

CHAPTER - V

**SUMMARY CONCLUSION
AND RECOMMENDATIONS**

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There is an environmental crisis on a global scale. (Khoshoo, 1986; Peng, 1992; Mohd Idris, 1992; National Report to UNCED, 1992) which is the result of his-the human being's - own action. Its present deterioration has come about mainly due to industrialisation coupled with unrestrained growth of human population and the resultant degradation and mismanagement of the world environment. These have created several environmental problems. Such as pollution of air and water, deforestation, degradation of land, depletion of important resources due to over population, changing patterns of climate, increasing greenhouse effect, global warming, depletion of ozone layer and the like.

Realising the seriousness of these problems, the world has made some efforts towards their solutions. The United Nations has held several world summit conferences focusing on the need for action at all level to lead people towards a sustainable and equitable development. (The Tribune 1991, 1993)

The Government of India has framed a number of laws and has various special programmes for protecting the environment. It promotes environmental education to create awareness in people, which is considered as one of the critical elements of an "All round" attack on the world's environmental crisis. If individuals are environmentally

educated, the society and the government are automatically educated because the latter two are only the extension of an individual (Khoshoo, 1986). It is important that women are given environmental education to increase the awareness because environmentally aware and concerned women influence the entire family in its perception, value, attitude and behaviour in relation to the use of natural resources from the environment.

Family and individuals in the family take several decisions while using resources from the environment. Such decisions whether informed and deliberate or uninformed and semi-conscious, affect the environment (Paolucci et al. 1977; Kinnear and Taylor, 1993). Viewed singly, these decisions may appear to make little impact, but viewed cumulatively, they can result in a major force shaping the quality of life possible for family and affecting the destiny of human kind (Paolucci, 1977).

Consumer's purchase decisions are influenced by several factors such as the goals, values, needs and motives of the individuals; the awareness about available resources; the family and other social groups to which the individual belongs, and the natural environment (Sherlekar, 1986).

Recently, the consumers are becoming increasingly interested in assessing environmental impact of their decisions. In the foreign countries, consumers buy "Green products" bearing a "Green Eco Label". This is given by a third party after doing "Cradle-to-grave" (right from manufacturing to the disposal stage) analysis of the

product. It certifies thereafter, that the product is 'eco-friendly' and does minimum harm to the environment. Such products are quite a few in foreign countries, and yet to be found in India. There are products which are eco-friendly but may not bear any identifying label. An environmentally concerned consumer buys such products.

Environmental concern is not only important while buying, but is also equally important while using any product/service and disposing of waste. Eco-conscious consumer would try to conserve the resources of the earth by being selective in their use.

Studies regarding environmental concern, awareness, buying and consumption behaviour, attitude and similar aspects have been conducted in foreign countries.

In India energy consumption and buying behaviour in relation to consumer goods have been studied but environmental concern in buying of goods remains relatively an uninvestigated area. Hence, a need was felt to find out the extent to which Indian women are concerned about environment when they buy or consume any product or throw away the waste. With such a background, the present investigation was planned.

Objectives of the Study

1. To study the background information of the respondents.
2. To ascertain the awareness of the homemakers regarding general environmental problems/ situations.

3. To study the attitude of homemakers towards the environmental responsibilities as consumers.
4. To assess the extent of environment friendly behaviour and environmental concern reflected in the buying, consumption and waste disposal practices of selected consumer goods by the homemakers.
5. To examine the association between personal and situational variables and the environmental awareness; attitude towards environmental responsibilities; environment friendly behaviour reflected in buying, consumption and waste disposal practices of the homemakers.

Hypotheses

1. There will be a relationship between the extent of environmental awareness of homemakers and their -
 - (i) age
 - (ii) education
 - (iii) employment status
 - (iv) extent of use of sources of information.
2. The homemakers' attitude towards environmental responsibilities as consumers will be influenced by their -
 - (i) education
 - (ii) family income
 - (iii) extent of use of sources of information
 - (iv) environmental awareness.

3. The environment friendly buying behaviour of homemaker will be affected by their -
 - (i) education
 - (ii) employment status
 - (iii) family income
 - (iv) extent of use of sources of information
 - (v) environmental awareness
 - (vi) attitude towards environmental responsibilities as consumers.

4. The environment friendly consumption behaviour of homemakers will be influenced by their -
 - (i) education
 - (ii) employment status
 - (iii) family income
 - (iv) environmental awareness
 - (v) attitude towards environmental responsibilities as consumers.

5. The environment friendly waste disposal practices of homemakers will be influenced by their -
 - (i) education
 - (ii) family income
 - (iii) environmental awareness
 - (iv) attitude towards environmental responsibilities as consumers.

