

EFFECTIVENESS OF TRAINING METHODS ON FISHERWOMEN IN COASTAL DISTRICTS OF TAMIL NADU

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**DEPARTMENT OF ANIMAL HUSBANDRY EXTENSION
VETERINARY COLLEGE AND RESEARCH INSTITUTE,
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NAMAKKAL - 637 002.**


2000

CERTIFICATE

This is to certify that the thesis entitled "EFFECTIVENESS OF TRAINING METHODS ON FISHERWOMEN IN COASTAL DISTRICTS OF TAMIL NADU" submitted in part fulfilment of the requirements for the award of the degree of DOCTOR OF PHILOSOPHY IN ANIMAL HUSBANDRY EXTENSION to the Tamil Nadu Veterinary and Animal Sciences University, Chennai, is a record of bona fide research work carried out by Mr. K. VEERAPUTHIRAN under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.


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ABSTRACT

EFFECTIVENESS OF TRAINING METHODS ON FISHERWOMEN IN SOUTHERN COASTAL DISTRICTS OF TAMILNADU.

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This study was designed to measure the knowledge gain and knowledge retention level of the fisherwomen who participated in different training methods in fish pickle preparation. It also aimed at assessing the symbolic adoption and skill acquisition of the learnt practice. The study of socio-personal characteristics of the fisherwomen also constituted one of the objectives of the study.

Keeping in view the above objectives, the study was conducted in southern coastal districts of Tamilnadu viz. Thoothukudi, Tirunelveli and Kanyakumari. A total of 180 respondents were randomly selected and subjected to various training methods and data were collected using a well structured and pre-tested interview schedule. In addition

to percentage analysis, cumulative frequency, paired 't' test, correlation co-efficient, multiple regression and path analysis were employed for analysis of data.

Majority of the fisherwomen who participated in the fish pickle preparation practice were young (54.44 percent) and educated upto primary school level (56.66 percent). Most of the respondents had fisheries alone as their main occupation (76.67 percent). About 60.56 percent of the sample respondents were found to be married and had upto two children (56.88 percent). More than half of the fisherwomen were belonged to low-income group(53.33 percent). Majority of the respondents (54.44 percent) had low level of experience, and the extension agency contact was moderately high (66.67 percent). Nearly three-fourths (74.33 percent) of the respondents took joint decisions regarding fisheries activities. Majority of the fisherwomen (47.27) had medium level of innovativeness . The fisherwomen selected for the study had low level of information seeking behaviour (52.88 percent). Majority of the respondent (51.11 percent)had high level of social participation. Medium level of economic motivation (43.33 percent) was observed among the respondents. More than 50 percent of the Fisherwomen had medium level of mass media exposure.

Significant knowledge gain was observed in fish pickle preparation. The knowledge gain was more in Method demonstration + Video show training method. More than three-fifths of the knowledge gained was retained after 15 days of exposure.

Among the fisherwomen one-third (32.78 percent) of the respondents had symbolically accepted to adopt the fish pickle preparation.

Among 16 variables studied, 7 variables showed a positive association while the variable, type of houses owned exhibited negative and significant association with skill acquisition.

The respondents expressed lack of marketing, financial problems, lack of time, complex technology and non-remunerative price as the problems faced by the fisherwomen who are actually involved in fish pickle preparation.

CHAPTER – I

INTRODUCTION

To awaken the people, it is the women

Who must be awakened, once she is on

The move, the family moves, the

Village moves, the nation moves.

-Pandit Jawaharlal Nehru.

Importance of fisheries in India needs emphasis. Fish and its preparation are excellent source of dietary essentials such as proteins, minerals and vitamins. Fish provides 193 kilocalories, while beef provides 114 kilo calories and chicken provides 143 kilocalories of energy for every 100 grams of their consumption. Marine Fish eating people seldom get goiter due to high Iodine. It is also recommended in preventing bone diseases.

The per capita average annual consumption of fish is 4.49 kg at national level and Tamil Nadu ranks 3rd place with 2.52 kg. The fisherfolk population of the country is estimated at one million, representing about 9 per cent of the population of India.

The potential role of rural women in agriculture and allied sectors are well known. In addition to the tasks performed at home, the fisherwomen are engaged in other productive activities. The income generating activities performed by the fisherwomen of Tamil Nadu include some of the fishing related activities such as net fabrication and mending, processing, dry fish preparation, marketing, fish handing (sorting, weighing, netting and icing) and fish trade. The present

involvement of women is predominantly not a result of deliberate attempts to exclude them from fish capture, though there is some bias against recruiting women for commercial fishing. Though women are not active partners in actual fishing operations, they are some times engaged in the collection of fishes, sardines, seaweeds etc.,

1.1. NEED FOR THE STUDY

While it is recognized that there has been an all round development of fisheries in the country during the last decade, we still have not exploited the vast potentials available in the country. Lack of awareness and knowledge regarding technical know-how has been observed as an important reason.

Women's participation needs to be acknowledged and meaningfully incorporated in planning fisheries development. Planners and decision makers need to perceive the important role of women in fisheries and bring women into the mainstream of fisheries by providing more training opportunities to women, given them ownership of assets like land, access to credit and other inputs and by involving them in planning and decision making at all levels.

In order to encourage the potential involvement of women in fisheries, it is felt that effective training method is essential to fulfill this end. Though it is said that training methods in fisheries can contribute to the advancement of knowledge among fisherwomen, but all methods are not able to achieve this. For any technology, to be in use it is necessary that the fisherwomen are trained in a proper training method. The gap between the innovation transferred and its adoption can be successfully bridged only through the proper training of fisherwomen. With this

background, it was felt pertinent to focus a study on effectiveness of training methods on fisherwomen with the following objectives:

1. To find out the effectiveness of different training methods in terms of knowledge gain and retention.
2. To study the level of skill acquired by the fisherwomen through different training methods.
3. To study the symbolic adoption of the technology by fisherwomen
4. To find out the relationship of socio-personal characteristics and selected psychological variables with knowledge gain, knowledge retention, skill acquisition and symbolic adoption.
5. To identify the problems faced by fisherwomen and their remedial measures.

1.2. SCOPE OF THE STUDY

This study aims at to find out the effectiveness of different training methods viz. Lecture aided literature, Method demonstration, Video show, Lecture aided literature + Method demonstration, Lecture aided literature + Video show, and Method demonstration + Video show as on educational tool in terms of knowledge gain, knowledge retention, symbolic adoption and skill acquisition by fisherwomen on selected subject matter areas. For this study, the fish pickle preparation was selected as the subject of extension programme. The results of the study would also give an idea about the symbolic adoption of enterprises due to different training methods. The relationship of the socio personal characteristics

of fisherwomen with their knowledge gain, knowledge retention, symbolic adoption and skill acquisition would also been explored.

1.3. LIMITATIONS

The constraints in respect of resources, sample size, conveyance, physical facilities, time and others that an academic researcher would normally encounter not ruled out in this study also. However, much care was taken to make the study objective oriented, definite and systematic. The study was carried out only in six villages of three coastal districts with one hundred and eighty respondents and hence the findings could be generalised to a limited extent only.

1.4. ORGANISATION OF THESIS

In addition to the introductory chapter, four more chapters have been organised in a logical sequence. The second and third chapters deal with review of literature and research methodology respectively. While findings and discussion are presented in the fourth chapter, the summary of the study with the salient findings and their implications are presented in the fifth chapter. The suggestions for future researchers along similar lines are also included at the end of the fifth chapter.

CHAPTER – II

REVIEW OF LITERATURE

This chapter is devoted to the retrospective analysis of the available research literature related to the present study. Such a review constituted a vital and a valuable source of information.

Review of literature is of great help to get a vivid, comprehensive picture of the previous research efforts conducted in similar lines. It provides a sound base for scientific investigation. The review also generates novel ideas and approaches for evaluating the research efforts in comparison with similar efforts done by others.

This study is a new one with regard to fisheries. A search could show that there was no past studies in line with the present investigation. Thus, the review of related studies in the field of Agriculture and Animal Husbandry was considered appropriate and hence, an attempt has been made to review the literature in the field of Agriculture and Animal husbandry.

This study attempts to find the effectiveness of extension training methods on fisherwomen. The relevant studies on this line were reviewed and have been presented in this chapter under the following sub-heads :

- 2.1. Effectiveness in terms of knowledge gain
- 2.2. Effectiveness in terms of knowledge retention
- 2.3. Symbolic adoption of learned technology
- 2.4. Skill acquisition among the respondents

2.5. Socio-personal characteristics and their contribution towards knowledge gain, knowledge retention, symbolic adoption and skill acquisition

2.1. EFFECTIVENESS IN TERMS OF KNOWLEDGE GAIN

There exists a number of training methods, projected and non-projected visual aids to learning about changes in the affective, cognitive and psychomotor domains of the learners. Research on the relative effectiveness of these extension teaching methods and aids solely and in combination were done by a number of extension scientists. To test these methods and aids, subject matter related to various farm technologies were considered and the findings are presented hereunder.

Lokhande (1959) stated that combination of result demonstration, personal contact and group discussion gave best result in changing the knowledge.

Roy (1964) and Mahajan (1966) reported that lecture was inferior to flash cards, and method demonstration was highly used for imparting knowledge.

Verma (1966) observed that lecture with chart and group discussion was superior to lecture method alone in imparting knowledge.

Lecture followed by group discussion was most effective for imparting knowledge (Roy, 1967).

Jha and Baral (1973) reported that the lecture-cum-discussion was effective to impart knowledge.

The training methods such as demonstration, exhibitions and field trials were found to be more effective (Gopal 1974).

Sinha and Verma (1976) observed that the training programme could be more effective if desired lecture followed by demonstration to be given by a combined team of both experts and progressive fisherwomen.

According to Sripal (1978), use of projected or non-projected visual during the lecture was found to increase the knowledge.

Lecture aided with specimen was more effective and superior to lecture with photographs and lecture with leaflets in gaining knowledge was reported by Selvanayagam (1980).

Agarwal and Rai (1980) observed that more women than men gained more knowledge from television viewing in areas of agricultural, health and in other areas of interest.

Raghavendra (1981) reported that both lecture and folder exerted similar influence on knowledge gain of farmers while method demonstration was found to be more effective in knowledge gain when compared with recorded talk and series of photographs with recorded explanations (Selvaraj 1981).

Randhawa *et.al.* (1984) reported that all the three methods namely lecture, lecture with aids and recreation were effective in terms of knowledge gain.

Television was identified as a potential medium in importing knowledge, skills and even in basic literacy among the mass audience as found (Anuragoonasekara 1987).

According to Rani and Achlamalaviya (1988) demonstration with flipchart and demonstration with flash card were equally effective in imparting knowledge.

Lecture with overlay chart and interpersonal communication were found to be more effective in gain of knowledge than lecture followed by overlay chart (Hosamani, 1989).

The knowledge gained by the farmers through drama mode of video exposure was found to be 52.89 per cent (Selvaraj, 1990).

Ravichandran (1992) reported that substantial knowledge gain had occurred through video education among the participants.

Thiagarajan and Kandoran (1988) observed a group of 28 fisherwomen who attended demonstration on three subjects, namely preparation of fish wafers, fish pickles and fish soup powder and found significant knowledge gain.

Thiagarajan *et.al.* (1988) observed a significant knowledge gain in the subjects taught through different extension methods. It was observed that lecture aided with slides induced maximum knowledge followed by lecture aided with charts and lecture alone. Among respondents, the young and highly educated women gained more knowledge.

Ahmed (1998) reported that the knowledge gained by farm women trainees on layer farming was 47.91 per cent.

It could be concluded from the review of above studies that extension training methods played a very important role in providing knowledge.

