



A STUDY TO ASSESS THE KNOWLEDGE REGARDING EFFECT OF PESTICIDES AND PROTECTIVE MEASURES ADOPTED BY THE HOUSEWIVES IN SELECTED AREA

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Abstract: Pesticides are widely used in agriculture and domestic environments, but their improper use poses significant health hazards. Housewives are particularly vulnerable due to their involvement in food handling and household pest control. This study aims to assess the knowledge regarding the effects of pesticides and the protective measures adopted by housewives in selected areas of Nashik, Maharashtra. A quantitative, non-experimental descriptive research design was used. A total of 100 housewives were selected using non-probability convenience sampling. Data were collected using a structured questionnaire.

The findings revealed that the majority of participants had moderate knowledge regarding pesticide effects, while a smaller proportion demonstrated good knowledge. Although many participants practiced basic protective measures such as washing vegetables, the use of advanced protective practices was limited. A significant association was found between knowledge levels and selected demographic variables.

The study concludes that there is a need for targeted educational interventions to improve awareness and promote safe practices related to pesticide use.

Index Terms Pesticides, Knowledge, Housewives, Protective Measures, Health Effects, Awareness

I. INTRODUCTION

Pesticides are chemical substances used to prevent, destroy, or control pests. While they play a crucial role in increasing agricultural productivity, their excessive and unsafe use leads to serious health and environmental problems. In India, pesticide residues are commonly found in food items, posing a risk to consumers.

Housewives are at higher risk of exposure as they are primarily involved in food preparation and household activities. Exposure to pesticides can lead to acute effects such as headaches, dizziness, and skin irritation, as well as chronic conditions like cancer, reproductive disorders, and neurological problems. Despite these risks, awareness regarding safe handling and protective measures is often inadequate. Therefore, assessing the knowledge level of housewives is essential to identify gaps and promote safe practices.

3.1 Population and Sample

The population of the present study comprised all housewives residing in selected areas of Yeola, Nashik, Maharashtra. Housewives were considered as the target population due to their active involvement in household activities such as food preparation and the use of pesticides for domestic purposes, which increases their risk of exposure. The accessible population included housewives who were available during the period of data collection and were willing to participate in the study.

A sample of 100 housewives was selected for the study. The sample size was determined based on feasibility and to ensure adequate representation of the population. A non-probability convenience sampling technique was adopted to select the participants. This method was chosen due to ease of accessibility and availability of participants within the selected areas. The inclusion criteria consisted of housewives who were willing to participate and able to understand the questionnaire, while those with communication barriers or unwillingness to participate were excluded. This sampling approach enabled the researcher to collect relevant data efficiently within the available time frame.

3.2 Data and Sources of Data

The present study was based on primary data collected directly from the participants. Data were obtained from housewives residing in selected areas of Yeola, Nashik, Maharashtra, using a structured and pre-tested questionnaire. The tool consisted of two sections: Section A included socio-demographic variables such as age, education, occupation, income, family type, and area of residence, while Section B comprised multiple-choice questions to assess knowledge regarding the effects of pesticides and the protective measures adopted.

The data collection process was carried out by the investigator through direct interaction with the participants after obtaining informed consent. Participants were clearly explained the purpose of the study, and confidentiality of the information was assured. The structured format of the questionnaire ensured uniformity and reliability in data collection. No secondary data sources were used in this study, as the focus was on obtaining first-hand information from the respondents.

3.3 Theoretical framework

The present study is based on the Modified Health Belief Model (HBM), which is widely used to explain and predict health-related behaviors. This model emphasizes that an individual's actions are influenced by personal beliefs and perceptions regarding a health problem. In the context of this study, the Health Belief Model helps in understanding how housewives perceive the risks associated with pesticide exposure and how these perceptions influence their adoption of protective measures.