6. There will be an interrelationship between homemakers' environment friendly buying, consumption and waste disposal practices.

Delimitations of the Study

- A. The study was limited to the homemakers
 - (1) living in Baroda city
 - (2) who could read and write English
 - (3) who themselves purchased goods for their households
 - (4) who themselves cooked food for their families.

- B. The study was limited to buying and consumption of selected consumer goods and waste disposal practices

regarding selected waste materials.

Methodology

The present investigation was a descriptive survey, conducted on 204 homemakers living in Baroda City, selected through purposive sampling method.

The tool to collect information

A questionnaire was framed keeping in view the objectives of the study. The tool comprised of seven sections. Section one contained questions to elicit information about personal and situational characteristics of the respondents. It also contained a rating scale to find out the extent of use of sources of information. Section two contained a rating scale to examine the respondents' environmental awareness. Section three contained some questions to find out the knowledge of respondents about Eco-Mark and willingness to buy such products, the awareness about environmental organizations and knowledge about harm created by certain products during various stages of their life style. Section four was an attitude scale constructed to assess the attitude of homemakers towards environmental responsibilities as consumers. Section five, six and seven contained rating scales to find out environment friendly behaviour and environmental concern in buying, consumption and waste disposal practices. Content validity for all the five scales was established by the

judgments of the panel of 13 judges from various fields. After some modifications, pretesting was done to establish reliability of various scales through test-retest and split-half method.

Analysis of Data

Descriptive as well as relational statistics were used to analyse data. The data were presented in frequencies, percentages, mean and standard deviation for analysing various information. Multivariate analysis techniques and coefficient of correlation were used to test the hypotheses postulated for the study. F and t-test were used to study the differences within and between various groups of respondents.

Major Findings of the Study

Main findings of this investigation are presented below :

I. Background Information of the Respondents :

(1) The mean age of the respondents was 37.9 years. Thirty five per cent respondents were graduate, 33.9 per cent were postgraduate and 30.9 per cent studied below graduation. Half of the respondents were employed and half were not employed. About 35 per cent respondents had total monthly family income ranging from Rs. 5001 to 9000 and 16.2 per cent had more than Rs. 13,001. The mean income was Rs. 12027.

II. Use of Sources of Information

- (2) About 72.1 per cent of the respondents used the sources of information to medium extent. Television was the most used source, news paper second and friends were third among all the sources. Cinema was the least used source. More than half respondents collected information from these sources about the quality and 42 per cent found about price of the product. None of them mentioned about collecting information regarding environmental impact of the product.

III. Environmental Awareness

- (3) Fifteen per cent respondents had low level, 67 per cent had medium and 17.6 per cent had high level of awareness about environmental situation/problems.
- (4) On all the five sub-scales most of the respondents had medium level of awareness. Respondents ranging from 57 to 62 per cent had medium level of awareness on aspects such as Ozone layer, green-house effect; pollution, resources of the earth and quality of the environment. Regarding ecological balance 85 per cent respondents had medium level of awareness.
- (5) A significant relationship was found between environmental awareness of homemakers and their age, education, employment status and sources of information as explained by 36 per cent of the loading

variance (Sig. 0.05) revealed through Canonical Correlation analysis.

- (6) A variation in the environmental awareness scores was observed due to education ($F=44.086$, Sig. 0.01) and extent of use of sources of information ($F=3.15$, Sig. 0.05).

IV. Knowledge Regarding Environmental Organizations, Eco-Marks and Harmful Effects Created by Certain Goods on the Environment

- (7) About 52 per cent respondents were aware about voluntary environmental organization. About one third respondents knew about "Socleen", an environmental organization working in Baroda. Three per cent respondents were member of such organizations and involved themselves in the programme for tree-planting.
- (8) Many homemakers did not have correct information regarding harmful effects of certain goods from their manufacturing to disposal stage on the environment.
- (9) Eighty-three per cent homemakers did not know about 'Eco-Mark', about half of them did not know about purpose of Eco-Mark and the product on which such mark was given. Nearly three-fourth of respondents were not willing to buy products bearing Eco-Mark.

V. Attitude Towards Environmental Responsibilities as Consumers

- (10) Respondent's scores on attitude scale ranged from 57 to 90 with a mean of 81.53 of respondents had moderately

favourable attitude towards environmental responsibilities for each of the sub-scale and total scale. The group attitude was favourable (a score of 2.7 on Intensity Index ranging from 1 to 3).