2.2. EFFECTIVENESS IN TERMS OF KNOWLEDGE RETENTION

Mishra and Sharma (1967) expressed that the retention of knowledge was found to be significant in all five programmes of their study. About 70.04 and 67.44 per cent of the gained knowledge was retained after 15 and 30 days of the telecast of the programmes respectively.

National Council of Education Research and Training, Delhi (1969) found that knowledge retained by the women viewers was about 58.00 per cent even after a period of 30 days of the programme telecast..

Sinha (1970) observed that primary viewers retained 82.80 per cent and secondary respondents retained 89.10 per cent of knowledge after a lapse of 15 days.

Kaur (1970) observed that women viewers retained 72.80 per cent of knowledge gained after a lapse of 15 days.

Mani (1976) stated that lecture aided with slide was superior to lecture aided with flash cards and lecture alone in knowledge retention.

Subramanian (1976) concluded that the treatment M₁ (Talk with slide show + flannel graph + exhibition cum demonstration + discussion) was found to be the most effective in terms of knowledge retention followed by the treatments M₂ (Exhibition cum

demonstration + discussion), M₃ (Talk with flannel graph + discussion) and M₄ (Talk with slide show + discussion).

Sripal (1978) reported that lecture aided with slide show was significantly superior in retention of knowledge upto 15 days in the age group of respondents above 45 years.

Selvaraj (1981) reported that the method demonstration which involved poly perception sensory organs was more effective and significant in knowledge retention. The retention of knowledge gained upto 8th day through poly perception organs was also maximum when compared to mono and depreciatory organs.

Rathakrishnan (1988) observed that more than 90.00 per cent of the respondents were able to retain the knowledge gained after 10 days of exposure.

Thiagarajan and Kandoran (1989) studied the retention of knowledge in the preparation of fish pickle, fish wafers and fish soup powder from an experimental group of 20 fisherwomen selected from three fisheries villages. The knowledge retention immediately after exposure and also at intervals of 15 days and 30 days after exposure differed significantly.

Selvaraj (1990) in his study on video teaching concluded that more than half of the information was found retained upto 15 days.

Philip (1995) observed that more than 50.00 per cent of the knowledge gained through video exposure was retained after a lapse of 15 days.

Review of the above reveals that the various training methods play a significant role in retaining the knowledge gained by the respondents.

2.3. SYMBOLIC ADOPTION OF LEARNED TECHNOLOGY

Symbolic adoption of any technology is an important stage in adoption process. It is nothing but the decision to adopt the technology. The effectiveness of extension methods used in a training programme may be assessed in terms of how it affects the behaviour of the respondents. Here the effectiveness of the selected treatments was assessed in terms of the symbolic adoption behaviour of the trainees due to their exposure to the treatments.

Lionberger (1958) stated that most of the household women had seen farm and home shows on Television. Television messages were frequently used by them at all stages of adoption. Rathakrishnan (1988) found that one-third of the televiewer had accepted symbolically to adopt the technologies telecasted on Integrated farming system.

Karthikeyan (1997) revealed that the treatments, lecture with flip chart, slides + discussion, forum and video had the highest symbolic adoption score obtained by the respondents.

Among the viewers, 90.00 per cent were in the categories of medium and high adopters, whereas 40.00 per cent of the non-viewers were low adopters on the recommended farm practices (Lakshmanan, 1982).

Ahamed (1998) found that majority of the trainees had medium level (52.50 per cent) of symbolic adoption behaviour followed by low and high levels of symbolic adoption on layer farming.

2.4. SKILL ACQUISITION AMONG THE RESPONDENTS

Schramm (1953) reported that people would certainly learn from television and learning from TV would not remain confined to facts only as skills, critical thinking and problem solving could also be learnt.

Chandrakandan (1982) stated that one-fourth (27.78 per cent) of the subjects were found to have acquired skill perfectly and fully owing to their exposure and little less than one-fourth (22.22 per cent) could not make out anything and remaining half of the subjects (45.99 per cent) acquired skill partially to varying degrees.

Selvaraj (1990) noticed highly significant difference in acquisition of skill after exposure of the video presentation.

2.5. SOCIO-PERSONAL CHARACTERISTICS AND THEIR CONTRIBUTION TOWARDS KNOWLEDGE GAIN, KNOWLEDGE RETENTION, SYMBOLIC ADOPTION AND SKILL ACQUISITION

2.5.1. Independent Variables and their Association with Knowledge gain

The findings regarding the factors that influence the knowledge gain by the subjects due to exposure to different extension training methods by various extension scientists over many years were collected and presented in the Table 1.

2.5.2. Independent Variables and their Association with Knowledge Retention

Bhaskaran (1968) concluded that young and middle aged farmers retained slightly more knowledge compared to the other age groups. In respect of education, those who had higher level of education had shown a better response to knowledge retention.

Table 1. Consolidated reviews on independent variables and their association with knowledge gain

Author (Year)	Age	Education	Occupation	Farming experience	Nature of family	Annual Income	Material possession	Mass media exposure	Extension agency contact	Scientific orientation	Economic motivation	Risk orientation	Social participation	Social economic status	Innovativeness	Urban contact	Media participation
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Bhardwaj (1970)	NS	PS	PS	PS													
Dey & Sharma (1970)		PS															
Parthasarathy (1971)	PS	PS															
Singh (1971)	NS	NS													NS		
Singh (1972)													NS				
Knight (1973)											PS						
Ganesh (1975)			NS		NS	NS					NS			NS			
Gangurde (1975)	PS	PS			PS	PS				PS				PS			
Mani (1976)	NS								PS	PS							PS
Singh and Singh (1976)	NS	NS			NS	NS						NS		NS	NS		
Duraiswamy (1977)	NS	NS			NS							NS	NS				
Ramanathan (1977)	NS								PS	NS				NS			
Sripal (1978)		PS							PS								
Challan & sinha (1979)				NS													
Chandrangi (1980)		NS	NS				NS	NS	NS				NS				
Chopra (1980)		PS															
Ramakrishna (1980)	NS			PS													NS
Selvanayagam (1980)										PS				NS			
Gupta (1981)									PS								

Author (Year)	Age	Education	Occupation	Farming experience	Nature of family	Annual income	Material possession	Mass media exposure	Extension agency contact	Scientific orientation	Economic motivation	Risk orientation	Social participation	Social economic status	Innovativeness	Urban contact	Media participation
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Selvaraj (1981)	NS	PS		NS	NS									NS			
Chandrakandan (1982)	NS	NS		NS						NS				NS			NS
Seshagiri (1982)				PS										PS			
Hansra Chopra (1987)		PS															
Kaur and Verma (1987)														NS			
Murthy (1987)									NS	NS				PS			
Manoharan (1988)		NS							PS					PS			
Sadagath (1988)																	
Krishnamurthy (1989)	NS																
Shoba&Channegowda(1989)	NS																
Mehta (1990)	NS							NS									
Raghupathy (1990)																PS	
Raghupathy & Talwar (1990)																PS	
Selvaraj (1990)	NS	NS	PS	NS	NS		PS		PS	PS		NS		NS			
Somasundram et. al. (1990)	NS	NS	NS	NS	NS	PS	PS	NS		NS	NS	NS	NS	NS			
Thilagavathy (1990)									PS								
Ananthachary (1991)		PS												PS	PS		
Bhatia & Sharma (1991)		PS	PS														
Rao (1991)	NS																

Author (Year)	Age	Education	Occupation	Farming experience	Nature of family	Annual income	Material possession	Mass media exposure	Extension agency contact	Scientific orientation	Economic motivation	Risk orientation	Social participation	Social economic status	Innovativeness	Urban contact	Media participation
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Reddy (1991)							PS										
Reddy & Bhaskaram (1991)				NS							NS						
Reddy & Venkureddy (1991)										NS							
Sripal and Philip (1991)									PS								
Subramanian (1991)	NS	NS															
Uma and Badiger (1991)		NS															
Thilagavathi & Annamalai (1992)										NS							
Kumar & Subramaniam (1994)	NS	PS	NS					NS	PS	PS		NS		NS			
Parvathy (1995)	NS	NS		NS	NS	NS	NS		NS	NS							
Jeyasubramanian (1996)	NS	PS	NS	NS	NS		NS		PS	NS		PS					
Murugesan (1996)	NES	PS	NS		NS	NS											
Nirmala (1997)	NS	NS	NS	NS	NS	NES			NS				NS		PS		
Karthikeyan (1997)	NES	NS	NS			NS							PS		NS		
Zamir Ahmed (1998)	NES	NS	NS	NS		NS		NS	NS				NS		NS		

NS : Non – significant
 PS : Positively significant
 NES : Negatively significant

Day (1968) expressed that respondents between 30-39 years of age gained and retained higher amount of knowledge and was not affected by extent of their media participation.

Hansa and Chopra (1984) found that age of the respondents and retention of gained knowledge had significant but negative correlation whereas education and retention of gained knowledge had highly significant association.

2.5.3. Independent Variables and their Influence on Symbolic Adoption

Seetharamu (1979) observed education did not influence the symbolic adoption behaviour on dairy management.

Chandrakandan (1982) reported that educational status had highly significant positive coefficients towards symbolic adoption.

Mahesha (1985) reported that education and farm size of farmers did not play significant role in influencing their symbolic adoption behaviour.

Ramanna (1989) stated that, age, education, farm size and cosmopolitaness did not influence the symbolic adoption behaviour of the trainees.

Rathakrishnan (1988) and Ahmed (1998) found a significant relationship between social participation and symbolic adoption.

Selvaraj (1990) stated that mass media exposure had highly significant and positive association with symbolic adoption.

The technology transfer methodologies such as lecture, demonstration and this combination did not affect the innovation – decision process (Balagtay and Versola 1995).

2.5.4. Independent Variables and their Influence on Skill Acquisition

The study conducted by Chandrakandan (1982) revealed that educational status, mass media exposure, urban contact, value orientation, secular orientation have had significant relationship with knowledge gain related to skill delivered. Age had shown negative significant relationship with gain in knowledge relating to skill. Regarding acquisition of skill, he stated that it had significant and positive correlations with variables like educational status, farm size, social participation, media participation and contact with extension agency.

According to Philip (1995) the variables, value orientation, mass media exposure, farm size and economic motivation had positive association with skill acquisition.

CHAPTER - III

RESEARCH METHODOLOGY

“Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to the research questions and to control variance. The strategy includes the methods to be used to gather and analyse the data or in other words, the strategy implies how the research objectives could be reached and how the problems encountered in the research would be tackled”

· Kerlinger, 1973

This chapter delineates the research techniques adopted in the study on “Effectiveness of training methods on fisherwomen in coastal districts of Tamil Nadu”. The research techniques adopted have been discussed under the following sub-headings:

- 3.1 Selection of the study area
- 3.2. Selection of respondents
- 3.3. Description of the study area
- 3.4. Selection, operationalisation and measurement of variables
- 3.5. Method of Investigation
- 3.6. Statistical tools used

3.1. SELECTION OF THE STUDY AREA

3.1.1. Selection of district

It was decided to conduct the study in the state of Tamil Nadu. Thoothukudi, Tirunelveli and Kanyakumari districts were purposively chosen for this study due to the following reasons :

1. Majority of the fisherwomen ~~are~~ involved in post-harvest technology
2. These districts are having high production of fish
3. The researcher is very much familiar with the local fishing systems and fishing community and such a familiarity is considered essential for the successful conduct of the study.
4. Necessary physical facilities ~~are~~ also available to the researcher

3.1.2. Selection of fishing Villages

The three selected districts are having the total fishing villages of 19, 7 and 44 respectively. Out of these, two fishing villages in each district, highest women population have been selected

The name of

villages selected were Therespuram & Amalinagar from Thoothukudi district, Koothankuzhi and Kooduthazhi from Tirunelveli district and Vallavilai and Colachel from Kanyakumari district.