The key components of the model include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Perceived susceptibility refers to the housewives' belief about the likelihood of being affected by pesticide exposure, while perceived severity relates to their understanding of the seriousness of its health effects. Perceived benefits involve the belief in the effectiveness of protective measures such as washing vegetables, using gloves, and proper storage. Perceived barriers include factors such as lack of knowledge, cost, or inconvenience that may hinder the adoption of safety practices. Cues to action, such as health education, media information, or advice from health workers, act as triggers for adopting protective behaviors. Self-efficacy refers to the confidence of housewives in their ability to implement these protective measures effectively.

I. RESEARCH METHODOLOGY

Research methodology refers to the systematic process used to conduct a study in order to achieve its objectives. It includes the methods, techniques, and procedures used for data collection, analysis, and interpretation. The present study aimed to assess the knowledge regarding the effects of pesticides and the protective measures adopted by housewives in selected areas. A quantitative research approach with a non-

experimental descriptive design was adopted, as it allows the researcher to describe and analyze the existing level of knowledge without manipulating any variables.

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Thus, the Health Belief Model provides a comprehensive framework for assessing knowledge and practices related to pesticide exposure and helps in identifying factors influencing behavior, thereby supporting the development of effective health education interventions.

3.4 Statistical tools and econometric models

Statistical tools play a vital role in analyzing and interpreting the collected data in a meaningful manner. In the present study, both descriptive and inferential statistical methods were used to analyze the data collected from 100 housewives regarding their knowledge of pesticide effects and protective measures. The data were organized, coded, and analyzed using appropriate statistical techniques to draw valid conclusions.

3.4.1 Descriptive Statistics

Descriptive statistics were used to summarize and describe the characteristics of the study sample and their responses. Frequency and percentage distribution were used to analyze socio-demographic variables such as age, education, income, and other background information of the participants.

In addition, measures of central tendency and dispersion such as mean and standard deviation were used to assess the overall knowledge scores of the participants. These statistical measures helped in understanding the average level of knowledge and the variability among the respondents. The results were presented in the form of tables and graphs for better clarity and interpretation.

3.4.2 Inferential statistics

Inferential statistics were used to determine the significance of relationships and differences within the data. The paired t-test was used to compare the mean knowledge scores where applicable, in order to assess any significant differences in knowledge levels.

The Chi-square (χ^2) test was used to find the association between the level of knowledge and selected demographic variables such as age, education, and income. A significance level of $p < 0.05$ was considered statistically significant. These statistical tests helped in drawing meaningful inferences and validating the study findings.

3.4.3 Knowledge Scoring

The knowledge of the participants regarding pesticide effects and protective measures was assessed using a structured questionnaire consisting of multiple-choice questions. Each correct answer was awarded one mark, while incorrect answers were given zero marks.

Based on the total score obtained, the knowledge level was categorized as follows:

- **Excellent:** 20–25 marks
- **Good:** 15–20 marks
- **Average:** 10–15 marks
- **Poor:** Below 10 marks

This scoring system helped in classifying the participants according to their level of knowledge and facilitated easy comparison and analysis.

3.4.3.1 Reliability of the Tool

The reliability of the research tool was established using Cronbach's alpha method. The reliability coefficient obtained was **0.94**, which indicates a high level of internal consistency and reliability of the tool. This confirms that the questionnaire was appropriate and dependable for data collection in the present study.

3.4.4.2 Data Presentation

The data were organized, analyzed, and presented systematically under the following sections for clear interpretation.

Section I: Distribution of Socio-Demographic Variables

This section presents the distribution of participants according to socio-demographic variables such as age, education, occupation, income, family type, and area of residence using frequency and percentage.

Section II: Assessment of Knowledge Regarding Effects of Pesticides

This section describes the knowledge level of housewives regarding pesticide effects using frequency, percentage, mean, and standard deviation.

Section III: Assessment of Protective Measures Adopted by Housewives

This section shows the protective practices followed by housewives to prevent pesticide exposure using frequency and percentage.