- (11) On all the sub-scales of attitude scale respondents reflected favourable attitude. The Intensity values of attitude in descending order were for -Prevention of pollution(2.79); Conservation of resources (2.7); Protection of environment (2.68) and Participation in environmental activities(2.66).
- (12) About 57 to 62 per cent of homemakers had moderately favourable attitude towards environmental responsibilities for participation in activities to save the environment, conservation of resources, and protection of environment. For the aspect of prevention of pollution 82 per cent had moderately favourable attitude. On the whole 71 per cent had moderately favourable attitudes.
- (13) The homemakers' attitude towards environmental responsibilities as consumers had strong relationship with their education, family income, extent of use of sources of information and environmental awareness, as explained by 54.9 per cent of loading variance (Sig. 0.05) revealed through Canonical Correlation analysis.
- (14) Variation in the attitude towards environmental responsibilities was caused by respondents' education (F=13.92, Sig. 0.01), Family income (F=6.42, Sig 0.01),

Environmental awareness ($F=18.83$, Sig. 0.01) and extent of use of sources of information ($F=4.83$, Sig. 0.01). Correlation coefficient computed between environmental awareness and attitude showed a positive relationship between the two ($r=0.4126$, Sig. 0.001, 200 df).

VI. Environment Friendly Behaviour and Environmental Concern in Buying Behaviour

- (15) About 66 per cent respondents exhibited environment friendly behaviour to some extent in their buying practices.
- (16) Cooking oil, cold drinks and food grains in bulk were purchased in the packaging least harmful to the environment by 56.4, 61.8 and 49 per cent respondents respectively. But 72.6 per cent purchased coffee powder and 68.6 per cent purchased hair oil in the most harmful packaging reflecting least friendly behaviour for the environment. Environmental concern was not reflected by 91 per cent in case of buying cooking oil. For rest of the items respondents ranging from 11 to 51 per cent reflected environmental concern.
- (17) Among the reusable or throw-away goods, 69.6 per cent showed most environment friendly behaviour in buying ballpen, 63 per cent showed some environment friendliness in buying disposable plates/cups made of different materials, 42.2 per cent reflected most environment friendly behaviour by carrying their own shopping bag and 41.7 per cent reflected friendly

behaviour to some extent by accepting plastic carry bags from the shopkeeper only if necessary. Regarding buying/obtaining gift wrapping paper 81.9 per cent showed least friendly behaviour for the environment. Environmental concern was reflected by respondents ranging from 8 to 20 per cent, whereas 80 to 92 per cent respondents did not reflect it.

- (18) Regarding buying surface / oven cookery and electrical appliances, 65.7 per cent and 60.8 per cent respondents respectively exhibited most environment friendly behaviour whereas 66 to 70 per cent did not reflect environmental concern. While buying bucket made of plastic 61 per cent reflected the least environment friendly behaviour and only one per cent reflected environmental concern.
- (19) There were 34.3 per cent respondents who did not know anything about phosphate contents of the detergent. On the other hand there were 13.7 per cent respondents who purchased a detergent which did not contain phosphate, reflecting most friendly behaviour for the environment, but only about 8 per cent of them reflected environmental concern.
- (20) The homemakers' environment friendly buying behaviour had a fair relationship with education, employment status, family income, extent of use of sources of information, environmental awareness and attitude towards environmental responsibilities as consumers

explained by 22.5 per cent of loading variance (Sig. 0.05) revealed through Canonical Correlation analysis. Variation in the environment friendly buying behaviour was caused by the education ($F=5.7$, Sig. 0.01), environmental awareness ($F=13.43$, Sig. 0.01) and employment ($t=2.59$, Sig. 0.01).

VII. Environmentally Concerned Consumption Behaviour

(21) On the whole, 70 per cent respondents reflected environment friendly behaviour to a medium extent in their consumption behaviour. There were 17.2 per cent who reflected higher level of friendliness than 12.3 per cent who reflected lower friendliness for the environment in consumption behaviour.

(22) Environment friendly consumption behaviour to some extent was reflected by 78 per cent in relation to use of plates and by 66.7 per cent in relation to cups made of different base materials. But in case of napkins 66.6 per cent reflected the least friendly behaviour. Environmental concern was reflected by 13 to 27 per cent respondents only and 73 to 87 per cent did not reflect it.

(23) In the consumption of paper for children to do rough work, three-fourths of the respondents reflected environment friendly behaviour to some extent. In the use of paper for writing letters, almost equal percentage of respondents exhibited most environment

friendly behaviour and what friendly behaviour. Most (61.3 per cent) respondents reused the greeting cards exhibiting environment friendly behaviour some extent, as, ultimately cards would be thrown away. Environmental concern in use of paper for writing letters was reflected by 73 per cent respondents, 57 per cent reflected in case of reuse of paper for rough work and 38.7 per cent in case of use of greeting card.

