METHODOLOGY

CHAPTER III

METHODOLOGY

Methodology in research is defined as the systematic method to resolve a research problem through data gathering using various techniques, providing an interpretation of data gathered and drawing conclusions about the research data (Bouchrika, 2022). To reach the aims of the study a detailed plan of work and a sequential procedure was required. The research design; operational definitions; selection, description, and development of tool; sample and sampling procedure; data collection and data analysis used in the present study are explained here briefly.

The step-by-step procedure adopted to carry out the investigation was covered under the following subheads:

3.1. Research Design
3.2. Operational Definition
3.3. Locale of the Study
3.4. Unit of Enquiry
3.5. Sample size and Sampling procedure
3.6. Selection of the Tool
3.7. Description and Development of the Tool
3.8. Establishment of Content Validity of the Tool
3.9. Establishment of Reliability of the Tool
3.10. Data Collection
3.11. Data Analysis
3.12. Design Development of Kitchen Garden in a Residence
3.13. Development of Booklet
3.14. An Intervention Program for Homemakers

3.1 Research Design

A research design also called a research strategy, is a plan to answer a set of questions (McCombes, 2019). Research design is a detailed plan of how the goals of research will be achieved." Descriptive research includes surveys and fact-finding enquires of different kinds (Kothari, 2014). The present research aimed to study the problems experienced by the respondents related to their existing kitchen garden, assess the knowledge of the respondents regarding the household compost and develop different kitchen garden designs for the residences of Vadodara city. Therefore, a descriptive research design was considered the most appropriate.

3.2 Operational Definitions

Certain terms are operationally defined for the present study. They are as follows:

i. Kitchen Garden: For the present study, a kitchen garden is defined as the garden developed in residence on land, balcony, terrace, or containers to grow vegetables and fruits.
   - a Small Space Garden: It is operationally defined as the gardens laid out on the land or ground for growing vegetables and fruits. The area for small space garden is 80 to 120sq.ft.
   - b Medium Space Garden: It is defined as the vegetable garden laid out on the land or ground having 140 to 200sq.ft. area.
   - c Large Space Garden: Large space garden is defined as the garden laid out on land having area of 200-600 sq. ft.
   - d Balcony Garden: For the present study, balcony garden is defined as the garden created in apartments, flats, or houses with limited space.
   - e Terrace Garden: Here in present study, terrace garden is defined as the garden in which vegetables, fruits or plants grown on terraces or roofs of the houses.
   - f Container Garden: In the present study, the container garden is defined as the plants grown in containers or pots rather than directly on the ground or land.

ii. Extent of Problems experienced by the users in kitchen garden: The extent of problems experienced by the user's in their kitchen garden are defined as the extent of problems faced regarding weeds, water clogging, plant rotation, sunlight, soil, etc. by the respondents in their kitchen garden.

iii. Household Compost: In the present study, household compost is defined as the organic compost prepared at home with the bio-degradable waste generated in the kitchen, which will be useful and act as a facilitator for the kitchen garden.

iv. Extent of knowledge of the respondents regarding household compost: The extent of knowledge of the respondents related to household composting is defined as the extent of knowledge they possess in terms of benefits of household composting, types of household composting, materials use for household composting, and process and preparation of household composting.

v. Users of Kitchen Garden: Users of kitchen garden are operationally defined as the homemakers who have their own kitchen garden to grow fruits and vegetables and use the produce developed in their households.

3.3 Locale of the Study

The locale of the study was Vadodara city, from where 200 residences having kitchen gardens were identified as the sample.

3.4 Unit of Inquiry

The unit of inquiry were the homemakers of the residences having kitchen gardens in their existing residences.

3.5 Sample size and Sampling procedure

For the present study, the sample comprised of 200 respondents from various areas of Vadodara City who had kitchen gardens in their residence. The sample for the present study was selected through purposive sampling method and the respondents were contacted through snowball technique method.

