feelings of the discouragement, pessimism and hopelessness that characterize clinical status of depressed individuals, but also the basic personality features of hyper-responsibility, high personal standard and intrapunitiveness. Odd-even split-half reliability coefficient is found to be 0.85.

(iv) Loneliness Scale:

The scale consists of a cluster of 20 statistically significant items measuring the nature of loneliness experienced by the inhabitants of high-rise apartments. It was developed specially by the present investigator following the standard procedure of test development with a total pool of 35 items wherefrom a group of 15 items were eliminated as insignificant items through item analysis. Odd-even split-half reliability was observed to be 0.76.
(v) **Life-Environment Integration Inventory:**

This scale originally developed by Dasgupta and Bose (1984) provides an efficient way to collect information regarding the adolescent students’ adjustment pattern, personality problems, group cohesiveness and social belief pattern.

A cluster of significant areas were identified for structuring the inventory after Allport and Muray (1943) and Bell Adjustment Inventory (1934 – 1939). Out of them finally 10 important areas were retained, as a result of consultation with a group of school teachers and psychologists, befitting to national educational objectives (Education Commissions, 1952 – 1953; 1964 – 1966). These areas are as follows: 1) Health; 2) Temperament; 3) Attitude towards parents; 4) Attitude towards family environment; 5) Sociability; 6) Personal-social preference; 7) Attitude towards education system; 8) Attitude towards legal system; 9) Attitude towards economic system; and 10) Social beliefs.

The inventory consists of 119 statements which are designed to yield information about four different areas:

1. **Constitutional Factor:** Consisting of 33 items, encompasses the informants' views regarding their physiological and psychological dispositions – concerning health and temperament.

2. **Home Adjustment Factor:** Consisting of 25 items, relates to the informants' nurturing figures, family members and home environment – expressing attitudes towards parents and family, mainly.

3. **Personal-social Adjustment Factor:** Consisting of 31 items, covers informants' views regarding their actual role-playing in the social life and several important
preferences in community meets and gathering in public places - indicative of social skills and personal-social preferences, mainly.


Estimation of reliability of the Inventory was worked out by both split-half (odd-even) and test-retest methods over 30% of the normative data (447 boys and 441 girls). In the latter method the second administration was done after a clear gap of three months from the first administration.

Reliability Coefficients of the four scales of the Inventory by odd-even split half and Test-Retest methods are presented below: (N=888)

<table>
<thead>
<tr>
<th>Scales</th>
<th>Reliability Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odd-even</td>
</tr>
<tr>
<td>Constitutional</td>
<td>0.85</td>
</tr>
<tr>
<td>Home Adjustment</td>
<td>0.86</td>
</tr>
<tr>
<td>Personal-social Adjustment</td>
<td>0.82</td>
</tr>
<tr>
<td>Personal-societal Adjustment</td>
<td>0.82</td>
</tr>
</tbody>
</table>

The original Bengali versions of all the five questionnaires, namely, General Questionnaire (GQ), Housing Environment Perception Inventory (H.E.P), Part-1 and Part-2, Depression Scale, Loneliness Scale and Life-Environment Integration Inventory along with their English translations are presented in the Appendix.

4.5. Study Areas and Subjects:

In order to select the subjects a group of high-rise residential buildings from different regions of the Kolkata city (south, central, north and east) were identified
randomly. The buildings which were minimum nine storied were considered as the high-rise buildings in the present investigation. Then 256 adults and 86 adolescents were selected from those buildings (only the residents of 5th floor and above were considered). Similarly, following the same procedure a group of low-rise buildings (not more than three storeys) were also selected from the same locality and wherefrom 256 adults and 86 adolescents were randomly taken.

The selection criteria of the subjects were as follows:

(1) all adults were the residents in their present houses at least for the last five years;
(2) all the adults must be literate;
(3) they must be willing to participate in the present study;
(4) all adolescents must be within an age range: 13 to 19 years;
(5) they must also be literate;
(6) they must be willing to participate in the present study;
(7) both the adults and the adolescents willing to participate in the study must be well conversant with the Bengali language.
(8) not more than one adult and one adolescent were selected from each apartment of the high-rise and the low-rise buildings.