3.2. DESCRIPTION OF THE STUDY AREA

To develop better perception about the findings and also to relate them for similar situations elsewhere, it would be necessary to know the general conditions of the study area. Hence, the details of the locale of research are presented.

3.2.1. Thoothukudi district

Thoothukudi is the 20th district in Tamil Nadu and it covers an area of 4,635 Km², accounting 3.53 per cent of the total geographical area of the state. Virudhunagar and Ramanathapuram districts are on its north, Kanyakumari district on the south, Gulf of Mannar on the east and Tirunelveli district on the west. This district has a coastal length of 121 kilometers out of the state's coastal length of 1000 kilometers which accounts for 12.10 per cent.

According to 1991 census, the total population of the district was 13,50,581 which accounts for 2.79 per cent of the total population of the state of which 48.67 per cent were males and remaining were females. The density of population was 291 per sq.km as against the state average of 372. The literacy percentage of 54.60 was higher

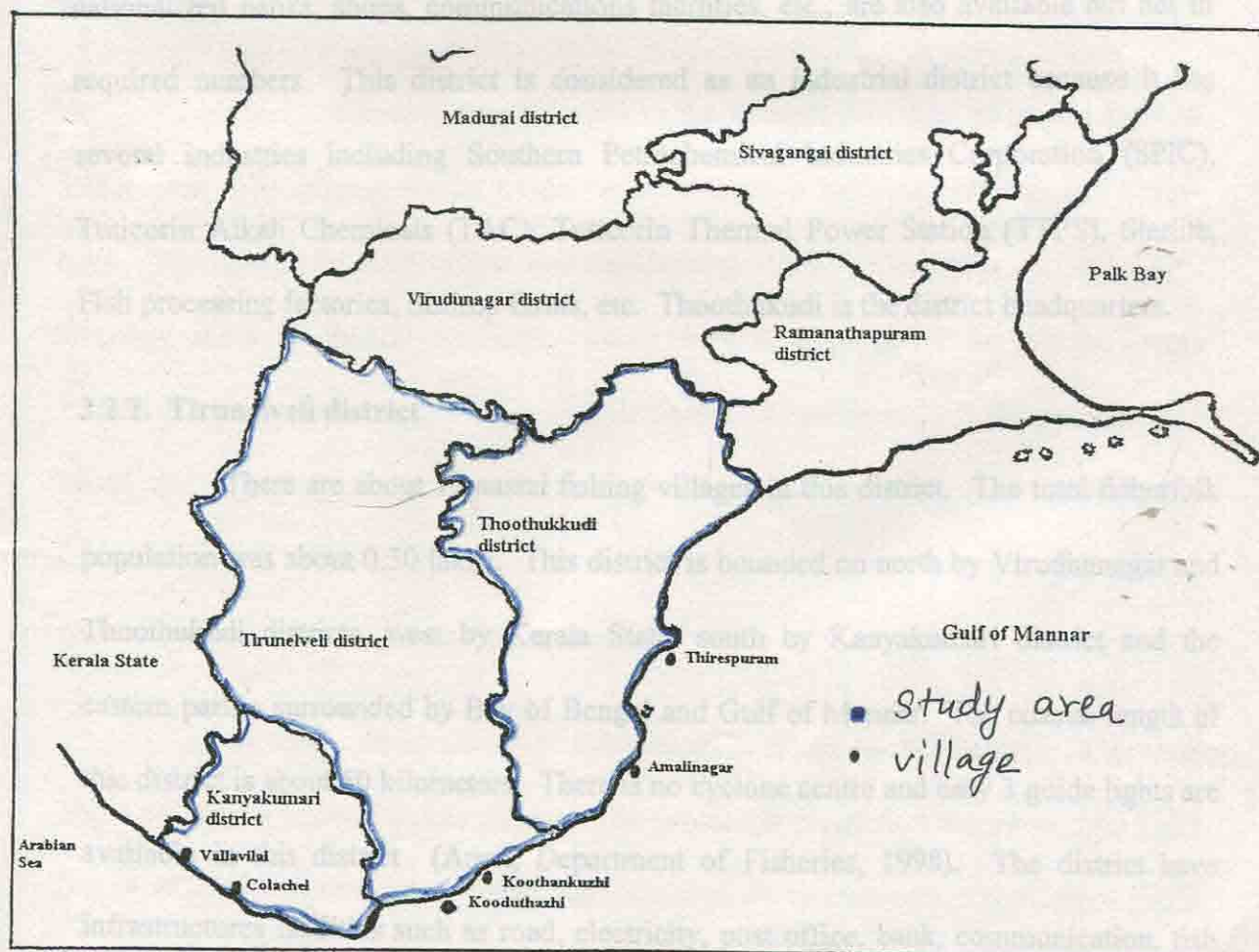
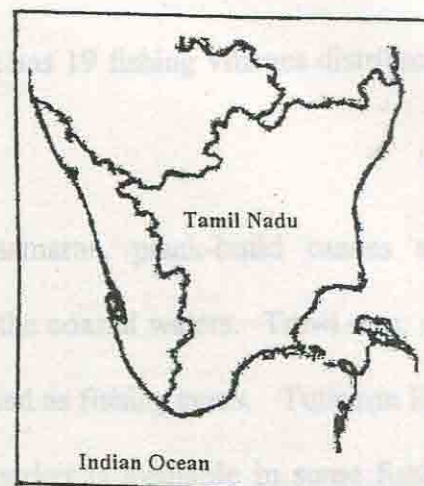
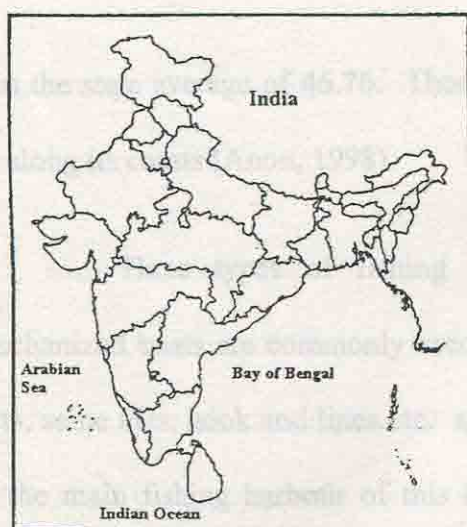


Figure 1. Map showing the study areas

than the state average of 46.76. Thoothukudi district has 19 fishing villages distributed all along its coasts (Anon, 1998).

Three types of fishing crafts viz., catamaran, plank-build canoes and mechanized boats are commonly used for fishing in the coastal waters. Trawl nets, gill nets, seine nets, hook and lines etc. are commonly used as fishing gears. Tuticorin Port is the main fishing harbour of this district. Fish market is available in some fishing villages. Ice plant is available only in Vembar and Thoothukudi and for the rest of the villages the distance to the nearest ice plant ranges from 5 to 30 km. Primary and middle schools are available in selected coastal villages. Drinking water facilities, post office, nationalized banks, shops, communications facilities, etc., are also available but not in required numbers. This district is considered as an industrial district because it has several industries including Southern Petrochemical Industries Corporation (SPIC), Tuticorin Alkali Chemicals (TAC), Tuticorin Thermal Power Station (TTPS), Sterlite, Fish processing factories, Shrimp farms, etc. Thoothukudi is the district headquarters.

3.2.2. Tirunelveli district

There are about 7 coastal fishing villages in this district. The total fisherfolk population was about 0.30 lakhs. This district is bounded on north by Virudhunagar and Thoothukudi districts, west by Kerala State, south by Kanyakumari district and the eastern part is surrounded by Bay of Bengal and Gulf of Mannar. The coastal length of this district is about 50 kilometers. There is no cyclone centre and only 3 guide lights are available in this district (Anon, Department of Fisheries, 1998). The district have infrastructures facilities such as road, electricity, post office, bank, communication, fish market, drinking water, etc., but the these are not adequate. The only river available in

this district is Thamiraparani, which is the main source of irrigation. Tirunelveli is the district headquarters.

3.2.3. Kanyakumari district

Kanyakumari district is located in the southern tip of Peninsular India, covering an area of 1671 Sq.km. It is bordered by Tirunelveli district in the north and north-east, Kerala state in the north-west, Arabian Sea is the west and the south. The district is densely populated with a total population of 14.2 lakhs with 849 persons per sq.km. This district is divided into four taluks viz., Agastheeswaram, Thovalai, Kalkulam and Vilavancode. Except of Thovalai taluk, all others are coastal taluks. Nagercoil is the district headquarters.

It stretches from the Arabian sea to the Western Ghats up to an elevation of 600 meters. The average annual rainfall in the district is 1465 mm receives in 64 rainy days. The rainfall is more or less continuous from April to December with a relative humidity from 60 to 100 per cent. There are five important river sources in the Kanyakumari district viz., Pazhayaru, Villiyaru, Thovalaiaru, Thamiraparani and Mullayaru. The irrigation projects in the district are Pechiparai, Perunchani, Kodayar and Chittar I and II. The major crops are rubber, coconut, tapioca, banana, rice, mango, cashew and other horticulture crops.

The total coastal length of this district is about 68 kilometers. There are about 44 fishing villages in this district. The fisherfolk population was about 2.09 lakhs out of which 0.49 were active fisherfolk. There is no cyclone centre and only 7 guide lights are available (Department of Fisheries, 1998). All other facilities like bus, post

office, banks, communication, fish market, drinking water facilities, etc., are available in the district.

3.3. SELECTION OF RESPONDENTS

Fisherwomen of the selected villages constituted the From each of the selected villages, the list of fisherwomen was obtained from the records of the Fisheries department. From the list, thirty fisherwomen were randomly selected from each village making a total of 180 in all. The same respondents were studied at pre-exposure for the different training methods (i.e. single and combination of training methods) to assess the knowledge gain and again a subsequent post-exposure after 15 days to assess the knowledge retention.

Table 2. villages selected, with its fisherwomen population and number of respondents selected from each village.

No.	Name of the district	Name of the fishing taluk	Name of the fishing village	Total No. of fishing women population	No. of respondents selected
1.	Thoothukudi	Thoothukudi	Thirespuram	1120	30
		Tiruchendur	Amali Nagar	1010	30
2.	Tirunelveli	Radhapuram	Koothankuzhi	680	30
			Kooduthazhai	501	30
3.	Kanyakumari	Kalkulam	Colachel	7458	30
		Vilavankode	Vallavilai	5361	30

3.4. SELECTION, OPERATIONALISATION AND MEASUREMENT OF VARIABLES

Propositions involving theoretically defined concepts are not directly testable and, therefore, the actual test is made in terms of the concepts which could be operationally defined (Blalock, 1960). Variable selection, operationalisation and their empirical measurements are discussed below.

3.4.1. INDEPENDENT VARIABLE

The variable that is antecedent to the dependent variable is termed as an independent variable (Kothari, 1985). In discussion with extension workers, social scientists, advisory committee members, staff of fisheries department and on perusal of literature, twenty ~~four~~ variables, which may likely to influence the knowledge gain, knowledge retention, symbolic adoption and skill acquisition on pickle preparation learnt through different training methods by fisherwomen were identified. These twenty four variables were sent to sixty five social scientists to judge ~~the~~ relevancy on a three point continuum most relevant, relevant and not relevant and scores assigned were 3, 2 and 1 respectively. Out of 65 judges, responses were received only from 41 judges.

Mean and co-efficient of variation was worked for all the 16 variables. The variables which had their average score value greater than the over all mean score as also their co-efficient of variance less than the overall co-efficient of variation were selected for the study. ~~The 16~~ variables selected for the study and the instruments used to measure them are given below.