Section IV: Association Between Knowledge and Selected Demographic Variables

This section presents the association between knowledge level and selected demographic variables using the Chi-square test.

IV. RESULTS AND DISCUSSION

4.1 KNOWLEDGE SCORE DISTRIBUTION

Distribution of Participants Based on Knowledge Scores (N=100)

Knowledge Category	Score Range	Frequency (f)	Percentage (%)
Excellent Knowledge	20-25	18	18%
Good Knowledge	15-20	30	30%
Average Knowledge	10-15	36	36%
Poor Knowledge	0-10	16	16%

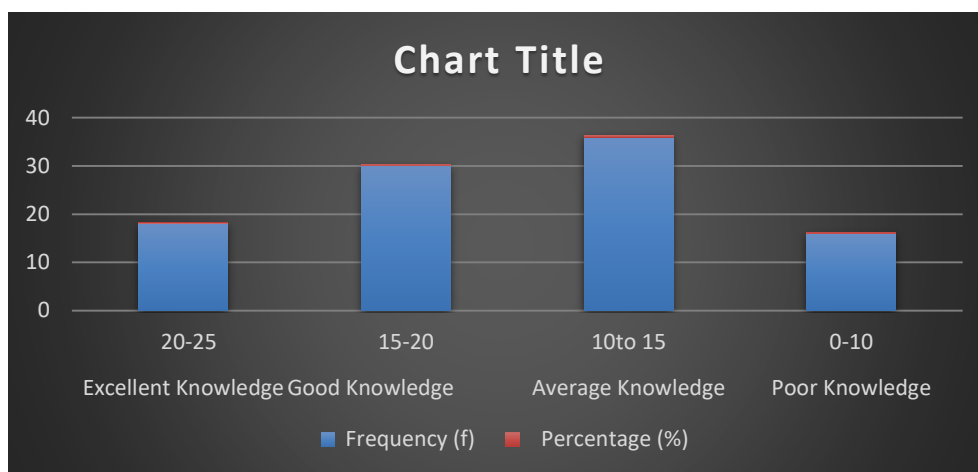
Observation:

- 36% had average knowledge.
- 30% had good knowledge.
- 18% had excellent knowledge.
- 16% had poor knowledge.

4.2 KNOWLEDGE LEVEL CLASSIFICATION

Bar graph showing knowledge levels (Poor, Average, Good, Excellent)

(Description: Most housewives demonstrated "average" and "good" levels of knowledge regarding pesticide effects and protective measures.)



4.3 Results of Descriptive Statics of Study Variables

Sr. No.	Demographic Variable	Chi-square value (χ^2)	p-value	Significance
1	Age	4.52	0.212	NS
2	Educational Qualification	8.34	0.040	S
3	Occupation	2.89	0.408	NS
4	Monthly Family Income	6.14	0.188	NS
5	Type of Family	1.22	0.542	NS
6	Area of Residence	5.68	0.058	NS
7	Use of Pesticides at Home	7.90	0.045	S

Association Between Demographic Variables and Knowledge Level

The association between demographic variables and knowledge level was tested using the Chi-square (χ^2) test. The results showed that **educational qualification** ($\chi^2 = 8.34$, $p = 0.040$) and **use of pesticides at home** ($\chi^2 = 7.90$, $p = 0.045$) had a significant association with knowledge level, as their p-values were less than 0.05. This means that housewives with higher education and those who use pesticides at home had better knowledge.

On the other hand, variables such as **age** ($\chi^2 = 4.52$, $p = 0.212$), **occupation** ($\chi^2 = 2.89$, $p = 0.408$), **monthly family income** ($\chi^2 = 6.14$, $p = 0.188$), **type of family** ($\chi^2 = 1.22$, $p = 0.542$), and **area of residence** ($\chi^2 = 5.68$, $p = 0.058$) did not show a significant association with knowledge level, as their p-values were more than 0.05.

This shows that education and direct use of pesticides influence knowledge, while other factors do not have much effect.

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