3.6 Selection of the Tool

For the present research, the Questionnaire was selected as the tool. The questionnaire is selected keeping in mind the objectives of the present study. A questionnaire was used as a tool for following reasons: (i) very large samples are desired, (ii) costs must be kept low, (iii) the target groups who are likely to have

high response rates are specialized, (iv) ease of administration is necessary, and (v) moderate response rate is considered satisfactory. (Ahuja, 2012)

3.7 Description and Development of the Tool

Based on the objectives of the present study questionnaire was prepared. While preparing the questionnaire, care was taken to include all such questions that would elicit the information needed to attain the objectives of the study.

i. The questionnaire included three sections (Appendix 1).

Section I: This section dealt with the questions regarding the demographic profile of the respondents, which included name, address, phone no, family monthly income, type of family, no. of family members, type of house, type of kitchen garden, area of the garden, shape of the garden, and preparation of compost at home.

Section II: This section dealt with the extent of problems experienced by the respondents in maintaining their kitchen garden. The respondents were asked to respond on a 3-point continuum in terms of "Always", "Sometimes", "Never" and the scores from 3 through 1 were given to the respondents respectively. To obtain the categories of extent of problems faced, the score range was divided on an equal interval basis.

Section III: This section dealt with the extent of knowledge of the respondents regarding the household compost in the kitchen garden. The respondents were asked to respond on a 3-point continuum in terms of "Aware", "Undecided", "Unaware" and scores from 3 through 1 was given to the respondents respectively. To obtain the categories of extent of knowledge regarding the household compost, the score range was divided on an equal interval basis.

3.8 Establishment of Content Validity of the Tool

"Validity is the extent to which differences found with a measuring instrument reflect true differences among those being tested. Content validity is the extent to which a measuring instrument provides adequate coverage of the topic under study." (Kothari, 2014) The scale was subjected to the establishment of content validity. To test the validity of the statements prepared, the scales were given to a

panel of 11 judges, who were from the Family and Community Resource Management and garden officials of Vadodara city. They were requested to check the clarity and relevance of the content for each subsection. They were also requested to state whether each statement fell in the category under which was listed. A consensus of 80 % among the judges was taken as a benchmark for the inclusion of the statement in the final tool.

3.9 Establishment of Reliability of the Tool

The reliability of the scales was established through split-half method. For split half method the scales were divided in two using odd and even method. The coefficient of correlation was found between the two halves. Spearman-Brown correction formula was applied to estimate the reliability coefficient for the entire scale. The reliability values were found to be high for all the scales as reported here.

Table 2: Overview of the scales with reliability value

Sr. No.	Scales	Reliability Value
1.	Extent of problems experienced by the respondents in their existing kitchen garden	0.92
2.	Extent of knowledge of the respondents regarding the household compost	0.89

3.10 Data Collection Method

The data were collected with the help of questionnaire. Data were gathered by the investigator from January to March 2021. The houses having kitchen garden were identified through snowball technique from the Vadodara city. The purpose of research was explained, and a rapport was built to get the true responses. The investigator personally distributed and collected back the filled in questionnaire. The rate of return was 100%.

3.11 Data Analysis

The procedure of analysis of the data comprised of categorization, coding, tabulation, and statistical analysis.

3.11.1 Categorization

3.11.1.1 Demographic profile of the respondents: Categorization of the data was done for the Monthly Family Income, Type of Family, No. of Family Income, Type of House, Type of Kitchen Garden, Ownership, Area of the Garden, Shape of the Garden, and composting at home.

a Monthly Family Income: It was referred to as the monthly income of the family accrued from various sources.

It was categorized as:

1. Less than 30,000
2. 30,001 to 45,000
3. 45,001 to 60,000
4. 60,001 to 75,000
5. 75,001 & above

b Type of Family: At the time of data collection, the family were falling under the following types:

1. Joint
2. Nuclear

c No. of Family Members: The number of family members staying together under one roof at the time of data collection were categorized as follows:

1. Small (1 – 3)
2. Medium (4 – 6)
3. Large (More than 6)

d Type of House: Based on the information obtained, the following categories were obtained for the type of house.

1. Bungalow
2. Duplex
3. Row House
4. Flat
5. Tenement

e Type of Kitchen Garden: As per the data collected, the following categories were obtained for the type of kitchen garden.