3.4.1.1. Age

Age has been operationalised as the number of completed years of the respondents at the time of enquiry and the chronological age was taken as the measure. The completed years of the respondents were taken as such for analysis. The respondents were classified into three categories according to their age as followed by Venkatesan (1997).

Category	Years
Young	Upto 35
Middle	36 to 45
Old	Above 45

3.4.1.2. Educational Status

It refers to the educational qualification of the respondents. The sub-items were illiterate, functionally literate, primary education, middle education, secondary education and collegiate education. Illiterate was an individual who did not know to read and write, where as functionally literate can read and write. Primary education referred to formal schooling up to 5th Standard. Middle education referred to the education in the school from 6th to 8th standard. Secondary education meant the education from 9th standard up to plus two level. Collegiate education referred to degree / diploma after schooling. The scoring procedure developed by Mansingh (1993) was followed

Category	Score
Illiterate	1
Functionally literate	2
Primary education	3
Middle education	4
Secondary education	5
Collegiate education	6

3.4.1.3. Occupational Status

Occupational status was operationalised as the profession in which an individual spent much of his / her time, money and resources as a means to gain better livelihood to maintain oneself and his / her family.

Category	Score
Fisheries alone	3
Fisheries + labour	2
Fisheries + business	1

3.4.1.4. Marital Status

The Marital status of fisherwomen were classified as married, widowed, divorced, destitutes and unmarried. The scoring procedure followed by Senthamarai (1996) was followed in this study. The scores were given as below.

Category	Years
Married	5
Widowed	4
Divorced	3
Destitute	2
Unmarried	1

3.4.1.5. Annual Income

Annual income was operationalised as the gross income of the respondent in one calendar year. The scoring procedure followed by Rathakrishnan (1989) was used in this study.

Category	Scores
Rs. 5000 and below	1
Rs. 5001 to 15000	2
Rs. 15001 and above	3

3.4.1.6. Social participation

Social participation relates to the degree of involvement of an individual in formal organisations like Village panchayats, Fisherwomen society, Fisheries co-operative society, Fisheries training centre, Fisheries college and research Institute, Fisheries department and other related organizations. The scoring procedure followed is given below.

Category	Score
Member in one organisation	1
Member in more than one organisation	2
Office bearer in one organisation	3
Office bearer in more than one organisation	4
Distinctive features (MLA, MP's)	6

The individual scores were summed up to arrive at the final score.

3.4.1.7 Experience

It was operationalised as the number of years the respondent was occupied in the fisheries related field as a main source of her livelihood. The actual number of years of their experience in the field was considered.

Category	Score
Upto 5 years	1
6-10 Years	2
Above 10 Years	3

3.4.1.8. Mass Media Exposure

It refers to the degree of utilization of various sources of fisheries information by fisherwomen. The extent of media exposure was measured using the scale developed by ~~Singh~~ (1972).

Radio listening	Scores
Never	0
Rare	1
Less than once a week	2
Once a week	3
Often	4
Daily	5

Reading Newspaper	Scores
Never	0
Rare	1
Less than once a week	2
Once a week	3
Often	4
Daily	5

Reading bulletins, magazines	Scores
Never	0
Rare	1
Occasional	2
Regular	3

Film	Scores
More than six	3
Four to six	2
One to three	1
Never seen	0

3.4.1.9. Number of children

It referred to the actual number of children possessed by the sample women at the time of inquiry. The total number of children was considered for analysis.

3.4.1.10. Houses owned

This refers to the ~~type~~ ^{kind} of houses owned by individual. The following scoring procedure was adopted in this study.

House Owned	Number	Scores
Thatched	1	1
Thatched plus Tiled	1	2
Tiled	1	3
Tiled + Terraced	1	4
Terraced	1	5

3.4.1.11 Contact with Extension Agency

This refers to the degree to which an individual contacted extension agencies to get information on fisheries and non-fisheries aspects. The scoring procedure followed by Venkatesan (1997) ~~was used.~~

Frequency of contact	Scores
More than once a week	7
Weekly	6
Once a fortnight	5
Monthly	4
Once in 3 months	3
Once in 6 months	2
Once a year	1

Purpose of contact	Scores
Fisheries	2
Non-fisheries	1

The sum of the scores of the items constituted the total score of extension agency contact for the respondents. The respondent were classified low, medium and high using the cumulative frequency method.

3.4.1.12. Innovativeness

Innovativeness was operationalised as the degree to which a farmer is relatively earlier in adopting new ideas than the other members of the social system. Innovativeness was measured using the scoring procedure followed by Venkatesan (1997).

The scale consisted of five statement and the responses were collected on the five point continuum as given below.

Response	Score
Strongly agree	7
Agree	5
Undecided	4
Disagree	3
Strongly disagree	1

The sum of the scores for the five statements was taken as the total score for innovativeness. The maximum score one could get was 35, while the minimum was 5. The respondent were classified as low, medium and high based on their innovativeness by using cumulative frequency method.

3.4.1.13. Economic Motivation

It was operationalised as the profit maximization and relative value placed on economic ends by the fisherwomen. It was measured using the scale developed by Supe (1969). This scale consisted of five statements of which the last statement alone was negative and the rest were positive. The scoring procedure followed was detailed below.

Response	Scores
Strongly agree	7
Agree	5
Undecided	4
Disagree	3
Strongly disagree	1

The pooling of the response score measured on the five point continuum for both positive and negative statements constituted the total score obtained by a

3.4.1.16. Information Seeking behaviour

Information seeking behaviour has been operationalised as the activities performed by a fisherwomen for evaluation, information storage and transformation. It was measured by adopting the scoring procedure followed by Prameela (1992). The same is given below :

Component	Item	Method of Scoring
Information evaluation	a. Accepted unreserved b. Weighed in the light of past experience c. Discussed with other fellow fisherwomen d. Judged in the light of socio-economic condition. e. Judged in the light of climatic conditions. f. Discussed with State Fisheries department staff	Count the items. Each item is one score
Information Storage	a. By memorising b. By maintaining classified notebooks c. By conveying to family members and asking them to remember	Count the items. Each item is one score
Information transfer	a. Giving radio talk. b. Writing in newspaper c. Speaking in local meeting d. Conveying to other members about fisheries at your home. e. By demonstrations f. Lending fisheries journals to others	Count the items. Each item is one score.

The pooled scores on the above three components were considered as information processing behaviour score for each of the respondents.

3.4.2. Dependent Variable

Variable which depends upon or is a consequence of the other variables termed as a dependent variable (Kothari, 1985). Knowledge gain, knowledge retention, symbolic adoption and skill acquisition were taken up for this study.

Sl. No.	Dependent variable	Measurement
1.	Knowledge gain	Schedule developed for the study
2.	Knowledge retention	Schedule developed for the study
3.	Symbolic adoption	Schedule developed for the study
4.	Skill acquisition	Schedule developed for the study

Mc Leod (1982) defined knowledge as the facts and experiences, known by a person. Knowledge was operationalised in this study as the quantum of scientific information known to the fisher women about the preparation of fish pickles.

3.4.2.1. Knowledge gain

Knowledge was defined as the things known to an individual and presented in consutive domain knowledge was operationalised in this study as the quantum of scientific information known to the fisherwomen about the preparation of fish pickle. Knowledge gain was operationsed as the quantum of information or message newly learnt by an individual respondent due to the exposure to scientific method of fish pickle preparation.

The knowledge of the subjects was measured at two stages viz pre and post exposure to the different training methods. The difference between the pre and post exposure scores was taken as the knowledge gain by the individual respondent. A unit score was given for every correct answer and zero for a wrong answer. The maximum attainable score by an individual was 30 for the fish pickle preparation. The scores

obtained by each of the respondents for this practice converted into percentage. The difference in the knowledge level between pre exposure and immediate after exposure tests is taken as knowledge gained by the individual. The formula for knowledge gain was given below :

$$\text{Knowledge gain \%} = \frac{\text{Immediate after exposure} - \text{Pre exposure}}{\text{Maximum Score (30)}} \times 100$$

3.4.2.2. Knowledge retention

Knowledge retention was operationalised as the portion of the quantum of information (or) message retained/remembered by the fisherwomen respondent from the newly learnt through training methods after the lapse of 15 days. The difference between the recall score and the pre exposure score may be taken as retention score of the knowledge gained by an individual. The formula for work out the retention of the knowledge of the fisherwomen respondent was given below

$$\text{Knowledge retention} = \frac{15 \text{ days after exposure}}{\text{immediately after exposure}} \times 100$$

3.4.2.3. Skill acquisition

It involves physical and mental co-ordination in performing the taste of psychomotor learning in the operant learning in which skill is required.

Skill gain was operationalised as the improvement in the level of competency of the subject to prepare fish pickle as the result of her exposure to the treatment (s). It was measured in two steps-pre and post exposure to the treatment. The appropriate scores to the correct performance of the given steps by the subjects with out giving any assistance for them. The difference between the pre and post exposure scores was taken as skill gain.

3.4.2.4. Symbolic adoption

Rogers (1962) defined adoption as the decision to make full use of an innovation, and it further implies that the adopter is satisfied with the innovation before she adopts it.

Symbolic adoption was operationalised as the positive decision taken by an individual to accept and adopt an innovation which symbolically represented her adoption behaviour. The individual fisherwomen was asked to state whether she has decided to adopt each of the steps involved in the fish pickle preparation.

3.4.3. Teacher made test

A teacher made test was developed and administered for assessing the knowledge gain and knowledge retention. The test comprised of 37 questions on preparation of pickling were collected based upon the content of the practice and in consultation with 25 subject matter specialists.

The 7 questions which were less important, too easy and too difficult were rejected based on the discussion with the subject matter specialists, extension researchers, extension field functionaries and fisherwomen. The final set of questions selected for the teacher made test is presented in appendix. Score one was given for correct answer and zero for the incorrect answer.

3.4.4. Test of validity of the knowledge test

3.4.4.1. Validity

The validity of the knowledge checklist developed for the present study was established through content validity.

3.4.4.2. Content validity

Content validity refers to the repetition or sampling accuracy of the content of the measuring instrument. The content of the check list was derived from the list

of question prepared in consultation with equally competent persons on the selected practice. These questions represented the whole universe of the content of the programme. Therefore, it could be stated that the scores obtained by administering the knowledge checklist of the present study measured what it supposed (is decided) to measure.

3.5. METHOD OF INVESTIGATION

The aim of the research was to assess the efficacy of the different training methods as tools for the knowledge gain and retention among fisherwomen. The study dealt with knowledge gain, knowledge gain, knowledge retention, symbolic adoption and skills acquisition of the participants due to different extension training methods. The modes of training taken were Lecture aided literature, Method demonstration, (Plates 1 to 6) Video show, Lecture aided literature + Method demonstration, Lecture aided literature + Video show and Method demonstration + video show.

In order to test and verify the effectiveness of the selected extension methods namely Lecture aided literature, Method demonstration, Video show, Lecture aided literature + Method demonstration, Lecture aided literature + Video show, Method demonstration + Video show, the norm that subject matter content to be delivered through all the methods should be identical was followed.

Videogramme : The Video programme used for the treatment was produced with the help of private video production unit (M/s. Priya Videos) of Thoothukkudi. Based on the literature available and the consultations with the Fish processing specialists and extension specialist the basic steps involved in the "Preparation of fish pickle" was finalized and the script for commentary to accompany the visuals showing the steps of demonstration was prepared. The demonstration was carried out step by step by a trained person and the same was video – taped. Later, the prepared commentary explaining the steps was mixed with the visuals appropriately to produce the final video programme.