4.6. Administration of the Tests and Collection of Data:

In consultation with the selected households of the different housing units (both high-rise and low-rise buildings) a tentative program schedule for fixing up the probable time and dates of the test sessions was developed. Following the said schedule each selected household was visited by the present investigator to collect data from the subjects.
concerned, generally, in two separate test sessions. In the first session, the four scheduled
tests, namely, General Questionnaire, Housing Environment Perception Inventory, Part1
and Part 2, Depression Scale and Loneliness Scale were administered individually on one
of the literate adult members of the selected household. In the same session, the Life-
Environment Integration Inventory was administered on one of the adolescent members of
the family (if available in the said household).

Such a program schedule enabled the present investigator to collect data from 256
adults and 86 adolescents from the high-rise residential buildings and the same number of
adults and adolescents from the low-rise residential buildings. Thus for each adult, four
sets of data for the four tests and one set of data for each adolescent were collected.

4.7. Scrutiny of the Data:

The responses given by the subjects were carefully scrutinized, on the spot, by the
investigator just after each test session, to avoid any omission of the items by the subjects
concerned. In case of such omission the concerned subject was asked to fill in the same.

4.8. Scoring and Tabulation:

Scoring and tabulation were done separately for each category of buildings: 
1) high-rise and 2) low-rise.

As the General Questionnaire involved mainly qualitative data, the frequencies for
each type of responses were determined after tabulating all the responses of the subjects
belonging to each category of buildings. Thus for each of the high-rise and low-rise
buildings one set of categorical data was obtained for statistical treatment.
In case of the other tests, namely, the housing Environment Perception Inventory, both Part 1 and Part 2, Depression Scale, Loneliness Scale and Life Environment Integration Inventory, the respective scoring keys were used to score the data. Tabulation work was done separately for each test and each category of buildings (high-rise and low-rise) with respect to age and sex. For the ease of tabulation the adult subjects were classified into four age levels, that is, below 30 years of age, 30 – 45 years of age, 46 -60 years of age and above 60 years of age (Dasgupta and Sarkar, 1983). Thus in case of the adult subjects, for each of the four age levels tabulation work was done separately for male and female subjects.

4.9. Statistical Analysis of Data:

The tabulated scores were classified either in qualitative categories (for the General Questionnaire data) or in quantitative categories (for the other tests data) for further statistical analysis.

(i) General Characteristic Features of the subjects:

In order to depict a typical picture of the general characteristic features of the subjects, under different categories of housing, in terms of sex, age, floor level, education, occupation, income, number of family members, number of rooms, period of stay in the present address and kind of relationship with the neighbours descriptive statistics like mode values and percentages were calculated separately. Besides those, percentages suffering from physical diseases and mental disorders were also determined for each category.
(ii) Housing Environment perception Inventory:

Scores of H.E.P.Part-1 were summated separately for all subjects belonging to each category of buildings according to the subjects' age levels and genders and their arithmetic means and standard deviations were also calculated. Then t-test was applied to compare the data of different categories of buildings along the subjects' age levels and genders. The same procedure was followed for H.E.P.Part-2.

(iii) Depression Scale:

Like the former, the scores of the Depression Scale were considered to calculate means and standard deviations separately for each category of buildings with respect to the respondents' age levels and genders. Then t-test was applied to make the statistical comparisons among the groups (that is, different age levels, genders, and building types).

(iv) Loneliness Scale:

Scores of this Scale were added separately for all subjects belonging to each category of buildings with regard to the subjects' age levels and genders and after that arithmetic means and standard deviations were calculated. Then t-test was applied to make the comparisons among the groups formed on the basis of the subjects' age levels, genders and building types.

(v) Life-Environment Integration Inventory:

In this Scale, the scores of the adolescent subjects were summated separately for each category of the building types (that is, high-rise and low-rise) according to the subjects' genders. Then in addition to arithmetic means and standard deviations (for each gender in each category of buildings) t-test was applied to compare the data of different categories of buildings along the subjects' gender types.