1. Land

2. Balcony
3. Terrace
4. Container

f Area of the Garden (in sq. ft.): Based on the information collected from respondents, the area of the garden was categorized as follows:

1. 50 sq. ft. – 200 sq. ft.
2. 201 sq. ft. – 350 sq. ft.
3. 351 sq. ft. – 500 sq. ft.
4. 501 sq. ft. – 750 sq. ft.

g Shape of Garden: As per the data, the shape of the garden was categorized as follow:

1. L – Shape
2. Rectangle
3. Square
4. U – Shape

h Composting at Home: As per the data the compost preparation at home was categorized as follow:

1. Prepared
2. Did not prepare

3.11.1.2 Extent of Problems: In this scale, various problems related to sunlight, water and drainage, soil, food crops and rotation, pollution, seedling, plants, leaves, bud ends, and fruits were considered for the statements. The respondents were asked to respond to a 3-point continuum scale in terms of always, sometimes, and never. The scores of 3 through 1 were ascribed to each of the statements which depicted the extent of the problem. The possible score ranged from 123 to 287 of which three categories having almost equal intervals were made for total 94 statements in the scale. Higher scores indicated high extent of problems experienced by the homemakers.

Table 3: Categorization and range of scores for Extent of Problems experienced by the respondents regarding their existing Kitchen Garden

Extent of problems experienced by the respondents in their existing kitchen garden	Range of score
Low Extent	123-177
Moderate Extent	178-232
High Extent	233-287

3.11.1.3 Extent of Knowledge: Under this scale, various aspects of knowledge regarding the household compost, such as, benefits of household compost, types of household compost, materials for household compost, and process and preparation of household compost were considered for the statements. The respondents were asked to respond to a 3-point continuum scale in terms of "Aware", "Undecided", "Unaware" and the scores from 3 through 1 were given to the respondents for each of the statements respectively. The possible score ranged from 66 to 198 of which three categories having almost equal intervals were made for total 66 statements of knowledge scale. Lower scores indicated low extent of knowledge of the homemakers.

Table 4: Categorization and range of scores for Extent of knowledge of the respondents regarding the Household Compost

Extent of knowledge of the respondents regarding the household compost	Range of score
Low Extent	66 - 109
Moderate Extent	110 - 154
High Extent	155 - 198

3.12 Design Development of Kitchen Garden in a Residence

The design development was mainly focused on proposing kitchen garden designs with supportive drawings viz: 2D and 3D drawings with description of the following kitchen garden types.

Table 5: Proposed Kitchen Garden Designs

Sr. No.	Title
1	Small Space Garden (On Land) (80-120 sq. ft.)
2	Medium Space Garden (On Land) (140-200 sq. ft.)
3	Large Space Garden (On Land) (200-600 sq. ft.)
4	Terrace Garden (375 sq. ft.)
5	Balcony Garden (66 sq. ft.)
6	Container Garden (Vertical and Horizontal)

3.13 Development of Booklet

The booklet developed had all the techniques and working drawings for developing a kitchen garden at home and the methods to prepare the household compost from the kitchen waste. The booklet also covered the ways to overcome the problems experienced by the respondents regarding their existing kitchen garden. The designs for the kitchen garden for various spaces available for a residence were also included in the booklet. The booklet was in regional (Gujarati) and English language for better understanding. The booklet was given for validation to panel of judges from the interior designing field and horticulture field. The booklet content was useful to all the homemakers who were interested in developing a kitchen garden at home.

3.14 An Intervention Program for Homemakers

An intervention program was conducted for the respondents of the study which was focused on enhancing the knowledge of the homemakers regarding various aspects of kitchen garden. An intervention program was delivered in a regional language (Gujarati) for better understanding of the audience. The major focus in the intervention program was to discuss the ways to solve the problems faced by the respondents in their existing kitchen garden. An intervention program also focused on enhancing their knowledge regarding household compost. The developed designs of kitchen garden for various spaces of the residence were

also explained to the respondents for creating understanding of the respondents regarding the design aspect of the kitchen garden in various spaces in their residence, namely, land, terrace, balcony, and containers. Other aspects covered under the intervention program were seasonal fruits and vegetables and their horticultural requirements, such as, soil, water, drainage, sunlight, rotation of crops, plantation, etc. for developing kitchen garden in their residences.