Method demonstration : The materials required for carrying out the method demo were made available at the disposal of the researcher. They included the fish, ingredients, vinegar, citric acid, sodium bensovate etc. An extension workers was trained to carry out the actual demonstration in the same way as done in both video show and lecture.

Lecture aided literature : The lecture aided literature technique, whereby the teacher talks while students listen and make notes, has been praised and criticized. It is agreed, however, that in order for lecturing to be effective, there must be communication between the teacher and students.

The extension training methods used for different treatments viz. lecture, the video programme and method demonstration were subjected to standardization before a group of judges from the faculty of Extension and Fish processing technology.

The above programmes were played demonstrated before them one by one to get their judgements on quality of the above methods with respect to subject matter coverage sequence of presentation and clarity (Both Audi and Visual). Necessary alternations were made in the method(s) based on the suggestions received from the judges.

Interview schedule was prepared in accordance with the objectives of the study. Before finalizing the schedule, it was pre tested in a similar area. The inconsistencies noted were rectified by discussing with the members of the advisory committee and then the schedule was finalized.

3.5.1. Experimental Design

In this study, one group, before – after (pretest – post test) design (Kerlinger, 1973) was followed. A brief description of the design adopted is presented below.

The knowledge level of all the fisherwomen respondents on fish pickle preparation was measured before ~~methods~~. The respondents were exposed to the training methods and their knowledge level immediately after exposure to the different extension training methods was measured. Similarly, the knowledge level of the respondents regarding the practice was studied 15 days after exposure. The difference in the knowledge levels of the respondent before exposure and immediately after exposure gives the knowledge gain while the portion of knowledge remembered and retained 15 days after exposure represents the knowledge retention.

3.5.2. Fish Pickle Preparation

The subject of fish pickle preparation was selected to find out the effectiveness ^{of} different training methods because it is an income – generating employment avenue for the fisherwomen which requires little labour and low investment. It is considered as an important food product and has a heavy market – demand because of its storage value. Fish pickle being a value – added fishery product it prevents the deterioration of fishes during glut period and can be used as pickle during the lean season. It has more attraction for consumption because of the pleasant flavour and nutrient content. The procedure for pickle preparation is very simple and, therefore, easily practicable by fisherwomen.

3.6. STATISTICAL TOOLS USED

The data gathered were subjected to analysis by making use of the following statistical tools :

- ❖ Mean and standard deviation
- ❖ Percentages
- ❖ Cumulative frequency
- ❖ Paired 't' test
- ❖ Pearson's simple correlation co-efficient
- ❖ Multiple regression analysis and Path analysis.

Having adopted the methodology explained, the study was conducted, data gathered, processed and subjected to statistical analysis. The outcome of the investigation has been reported in the succeeding chapters.

CHAPTER – IV

FINDINGS AND DISCUSSIONS

This chapter focuses on the findings with relevant discussion on effectiveness of different training methods under the practice of fish pickle preparation. The results are presented under the following subheads :

- 4.1. Socio-economic characteristics of fisherwomen
- 4.2. Effectiveness of training methods in respect to knowledge gain
- 4.3. Effectiveness of training methods in respect to knowledge retention
- 4.4. Skill acquisition under different training methods.
- 4.5. Symbolic adoption of learned practice.
- 4.6. Contribution of socio – personal characteristics towards knowledge gain, knowledge retention, symbolic adoption and skill acquisition

4.1. SOCIO-PERSONAL CHARACTERISTICS OF FISHERWOMEN

In order to know the background and socio-economic aspects, it is important to analyse the socio-personal characteristics of fisherwomen respondents. This would present a clear picture about the background of fisherwomen which in turn would help in suggesting appropriate policy implications. Sixteen socio-personal characteristics were studied. Relevant data were collected and analysed. The findings are presented below.

4.1.1. Age

Age is one of the important factors to be considered in this type of study. It may bring variation in their rate of learning, knowledge gain, knowledge retention,

symbolic adoption and skill acquisition. The distribution of respondents according to their age have been presented in Table 3.

Table 3. Distribution of respondents according to their age

n = 180

Age	Frequency	Per cent
Young (upto 35 years)	98	54.44
Middle (36 to 45 years)	62	34.44
Old (above 45 years)	20	11.12

Among the total respondents, majority (54.44 per cent) of fisherwomen were young followed by 34.44 per cent in the middle aged category and 11.11 per cent were found to be old.

4.1.2. Educational Status

Table 4. Distribution of respondents according to their educational status

n = 180

Educational status	Number	Per cent
Primary school level	102	56.67
Middle school level	78	43.33

Table 4 indicates that more than half of the respondents (56.66 per cent) had education up to primary school level followed by middle school (43.66 per cent) education. There were no respondents in the other educational categories.

Being womenfolk, the poor rural economic condition and non availability of educational institutions within a reachable distance might be the reasons for low level of

educational status of the respondents. The results is in accordance with Ravichandran (1992) who revealed that majority (57 per cent) of women respondents had education upto primary level.

4.1.3. Occupational Status

The occupational status of a respondents decides the time available to them for other productive or non-productive activities. Hence, an attempt was made to study the occupational status of the fisherwomen respondents and the data collected have been presented in Table 5.

Table 5. Distribution of respondents according to their occupational status

n = 180

Occupational status	Number	Per cent
Fisheries alone	138	76.67
Fisheries + Labour	27	15.00
Fisheries + Business	15	8.33

More than three-fourths (76.67 per cent) women respondents had fisheries alone as their main occupation followed by fisheries + labour (15 per cent) and fisheries + business (8.33 per cent)

The finding reveals that majority of the fisherwomen in the selected villages had fisheries as their main occupation. The heavy demand for seasonal labour, high labour cost and other problems associated with fisheries labour had motivated the fisher folk to engage in post-harvesting activities in order to reduce the cost of production. They further engaged themselves as labourers in fisheries during their free time to generate additional income.

4.1.4. Marital Status

The distribution of respondents according to their marital status is presented in the following table 6.

Table 6. Distribution of respondents according to their marital status

n = 180

Marital status	Number	Per cent
Married	109	60.56
Unmarried	63	35.00
Widowed	8	4.44

Table 6 discloses that 60.56 per cent of the fisherwomen respondents were leading married life followed by unmarried (35 per cent) and widowed (8 per cent).

4.1.5. Number of children

The data gathered from the fisherwomen respondents with regard to their number of children have been presented in Table 7.

Table 7. Distribution of respondents according to their number of children

n = 109

Number of children	Number	Per cent
Upto two	62	56.88
Above two	47	43.11

About 56.89 per cent of the respondents had upto two children, while others (43.11 per cent) had more than two children. This finding is in accordance with Pandian (1999) who reported that more than half (56.67) of the respondents had upto two children and 43.33 per cent had more than two children.

4.1.6. Annual Income

Annual family income decides the status of an individual in the social system. It includes income from fisheries, wages and other related enterprises. The income details of the fisherwomen were collected and presented in Table 8.

Table 8. Distribution of respondents according to their annual income

n = 180

Categories of annual income	Number	Per cent
Low (upto Rs. 5,000)	96	53.33
Medium (Rs. 5,001 – Rs.15,000)	55	30.55
High (More than Rs. 15,000)	29	16.11

It is revealed from the Table 8 that the majority (53.33 per cent) of the fisherwomen had low level of annual income followed by medium (30.55 per cent) and high (16.11 per cent) levels of income. This findings is in similar lines with the findings of Pandian (1999) and Uma (1994).

4.1.7. Extension Agency Contact

The data were collected to know the respondent's level of contact with different extension agencies and the details are presented in table:9

Table 9. Distribution of respondents according to their extension agency contact

n = 180

Extension Agency Contact	Number	Per cent
Low	120	66.67
Medium	43	23.89
High	17	9.44

About 66.67 per cent of the respondents were found to have low level of contact with extension agency followed by medium (23.89 per cent) and high (9.44 per cent) levels of contact.

It could be concluded that two-third of the fisherwomen had low level of contact with extension agencies. This is because ^{mostly} the male members contact the extension agencies whenever they need technical guidance on fisheries.

4.1.8. Involvement in decision making

Decision – making is an important factor as the extent of participation by fisherwomen in this area would have a direct bearing on the symbolic adoption behaviour. The data collected with regard to involvement in decision-making by the respondents have been furnished in the Table 10.

Table 10. Distribution of respondents according to their involvement in decision making

n = 180

Type of decision	Number	Per cent
Self	48	26.67
Joint	132	73.33

It could be inferred from the above Table that the percentage of fisherwomen who made self decisions on fisheries related activities was 26.67 while the remaining 73.33 per cent of them took joint decisions. This finding corroborates the results of Gurusamy (1987) and Pandian (1999) who reported that most of the women took joint consultative decisions rather than independent decisions on fisheries activities.

4.1.9. Innovativeness

To know about the tendency of individual women to try and use the new and noval ideas relatively earlier than others in the social system, data have been collected and analysed. The result of the analysis is presented in Table 11.

Table 11. Distribution of respondents according to their innovativeness

n = 180

Innovativeness	Number	Per cent
Low	53	29.45
Medium	85	47.22
High	42	23.33

From the above Table, it could be inferred that almost half of the fisherwomen (47.22 per cent) possessed medium level of innovativeness followed by low (29.44 per cent) and high (23.33 per cent) levels of innovativeness.

However, medium to high level innovativeness was seen with 70.55 percent of the sample. The results corroborated with Ahmed (1998) who concluded that the most (42.50) of the women trainees had a high degree of innovativeness.

4.1.10. Information Processing Behaviour

To know about the information processing behaviour of fisherwomen respondents, particulars were collected and subjected to analysis. The result of analysis has been furnished in Table 12.

Table 12. Distribution of respondents according on their information processing behaviour

n = 180

Information processing behaviour	Number	Per cent
Low	95	52.78
Medium	57	31.66
High	28	15.56

More than half (52.78 per cent) of fisher women possessed low level of information processing behaviour followed by medium (31.66 per cent) and high (15.56 per cent) levels of information processing behaviour.

More or less an equal proportion of the sample respondent were seen in low (52.78 per cent) and medium to high level (47.22 per cent) of information processing behaviour.

4.1.11. Social Participation

To assess the level of social participation of the respondents, data were collected and analysed. The results are presented in Table 13.

Table 13. Distribution of respondents according to their social participation

n = 180

Social Participation	Number	Per cent
Low	31	17.22
Medium	57	31.67
High	92	51.11

More than half of the respondents (51.11 per cent) had high level of social participation followed by medium (31.67 per cent) and low (17.22 per cent) levels of participation.

The high level of social participation by the respondents was attributed to their membership in more than one organisations like Village Panchayats, Fisherwomen Co-operative society, Mahila Mandals, Fisherwomen Training Centre, Adult education group etc., The result is incorporated with Pandian (1999) who reported that more than half of the respondents (53.33 per cent) possessed the high level of social participation.

4.1.12. Economic Motivation

The basic urge with every individual is to earn more, irrespective of occupation. Such an urge may prevail also among fisherwomen which may motivate them to adopt innovative income-generating practices. The level of economic motivation that existed among the respondents is shown in Table 14.

Table 14. Distribution of respondents according to their economic motivation

n = 180

Economic motivation	Number	Per cent
Low	52	28.89
Medium	78	43.33
High	50	27.78

About 43.33 per cent of the fisherwomen had medium level of economic motivation while 28.89 and 27.78 per cent of them had low and high levels of motivation respectively.

This finding gets support from Pandian (1999) who reported that more than half of the respondents (64.17 per cent) had medium level of economic motivation.

4.1.13. Mass Media Exposure

There is a belief that if a fisherwoman is exposed to different mass media, she could gather more information on latest fisheries technologies. The respondent's exposure to mass media is presented in Table 15.

