CHAPTER - 4
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RESEARCH DESIGN

4.0 RESEARCH DESIGN

The current chapter of the present study deals with the Research Design, the sample framework, description of tools utilized in order to study the different variables, strategy for data collection, statistics used, flow chart showing the procedure of the research etc.

In order to search a truth, systematic planning, strategy and design of research are to be preplanned. There should be a precise and accurate plan in order to have a smooth journey from problem to solution, or from question to answer. The researcher must have a very transparent planning in order to assess, analyze the problem and interpret the findings. The success of the research investigation solely depends upon the proper selection of the sample and the tools utilized in order to study the variables as well as the appropriate statistical analysis. For the present study the sample has been selected on the three important aspects. i.e:

(A) Selection keeping in view students’ mother’s education level.
(B) Selection keeping in view the discipline of study of the students.
(C) Selection according to the gender.

4.1 THE SAMPLE FRAME

The sample is a small area of a large population. As, to study the whole population to arrive at generalization would be impracticable, hence it is advised to select the sample. The process of sampling assists the research scholar to draw valid inferences or generalization on the basis of careful observation of variables with in a
relatively small proportion of large population selected for observation and analysis. Samples are not selected haphazardly; they are chosen in a systematic way. The population for the present study consists of all the children of class XI of three disciplines, studying in the Raipur city. The sample frame of the study consists of 720, XI grade students whose mothers’ education levels are different.

4.2 SAMPLE SELECTION PROCEDURE:

(A) For different levels of mothers’ education:

As it has been mentioned earlier, the topic is to investigate into the impact of mother’s educational level on the aspirations of children; an information sheet (self made) will be distributed to collect the information with regard to mothers’ education levels.

(B) Disciplines of the study sample:

The present study is conducted for the students of class XI who belong to science, commerce and arts disciplines.

(C) Gender sample:

The selection of sample is also being made according to the gender. Equal number of boys and girls from each discipline from same level of mothers’ education being selected for proper and accurate results.

Table No: 4.01 provide us with clear picture of sample frame work on the basis of mothers’ education level, discipline of study and sex:


**TABLE – 4.01**

Table showing the sample frame work on the basis of mother’s education level, discipline of study and sex:

<table>
<thead>
<tr>
<th>Mother’s education</th>
<th>Science</th>
<th>Commerce</th>
<th>Arts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Secondary level</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Higher-secondary</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Graduation Level</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Post Graduation</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
</tr>
</tbody>
</table>

4.3 TOOLS UTILIZED:

In order to collect the data concerning to the present study, following tools will be utilized:

(A) Self made information sheet

(B) Educational Aspiration Scale

By Dr. V.P. Sharma & Dr. Anuradha Gupta

(C) Occupational Aspiration Scale

By J.S. Grewal

4.4 DESCRIPTION OF THE TOOLS:

As mentioned above, following three tools will be utilized to collect data. Description of self made information sheet, educational aspiration scale and occupational aspiration scale is given below:

4.4.1 Self made information Sheet:

The research scholar prepared a self made test to collect required general information about the student. As the study is related to impact of children’s mothers’
education, this tool being used to gain knowledge about student’s family. The main motto behind collecting the information is to know about the mother’s educational level of the student. The areas of information are concerned with student’s name, class, sex, father’s name, father’s educational qualification, father’s occupation, mother’s name, mother’s educational qualification, mother’s occupation, details of siblings, etc. As the present study is to investigate the impact of mother’s education on children’s aspirations, this information sheet is an important tool for the study.

4.4.2 Educational Aspiration Scale:

The present study is pertained with the educational aspirations and vocational aspirations of XI graders. In order to measure their educational aspirations, Educational Aspiration Scale (EAS), Form (V) was being made use of. It has been prepared by Dr. V.P. Sharma & Dr. Anuradha Gupta. Educational Aspiration Scale has been designed for early college youth and followed by occupational Aspiration Scale of J.S. Grewal under Indian condition. Level of educational aspiration has been considered as a concept, referring orientation towards educational goal, spaced in continuum of difficulty and social prestige, and arranged in educational hierarchy. The present Educational Aspiration Scale has been designed on the strength of the lists of degrees, diplomas, certificates and such distinctive educational qualifications as maintained by different Indian Universities, competitive examination Boards, in Indian State and Union Services, e.g. Public Service Commission and Union Public Service Commission. The Educational Aspiration Scale contains eight different questions. Each question is followed by ten multiple choice responses in terms of educational qualifications.
4.4.3 Occupational Aspiration Scale:

The second important variable of the present study is the vocational Aspiration of XI graders. In order to investigate into the vocational aspirations of the children, Occupational aspiration Scale of Dr. J.S. Grewal was being utilized. Level of occupational aspiration has been defined as orientation towards occupational goal. It is considered as a concept which logically a special instance of concept of level of aspiration, its special nature consists only in the continuum of difficulty. The Occupational Aspiration Scale deals with the different occupations availability in present scenario and of different social status. The test contains eight items with ten multiple choices. Each item contains ten occupations nearly of all occupational status level arranged in a mixed order.

4.5 STATISTICAL TREATMENT

The raw scores drawn from the Educational Aspiration Scale and Occupational Aspiration Scale will be scrutinized and sorted separately according to their mothers' educational level. It has been mentioned earlier, knowledge of mothers' education has been gained from the information sheet provided to the students. The data will be tabulated and statistically treated as described below:

(A) The raw scores collected with the help of Educational Aspiration Scale and Vocational Aspiration scale will be tabulated.

(B) The data collected was classified on the mothers' education (secondary, higher secondary, graduation & post graduation), disciplines (Science, Commerce and Arts), Sex (Boys and Girls) etc.
(C) Mean, Sum of scores, standard deviation and squares of sum for all the subgroups will be calculated both for educational aspiration scores and occupational aspiration scores.