(24) Most of the respondents exhibited most environment friendly behaviour through conservation while using fuel and electricity. The main purpose was 'reducing bill' and 'energy consumption'. About 66 and 77 per cent respondents, reduced flame and lighted gas burner during pre-preparation thus reflected environmental concern, 53 to 57 per cent respondents reflected environmental concern in the using pressure cooker, heating refrigerated food and switching off lights and fans. About 25 to 32 per cent reflected concern while placing lid on the vessel during cooking, warming food before having meals and soaking food grains before cooking. About 18 to 19 per cent reflected concern by choosing proper shape of the bottom of the pan and cleanliness of the burner. Only 2.45 per cent reflected environmental concern in using gas burner of small size. Only 1.47 per cent respondents expressed environmental concern while using insecticide.

(25) Seventy three per cent respondents reflected the least friendly behaviour in the use of insecticides to

control cockroaches and 58.3 per cent reflected least friendly behaviour by the use of insecticides for protecting one self from mosquitoes. About 34.3 per cent respondents followed most environment friendly method for protection from mosquitoes. Environmental concern was reflected by only 1.47 per cent respondents. Thus, nearly 98.5 per cent reflected no concern for environment.

- (26) In use of empty containers made of plastic/glass, 86 per cent exhibited most environment friendly by reusing them, but 83 per cent respondents did not reflect environmental concern in this behaviour.
- (27) A significant relationship was found between environment friendly consumption behaviour of homemakers and their education, employment status, family income, environmental awareness and attitude towards environmental responsibilities as consumers. This was explained by 58.6 per cent loading variance on computing canonical correlation analysis.
- (28) Variation in the environment friendly consumption behaviour was caused by education ($F=17.42$, Sig. 0.01), employment ($t=3.8$, Sig. 0.01), environmental awareness ($F=19.58$, Sig. 0.01), attitude towards environmental responsibilities ($F=9.64$, Sig. 0.01). The mean score of environment friendly consumption behaviour increased with the increase in educational level, level of environmental awareness and favourableness on attitude towards environmental responsibilities.

VIII. Environmentally Concerned Waste Deposal Practices

- (29) Seventy one per cent respondents reflected environment friendly behaviour to some extent in their waste disposal practices. About 18 per cent reflected lower and 10.8 per cent reflected higher extent of the environment friendly waste disposal behaviour.
- (30) Regarding disposal of bits of waste paper 81.4 per cent and for gift wrapping paper received with gift 42.6 per cent home makers reflected environment friendly behaviour to some extent. Environmental concern was reflected by 81.8 per cent and 50 per cent respectively in relation to these practices.
- (31) Around 68 per cent respondents exhibited most environment friendly behaviour in relation to empty milk bags and shopping/packaging bags made of plastic by reusing them. But environmental concern was reflected by only 5.39 per cent in case of empty milk bags and 28.9 per cent in case of empty shopping/packaging bags. This reflected that though the behaviour was most environment friendly, it was not followed due to concern for the environment.
- (32) About 87.3 per cent of the respondents showed environment friendly behaviour to some extent regarding disposal of through-away cups/plates. But 94 per cent reflected no environmental concern.

- (33) In relation to disposal of general waste material made of plastic/glass/paper and the like, 60.3 per cent of the respondents reflected most friendly behaviour for the environment by separating the constituents and selling them. This was done by 73 per cent for economic gains and by 7.32 per cent for sending various material for recycling and there by helping to reduce solid waste disposal problem. Nearly 93 per cent homemakers from the total sample did not reflect environmental concern.
- (34) Sixty six per cent of the respondents exhibited most environment friendly behaviour by disposing empty waste paper/packets after consuming eatables in parks or on roadside by definitely throwing into garbage bin. But 30.9 per cent did so only if the garbage bin was available nearby. Nearly 88 per cent of them did not reflect environmental concern.
- (35) No significant relationship was found between environment friendly waste disposal practices of homemakers and their education, family income, environmental awareness and attitude towards environmental responsibilities. Variation in the waste disposal scores was observed only due to education ($F=11.677$, Sig. at 0.01) and environmental awareness ($F=6.46$, Sig. 0.01 level).

(36) Positive relationships were found in environment friendly behaviour between buying and consumption ($r=0.4241$; sig.at 0.001 level, 200 df) ; between buying and waste disposal practices ($r=0.2878$; sig. at 0.001, 200 df) and between consumption behaviour and waste disposal practices ($r=0.3744$ sig.at 0.001, 200 df).