Table 15. Distribution of respondents according to their mass media exposure
n = 180

Mass media exposure	Number	Per cent
Low	21	11.67
Medium	108	60.10
High	51	28.33

The above table indicates that more than 60.00 per cent of fisherwomen had medium level of mass media exposure followed by high (28.33 per cent) and low (11.67 per cent) levels of exposure.

This findings derives support from the results of Ahamed (1998) Pandian (1999) who had stated that majority of the respondents had medium level of exposure to mass media.

4.1.14. Type of Houses owned

This refers to the number of houses owned by an individual.

Table 16. Distribution of type of houses owned by the respondent
n = 180

Type of houses owned	Number	Per cent
Thatched	93	51.67
Thatched plus tiled	47	26.11
Tiled	8	4.44
Tiled plus terraced	14	7.78
Terraced	18	10.00

Table 16 reveals that 51.66 per cent of the respondents had Thatched houses, followed by Thatched plus tiled (26.11 per cent), Terraced (10 per cent), Tiled plus terraced and Tiled (4.44 per cent) houses.

4.1.15. Experience

Fisherwomen's experience could facilitate them to be effective and to communicate about fisheries activities effectively. The experience of the fisherwomen respondents was assessed and the results are furnished in Table 17.

Table 17. Distribution of respondents according to their experience

n = 180		
Fisheries Experience	Number	Per cent
Low (upto 15 years)	98	54.44
Medium (16 to 24 years)	45	25.00
High (25 years and above)	37	20.56

More than half of the respondents (54.44) had low level of experience. One-fourth (25.00) of the respondents had medium level of experience while one-fifth of the fisherwomen had rich experience in fisheries. This findings is in accordance with the findings of Jeyasree (1993) and Pandian (1999).

4.16. Level of aspiration

To know the level of aspirations of the fisherwomen respondents in familiar task, data were collected, analysed and tabulated in table 18.

Table 18. Distribution of respondents according to their level of aspiration

n = 180

Level of aspiration	Number	Per cent
Low	87	48.83
Medium	54	30.00
High	39	21.67

It reveals that 48.33 per cent of the fisherwomen had low level of aspiration followed by medium (30 per cent) and high (21.67 per cent) levels of aspiration.

It could be stated that medium to high level of aspiration was seen with more than half (51.67 per cent) of the sample fisherwomen which showed that they may have the inclination towards any enterprise related to fisheries in order to enhance their income for better standard of living.

The result is in line with that of Arularasan (1992) who observed that an overwhelming majority of the respondents had high level of aspiration and only 5 per cent belonged to low aspiration category.

Based on the analysis of socio-personal characteristics of fisherwomen the following conclusions well drawn.

- Majority of the respondents were young (54.44 per cent) followed by middle aged (34.44 per cent)
- More than half of the respondents (56.67 per cent) primary school education followed by middle school education (43.33 percent)

- More than 75 per cent of the women respondents had fisheries alone as their main occupation.
- Majority of the fisherwomen were married and more than 50 per cent of the respondents had upto two children.
- Half of the total respondents 53.33 per cent had low level of income followed by medium (30.55 per cent).
- More than 50 per cent of the respondents had low level of extension agency contact.
- More than 70 per cent of the fisherwomen took joint decision in the case of investment, production, marketing, health care, etc.
- Almost half of the total fisherwomen possessed medium level of innovativeness.
- About 52.78 per cent of fisherwomen had low level of information processing behaviour.
- More than 5% per cent of women respondents had social participation.
- About 43.33 per cent of the fisherwomen had medium level of economic motivation while 28.89 and 27.78 per cent of them had low and high levels of motivation respectively.
- Mass media exposure was found only in 60.00 per cent of the respondents.
- About 51.66 per cent of the respondents had thatched houses.
- Low level of experience was expressed by the fisherwomen.
- About 48.33 per cent of the respondents had low level of aspiration.

4.2. EFFECTIVENESS OF VARIOUS TRAINING METHODS IN TERMS OF KNOWLEDGE GAIN

The pre exposure and post exposure knowledge levels of the fisherwomen on preparation of fish pickle to various training methods were assessed in order to find out the knowledge gain.

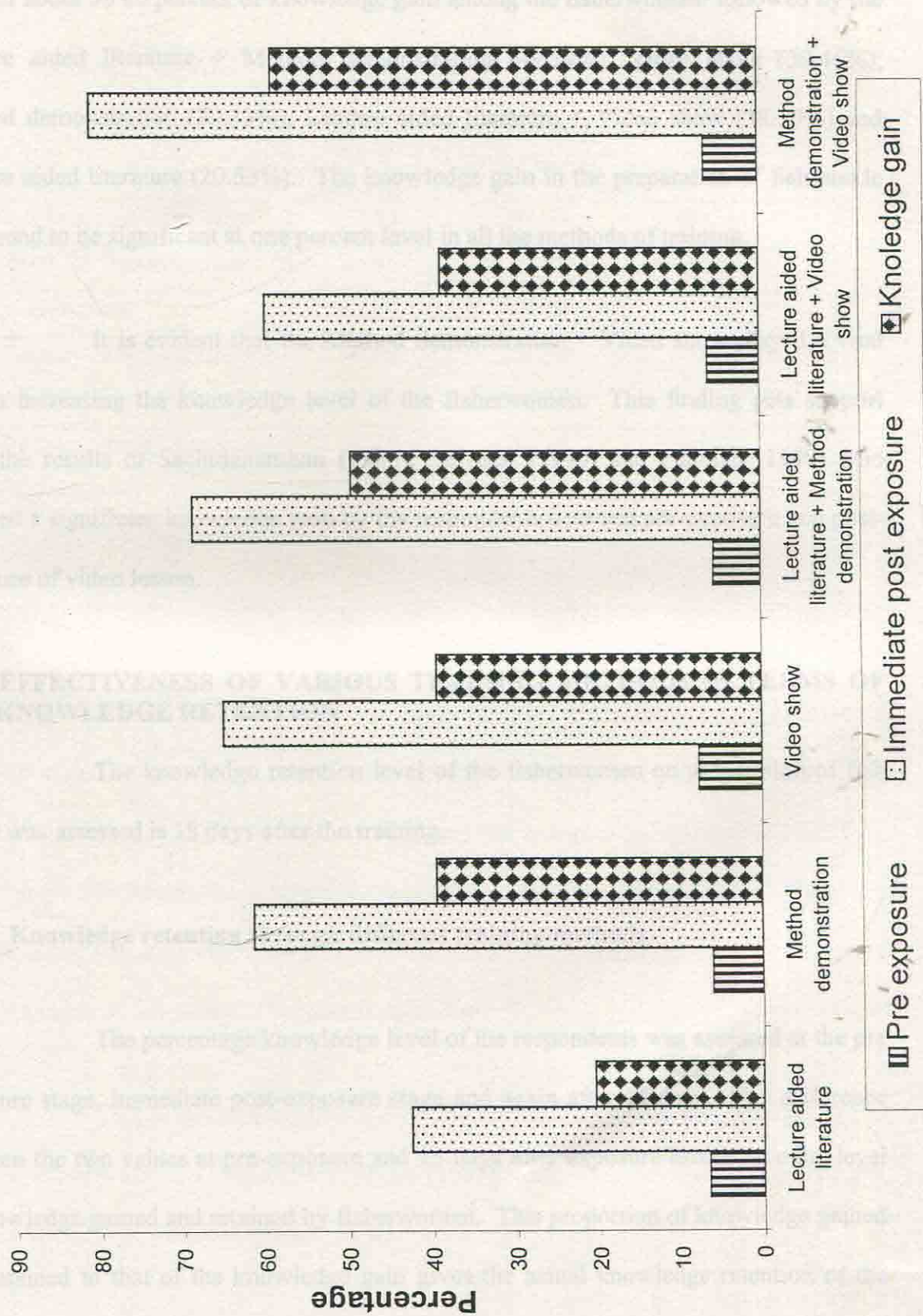
4.2.1 Knowledge Gain Through Different Training Methods

The maximum attainable scores by an individual was 30 for the preparation of fish pickle. The scores obtained by the fisherwomen through various training methods in the pickle preparation were converted into percentage. The difference in the percentage scores at two levels gave the knowledge gain of the respondents.

Table : 19 Knowledge gain through different training methods

Sl. No.	Training method	Knowledge level		Knowledge gain (%)	Rank
		Pre exposure	Immediate post exposure		
1.	Lecture aided literature	6.60	42.53	20.53	VI
2.	Method demonstration	6.06	61.45	39.48	III
3.	Video show	7.70	65.00	39.33	IV
4.	Lecture aided literature + Method demonstration	5.76	68.59	49.39	II
5.	Lecture aided literature + Video show	6.32	59.66	38.59	V
6.	Method demonstration + Video show	6.58	80.74	58.80	I

Fig. 2 Knowledge Gain Through Different Training Methods



From the table 19, it is evident that the Method demonstration + Video show had brought about 58.80 percent of knowledge gain among the fisherwoman followed by the Lecture aided literature + Method demonstration (49.39%), Video show (39.46%), Method demonstration (39.33%), Lecture aided literature + Video show (38.59%) and Lecture aided literature (20.53%). The knowledge gain in the preparation of fish pickle was found to be significant at one percent level in all the methods of training.

It is evident that the Method demonstration + Video show played a vital role in increasing the knowledge level of the fisherwomen. This finding gets support from the results of Sachidananthan (1980), Selvaraj (1990) and Pandian (1999) who reported a significant knowledge gain by the respondents between pre-exposure and post-exposure of video lesson.

4.3. EFFECTIVENESS OF VARIOUS TRAINING METHODS IN TERMS OF KNOWLEDGE RETENTION

The knowledge retention level of the fisherwomen on preparation of fish pickle was assessed is 15 days after the training.

4.3.1. Knowledge retention through different training methods

The percentage knowledge level of the respondents was assessed at the pre exposure stage, immediate post-exposure stage and again after 15 days. The difference between the two values at pre-exposure and 15 days after exposure levels gave the level of knowledge gained and retained by fisherwomen. This proportion of knowledge gained and retained to that of the knowledge gain gives the actual knowledge retention of the respondents. The results have been furnished in table 20.