(D) With the data obtained, 4x3x2, 3way ANOVA will be calculated to find the result.

(E) To find more specific result 't' test will be calculated between different groups.

(F) Finally, in the processed data will be studied under Pearson 'r' (correlation) to study the relationship between educational and vocational aspirations of the students.

The raw scores will be treated under the above said all statistical applications and the result will be analyzed & interpreted to understand whether the set objectives & hypotheses will be proven or not.

4.6 FORMULAE USED:

1. Mean  =  \( \frac{\sum X}{N} \)

2. Standard Deviation  =  \( \sigma = \frac{\text{C.I.} \sqrt{N\sum fd^2 - (\sum fd)^2}}{N} \)

3. Analysis of Variance

Three way ANOVA

1\textsuperscript{st} Step:

A. Correction factor (C)  =  \( \frac{T^2}{N} \)

2\textsuperscript{nd} Step:

B. Sum of squares of Total (SS\textsubscript{T})

\[ SS_T = \sum X_1^2 + \sum X_2^2 + \sum X_3^2 + \sum X_4^2 - C \]
3rd Step:

C. Sum of squares of Factor A (SSA)

\[
SS_A = \frac{\sum X_1^2 + \sum X_2^2 + \sum X_3^2 + \sum X_4^2}{6n} - C
\]

4th Step:

D. Sum of squares of Cells SS_cell

\[
SS_{cell} = \frac{\sum X_1^2 + \sum X_2^2 + \sum X_3^2 + \cdots + \sum X_{24}^2}{n} - C
\]

5th Step:

E. Sum of squares of Factor B x C : (SS_BC) (Ignoring Factor A)

(i) \[SS_B = \frac{(\sum B_1)^2 + (\sum B_2)^2 + (\sum B_3)^2}{8n} - C\]

(ii) Sum of squares of Factor C : SS_c

\[
SS_C = \frac{(\sum C_1)^2 + (\sum C_2)^2}{12n} - C
\]

(iii) Sum of squares of B x C interaction

\[
SS_{cell} = \frac{(\sum B_1C_1)^2 + (\sum B_1C_2)^2 + (\sum B_2C_1)^2 + (\sum B_2C_2)^2 + (\sum B_3C_1)^2 + (\sum B_3C_2)^2}{4n} - C
\]
6th Step:

F. Sum of squares of A x B interaction (Ignoring C Factor)

(i) Sum of squares of Factor A
\[ SS_A = \frac{\left( \sum A_1 \right)^2 + \left( \sum A_2 \right)^2 + \left( \sum A_3 \right)^2 + \left( \sum A_4 \right)^2}{6n} - C \]

(ii) Sum of squares of Factor B
\[ SS_B = \frac{\left( \sum B_1 \right)^2 + \left( \sum B_2 \right)^2 + \left( \sum B_3 \right)^2}{8n} - C \]

(iii) Sum of squares of A x B interaction
\[ SS_{AB(Cell)} = \frac{\left( \sum A_1B_1 \right)^2 + \left( \sum A_1B_2 \right)^2 + \left( \sum A_1B_3 \right)^2 + \left( \sum A_2B_1 \right)^2 + \ldots + \left( \sum A_4B_3 \right)^2}{2n} - C \]

\[ SS_{AB(Cell)} = SS_A + SS_B + SS_{AB} \]

\[ SS_{AB} = SS_{(Cell)} - (SS_A + SS_B) \]

7th Step:

G. Sum of squares of SSAC (Ignoring Factor B)
\[ SS_{AC(Cell)} = \frac{\left( \sum A_1C_1 \right)^2 + \left( \sum A_1C_2 \right)^2 + \left( \sum A_2C_1 \right)^2 + \left( \sum A_2C_2 \right)^2 + \ldots + \left( \sum A_4C_2 \right)^2}{2n} - C \]

\[ SS_{AC(Cell)} = SS_A + SS_C + SS_{AC} \]

\[ SS_{AC} = SS_{(Cell)} - (SS_A + SS_C) \]
8th Step:

H. Analysis Variance Table will be prepared by summarizing the calculated values.

4. 't' Test

\[ t = \frac{M_1 - M_2}{\sqrt{\frac{\sigma_1^2}{N_1} - \frac{\sigma_2^2}{N_2}}} \]

5. Pearson 'r'

\[ r' = \frac{n (\sum xy) - (\sum x)(\sum y)}{\sqrt{n \sum x^2 - (\sum x)^2} \cdot n \sum y^2 - (\sum y)^2} \]
4.7 FLOW CHART OF THE PRESENT STUDY

IMPACT OF MOTHER'S EDUCATION ON ACADEMIC AND VOCATIONAL ASPIRATIONS OF HIGHER SECONDARY SCHOOL CHILDREN

SELECTION OF TOPIC
OBJECTIVES
FORMULATION OF HYPOTHESES
SELECTION OF TOOLS TO MEASURE

EDUCATIONAL ASPIRATION
MOTHER'S EDUCATION LEVEL
VOCATIONAL ASPIRATION

SAMPLE

SECONDARY
HIGHER SECONDARY
GRADUATION
POST GRADUATION

SCI. COM ARTS SCI. COM ARTS SCI. CVM ART SCI. COM ARTS
B G B G B G B G B G B G B G B G B G B G R G R G R G R G

Note: B- Boys , G- Girls
Sci. - Science Discipline of study
Com. - Commerce Discipline of study
Arts- Arts Discipline of study

DATA COLLECTION
STATISTICAL TREATMENT
INTERPRETATION
RESULT