Conclusions

On the basis of the findings of this investigation following conclusions are drawn.

The homemakers had medium level of awareness regarding situation/problems of environment and moderately favourable attitude towards environmental responsibilities as consumers. Most of the homemakers did not know about "Eco mark", its meaning, and purpose and hence were not willing to buy the products bearing such mark. The environment friendly behaviour in buying, consumption and waste disposal were reflected to some extent by the homemakers. It was further concluded that though the environment friendly behaviour in buying, consumption and waste disposal practices was found to be at "medium" extent, very few homemakers had real environmental concern as reflected in the reasons given for the choice of alternatives provided for each behaviour. In majority of the instances environment friendly behaviour was exhibited without being conscious of it. It was concluded that personal and situational variables of the homemakers affected the environmental awareness, attitude towards environmental responsibilities, and environment friendly in buying and consumption behaviour. But environment friendly waste disposal practices were not not influenced by these variables. It was found that better the environmental awareness of homemakers, the more favourable was the attitude towards environmental responsibilities as consumers. More was the environmental

awareness and more favourable attitude towards environmental responsibilities, the more was the environment friendly buying and consumption behaviour. But the waste disposal behaviour was influenced by environmental awareness only. Thus, the theory set for the present study was accepted to a great extent.

Implications of the study

The findings of the study brought out a number of implications for the government, educational institutions and voluntary organisations.

1. Knowledge about "Ecomark" was found to be nil in majority of the homemakers. The Government of India must take steps to make people aware about this mark, its purpose and the kind of products to which it is given. This can be done even before the products bearing 'ecomark' come in the market. As revealed by this study, Television was the most used source of information, the Government can make use of this media to publicise 'Ecomark'.
2. As revealed by the study most of the homemakers had medium level of environmental awareness, the government must plan out and implement, environment education programmes. The goal of environment education is to develop a world population that is aware of and concerned about, the environment and its associated

problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards solution of current problems and the prevention of new ones. This goal was set by Belgrade Charter (1975) and Tibilisi conference (1977) as reported in Connect (1976). Such an education must be given to all but specially focused on women to increase the knowledge level of the homemakers. It is well recognised that if a woman is educated, she educates five more people around her. The Government can do this through its extension programmes. The mass-media can be used successfully for this purpose. The messages regarding environmental condition and individual actions for helping the environment must be telecasted at the most suitable timings for the women and with the popular programmes.

3. Educational institutions have a vital role to play in raising the level of environmental awareness in homemakers. Certain Home Science colleges may be offering courses related to environment education, but, such an education should be made compulsory for all the students of the university, irrespective of the departments. The Supreme Court in 1991 opined that the universities and colleges should consider the feasibility of making environment a compulsory subject at each level of college education (Powar, 1993).

4. Home Management Department of Faculty of Home Science can strengthen the existing course of Ecology and environment offered at various levels, focusing on the areas where environmental knowledge was found to be low.
5. As the study revealed, most of the homemakers reflected environment friendly behaviour in the buying and consumption to a medium extent, there is a need to increase this extent. The reasons reported by the homemakers for the choice of most or least environment friendly products revealed that mostly they were selecting environment friendly product not because of environmental reasons but for some other reason. This indicates a need to make people understand the underlying cause clearly. This can be done through the extension programmes organised by Home Management department, and Education and Extension department of Faculty of Home Science.
6. The study made it clear that though about half of the homemakers were aware of various organisations working for the cause of environment, only three per cent were member of such organisations. Based on these findings. Such organisations can take measures to increase the membership and thereby increase peoples' active participation in the programmes to save the environment.

Recommendations for Further Research

1. A comparison for environmental awareness can be made between homemakers having education from various fields of study.
2. A comparative study can be conducted between homemakers from various fields of occupations, such as teachers and non-teachers. This will help to find out the effect of occupation on the environmental knowledge and environmental concern in behaviours.
3. A study can be conducted to find out knowledge of women from various educational and income strata about voluntary organizations, especially those working for the betterment of environment. The types of activities and participation of women in those activities can be studied on a wider scale.
4. A comparative study can be conducted to find out whether there are any differences in environmental awareness of urban and rural population.
5. An in-depth study can be conducted to find out the volume and constituents of household solid waste material in various residential localities, and people belonging to various income groups. This will create an awareness in people for the need of reducing waste, reusing and recycling many of the waste material. This will help to some extent in reducing the deterioration of environmental quality.

6. Purchase behaviour related to generation of waste can be studied to find out the influence of purchase choice of certain goods, such as food, on the amount and type of waste generated in the households.
7. The motivators and barriers to recycling activities can be studied.