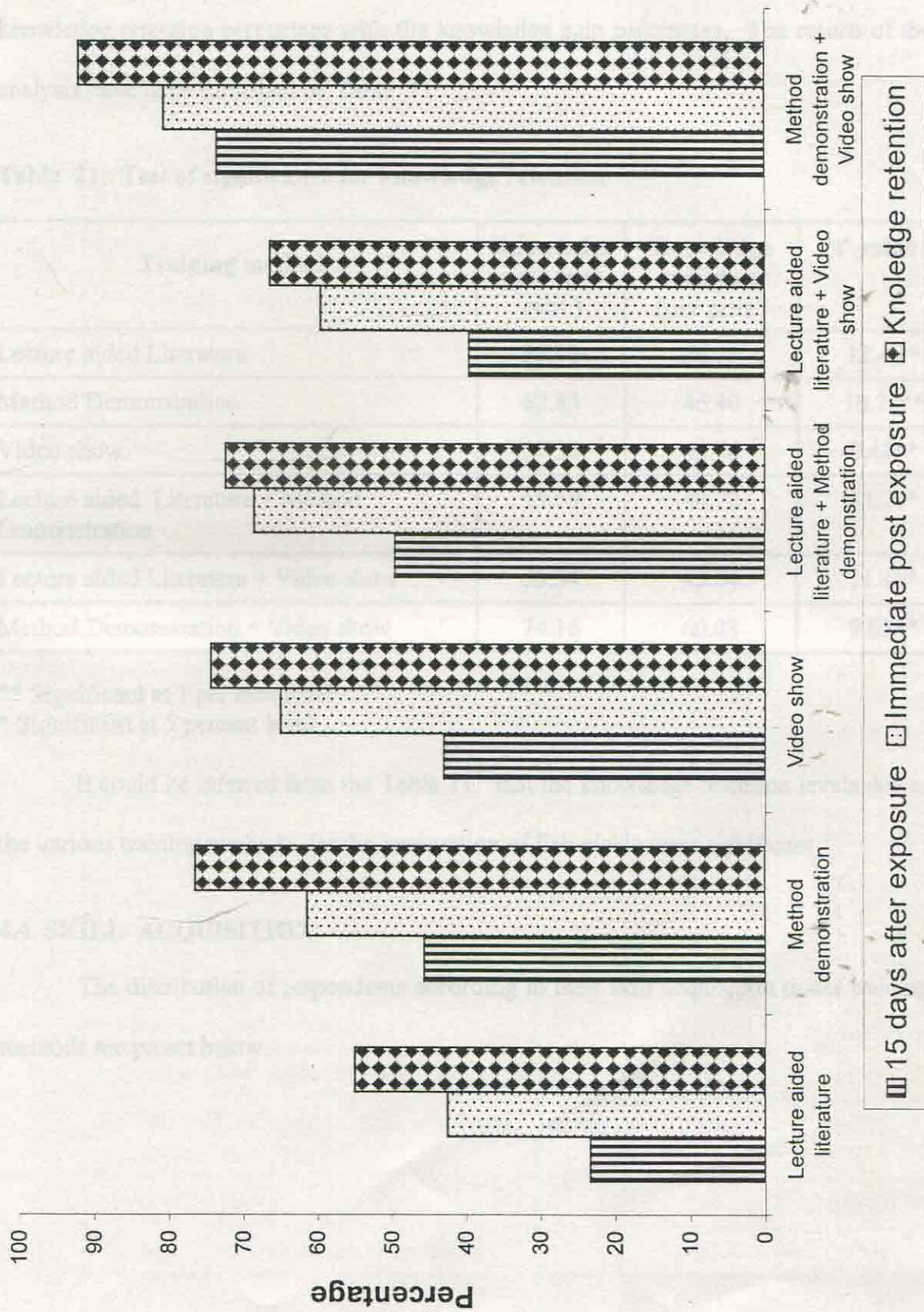
Table 20 : Knowledge retention through training methods

Sl. No.	Training method	Knowledge level		Knowledge retention (%)	Rank
		15 days after exposure	Immediate post exposure		
1.	Lecture aided literature	23.33	42.53	55.11	VI
2.	Method demonstration	45.66	61.45	76.53	II
3.	Video show	43.00	65.00	74.40	III
4.	Lecture aided literature + Method demonstration	49.66	68.59	72.40	IV
5.	Lecture aided literature + Video show	39.66	59.66	66.48	V
6.	Method demonstration + Video show	73.66	80.74	92.07	I

It could be seen from the table 20 that, the training method Method demonstration + Video show was found to be most effective in terms of knowledge retention to the tune of 92.07 percent followed by Method demonstration (76.53%), Video show (74.40%), Lecture aided literature + Method demonstration (72.40%), Lecture aided literature (66.48%) and Lecture aided literature (55.11%) with regard to the preparation of fish pickle, 15 days ask exposure.

This finding on knowledge retention derives support from the studies of Selvaraj (1990), Philip (1995) and Pandian (1999) who observed that 50 percent and more of knowledge gained was retained after a lapse of 15 days.

Fig.3 Knowledge retention through different training methods



To find out the significance of knowledge retention due to the various training methods on the fish pickle preparation, paired 't' test was performed by comparing the knowledge retention percentage with the knowledge gain percentage. The results of the analysis have been furnished in Table 21.

Table 21. Test of significance for knowledge retention

Training method	Knowledge gain (per cent)	Knowledge retention (per cent)	't' value
Lecture aided Literature	35.93	26.73	12.40 *
Method Demonstration	62.83	46.40	10.28**
Video show	57.30	48.76	9.48**
Lecture aided Literature + Method Demonstration	55.69	40.72	11.21*
Lecture aided Literature + Video show	53.34	45.04	11.46*
Method Demonstration + Video show	74.16	60.08	9.02**

** Significant at 1 per cent level

* Significant at 5 percent level

It could be inferred from the Table 21. that the knowledge retention levels due to the various training methods, for the preparation of fish pickle were significant.

4.4. SKILL ACQUISITION

The distribution of respondents according to their skill acquisition under training methods are preset below

Table 22. Distribution of respondents according to their skill acquisition due to under Lecture aided Literature

Sl. No.	Skill Acquisition Area	Lecture aided Literature	
		No	Percent
1.	Identification of raw material	5	16.66
2.	Frying of groceries	4	13.33
3.	Frying of fish muscles	7	23.00
4.	Mixing of fried groceries with fried fish muscles	6	20.00
5.	Adding of Vinegar, Citric acid and sodium benzoate	8	26.00
6.	Maturation period	25	83.33
7.	Storing of packed fish pickle bottles	21	70.00

The above Table reveals that 83.33 percent of respondents acquired skill in the area of maturation period followed by storing of packed fish pickle (70.00 percent). The only 13.33 of them acquired skill in the area of frying of groceries under the training method of lecture aided literature.

Table 23. Distribution of respondents according to their skill acquisition under method demonstration

Sl. No.	Skill Acquisition Area	Method Demonstration	
		No	Percent
1.	Identification of raw material	22	73.33
2.	Frying of groceries	20	66.66
3.	Frying of fish muscles	26	86.66
4.	Mixing of fried groceries with fried fish muscles	27	90.00
5.	Adding of Vinegar, Citric acid and sodium benzoate	19	63.33
6.	Maturation period	30	100.00
7	Storing of packed fish pickle bottles	30	100.00

PLATE I

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PLATE II



About 100 per cent of fisherwomen acquired skill in maturation period and storing of packed fish pickle bottles followed by mixing of fried groceries with fried fish muscle, frying of fish muscle, identification of raw materials, frying of groceries and adding of vinegar, citric acid and sodium benzoate by 90, 86.66, 73.33, 66.66 and 63.37 percent of respondents respectively.

Table 24. Distribution of respondents according to their skill acquisition under video show

Sl. No.	Skill Acquisition Area	Video show	
		No	Percent
1.	Identification of raw material	15	50.00
2.	Frying of groceries	16	53.33
3.	Frying of fish muscles	18	60.00
4.	Mixing of fried groceries with fried fish muscles	20	66.66
5.	Adding of Vinegar,Citric acid and sodium benzoate	15	50.00
6.	Maturation period	14	46.66
7	Storing of packed fish pickle bottles	17	63.33

About 66 percent of the respondent acquires skill in the area of mixing of fried groceries with fried fish muscles followed by mixing of fried groceries with fried fish muscles (66.66 per cent), storing of packed fish pickle bottles (63.33 per cent), frying of fish muscles (60.00 per cent), frying of groceries (53.33 per cent), identification of raw materials (50 per cent), adding of vinegar, citric acid and sodium benzoate (50 per cent) and maturation period (46.66 per cent).

PLATE III



PLATE

Table 25. Distribution of respondents according to their skill acquisition under Lecture aided literature + method Demonstration.

Sl. No.	Skill Acquisition Area	Lecture Aided Literature + Method Demonstration.	
		No	Percent
1.	Identification of raw material	22	73.33
2.	Frying of groceries	22	73.33
3.	Frying of fish muscles	25	30.66
4.	Mixing of fried groceries with fried fish muscles	24	80.00
5.	Adding of Vinegar,Citric acid and sodium benzoate	20	66.66
6.	Maturation period	30	100.00
7	Storing of packed fish pickle bottles	30	100.00

About 100 per cent of respondent had acquired skill in the areas of maturation period and storing of packed fish pickle bottles followed by mixing of fried groceries with fired fish muscles, identification of raw materials, frying of groceries and adding of vinegar, citric acid and sodium benzoate is by 80.00, 73.33, 73.33 and 66.66 of respondents respectively.

Table 26. Distribution of respondents according to their skill acquisition under Lecture aided literature + Video show

Sl. No.	Skill Acquisition Area	Lecture aided literature + Video show	
		No	Percent
1.	Identification of raw material	11	36.66
2.	Frying of groceries	14	46.66
3.	Frying of fish muscles	9	30.00
4.	Mixing of fried groceries with fried fish muscles	4	13.33
5.	Adding of Vinegar,Citric acid and sodium benzoate	5	16.66
6.	Maturation period	26	86.66
7	Storing of packed fish pickle bottles	24	80.00

About 86.66 per cent of fisherwomen acquired skill in maturation period followed by storing of packed fish pickle bottles (80 per cent) and frying of groceries (46.66 per cent). The skill acquired in the rest of the areas was found to be low.

Table 27. Distribution of respondents according to their skill acquisition under method demonstration + Video show

Sl. No.	Skill Acquisition Area	Method Demonstration. + Video Show	
		No	Percent
1.	Identification of raw material	24	80.00
2.	Frying of groceries	26	86.66
3.	Frying of fish muscles	29	96.66
4.	Mixing of fried groceries with fried fish muscles	30	100.00
5.	Adding of Vinegar,Citric acid and sodium benzoate	27	90.00
6.	Maturation period	30	100.00
7	Storing of packed fish pickle bottles	30	100.00

PLATE V



PLATE VI



The Table 27 reveals that about 100 per cent of fisherwomen acquired skill in the items of mixing of fried groceries with fried fish muscles, maturation period and storing of packed fish pickles followed by frying of Fish Muscles (96.66 percent) adding of Vinegar, Citric acid and Sodium Benzoate (90.00 percent), frying of groceries (86.66 percent) and identification of raw materials (80.00 percent).

The comparative analysis of table 22 to 27 reveals that the training method – Method demonstration + Video show is most effective in acquiring skill in all the items of fish pickle preparation by the respondents. In Method demonstration and Video show, besides involvement of senses like, hearing and seeing, doing things is also play an active role. That is why, the training method of Method demonstration and Video show was found to be effective in acquiring skills in all the items of fish pickle preparation compared to other training methods.

4.5. SYMBOLIC ADOPTION OF FISH PICKLE PREPARATION LEARNT THROUGH DIFFERENT TRAINING METHODS

The impact of different training methods in favour of symbolic adoption of the practice exposed to the respondent has been dealt in this section. The effectiveness of different training methods depends on the extent of adoption by the respondent with regard to the selected practice. Symbolic adoption is the first positive sign towards actual adoption.

Table:28 Distribution of respondents according to their symbolic adoption

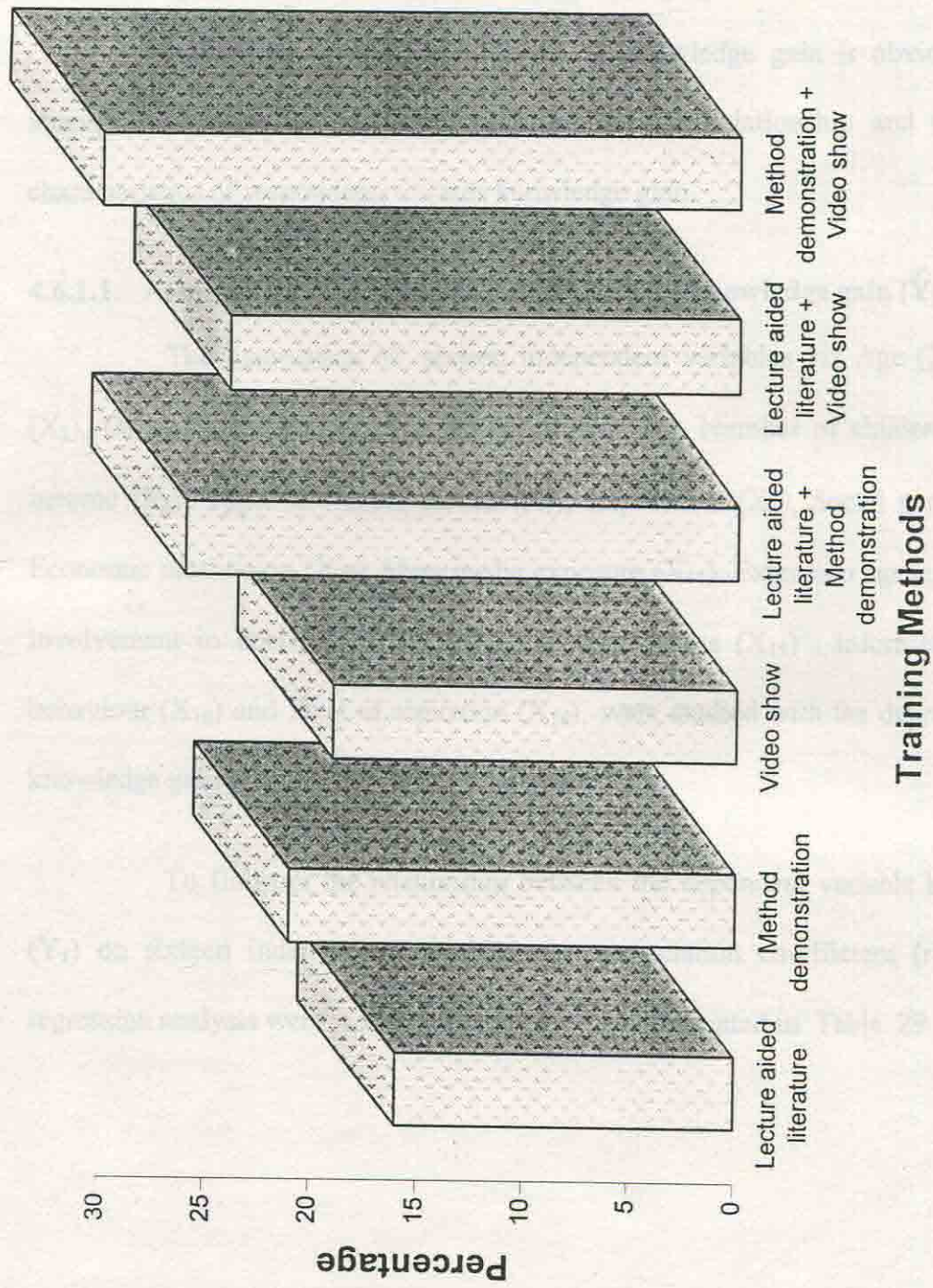
Sl.No	Training Method	Symbolically accepted to adopt		Symbolically accepted to not adopt	
		Number	%	Number	%
1	Lecture aided literature	16	53.33	14	46.67
2	Method demonstration	21	70.00	9	30.00
3	Video show	19	63.33	11	36.67
4	Lecture aided literature + Method demonstration	26	86.67	4	3.33
5	Lecture aided literature + Video show	24	80.00	6	20.00
6	Method demonstration + Video show	30	100.00	0	0.00

The table 28 reveals that the training method, Method demonstration + Video show was most effective in terms of symbolic adoption to the tune of 100 percent followed by Lecture aided literature + Method demonstration (86.67%), Lecture aided literature + Video show (80.00%), Method demonstration (70.00%), Video show (63.33%) and Lecture aided literature (53.33%) with regard to symbolically adopted by the fisherwomen.

4.6. CONTRIBUTION OF SOCIO-PERSONAL CHARACTERISTICS TOWARDS KNOWLEDGE GAIN, KNOWLEDGE RETENTION, SYMBOLIC ADOPTION AND SKILL ACQUISITION

This section gives the contribution and relationship between the social personal characteristics with the dependent variables viz knowledge gain, knowledge

Fig. 4 Symbolic adoption of of learned practice



retention, symbolic adoption and skill acquisition. For studying the association and contribution, zero order correlation, multiple regression and path analysis were used

4.6.1 Socio-personal characteristics and knowledge gain

Influences of numerous factors on knowledge gain is obvious. Hence an attempt was made in this study to bring out the relationship and contribution of characteristics of respondents towards knowledge gain.

4.6.1.1. Association of independent variables with knowledge gain (Y_1)

The association of sixteen independent variables viz Age (X_1), Education (X_2), Occupational Status (X_3), Marital Status (X_4), Number of children (X_5), Annual income (X_6), Type of House owned (X_7), Experience (X_8), Social participation (X_9), Economic motivation (X_{10}), Mass media exposure (X_{11}), Extension agency contact (X_{12}), Involvement in decision making (X_{13}), Innovativeness (X_{15}), Information processing behaviour (X_{16}) and level of aspiration (X_{14}) were studied with the dependent variables knowledge gain of the fisherwomen respondents.

To find out the relationship between the dependent variable knowledge gain (Y_1) on sixteen independent variables, the correlation co-efficient (r) and multiple regression analysis were worked out and have been presented in Table 29.

Table 29. Zero order correlation and multiple regression independent variable with knowledge gain on fish pickle preparation

Variable code	Independent Variable	'r' value	Regression		't' value
			Regression coefficient (b)	Std errors of 'b' (SE)	
X ₁	Age	-0.050 NS	0.018	0.261	0.6960 NS
X ₂	Education	0.055 NS	0.2746	0.1620	1.6949 NS
X ₃	Occupational Status	-0.092 NS	-0.2079	0.2604	0.7876 NS
X ₄	Marital Status	0.049 NS	0.336	0.5884	0.5669 NS
X ₅	Number of Children	-0.063 NS	-0.0414	0.1997	1.1517 NS
X ₆	Annual Income	-0.029 NS	-0.0228	0.0103	2.2007 NS
X ₇	Type of House owned	0.180*	-0.3253	0.2825	0.5488 NS
X ₈	Experience	0.341**	0.0194	0.0353	0.1457 NS
X ₉	Social participation	0.017 NS	0.0481	0.3301	0.6527 NS
X ₁₀	Economic motivation	0.301**	0.0146	0.0224	0.8215 NS
X ₁₁	Mass media exposure	0.701 NS	0.0154	0.0520	0.3267 NS
X ₁₂	Extension agency contact	0.407**	0.0353	0.419	0.3675 NS
X ₁₃	Involvement in decision making	0.425**	0.223	0.0485	0.7282 NS
X ₁₄	Level of aspiration	0.398**	0.0427	0.0305	0.7321 NS
X ₁₅	Innovativeness	0.401**	0.0390	0.0850	3.1749 NS
X ₁₆	Information processing behaviour	0.362**	0.0223	0.0305	0.4587 NS

$$R^2 = .400375$$

$$F = 4.2984$$

$$a = 2.4099$$

* = significant at 5 percent

** = significant at 1 percent

NS = Non significant.

The Table 29 indicates that out of sixteen variable studied seven variable viz. Experience (X_8), Economic motivation (X_{10}) Extension agency contact(X_{12}), Involvement in decision making(X_{13}), Innovativeness(X_{15}), Information processing behaviour(X_{16}) and Level of aspiration (X_{14}) , showed a positive and significant association with knowledge gain at one per cent level of probability while the Type of houses owned(X_7) exhibited a positive significant association with knowledge gain at 5 per cent level of probability.

The correlation values of the remaining variables showed non-significant association with the knowledge gain. It may be stated that the knowledge gain on fish pickle preparation was the function of experience, economic motivation, involvement in decision making, extension agency contact, innovativeness, Information processing behaviour and level of aspiration.

4.5.1.2 Path analysis

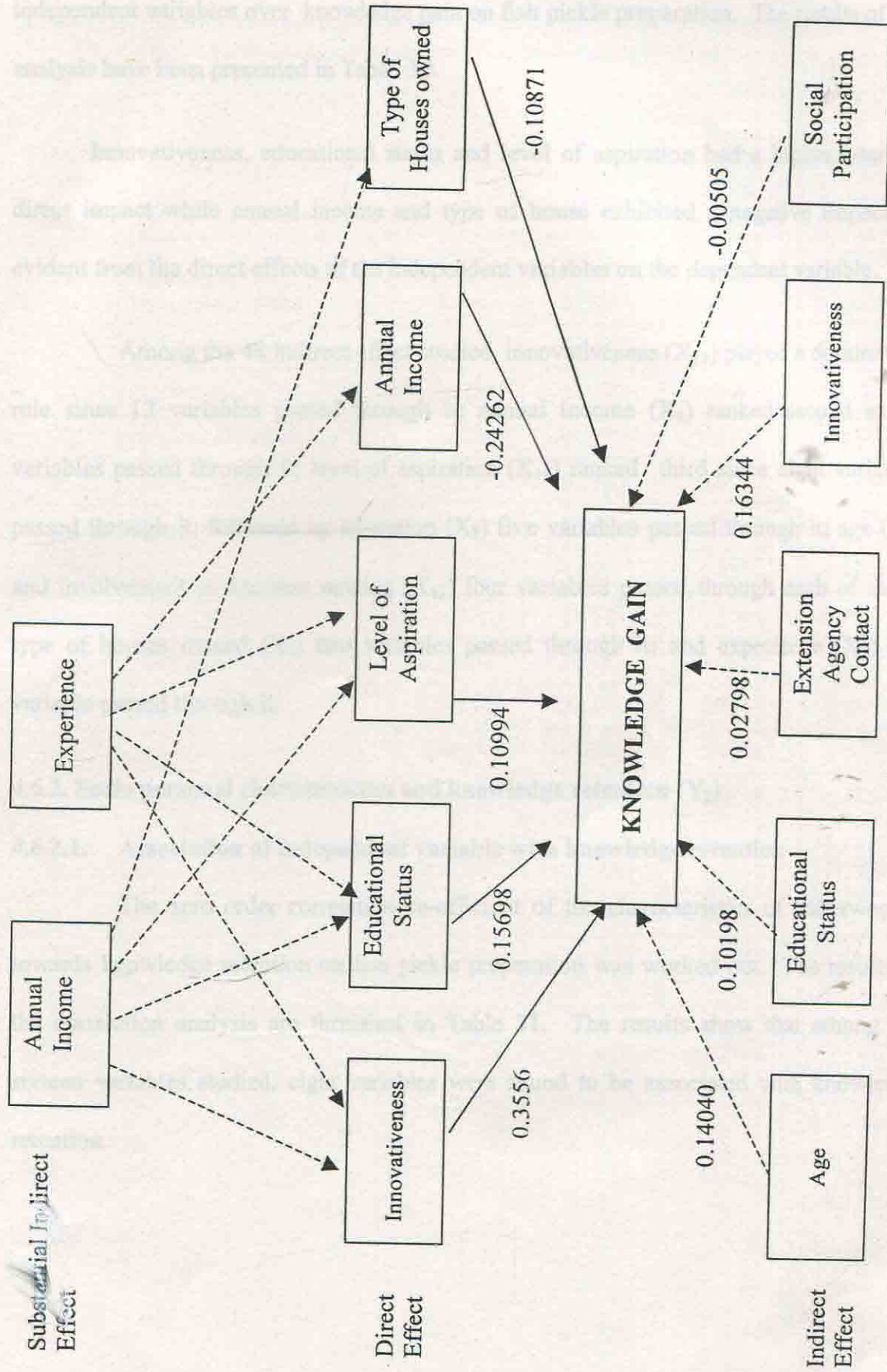
Knowledge gain has been associated with a number of variable and these variables themselves are inter-related. This interdependence among the independent variables itself becomes a contributing factor towards knowledge gain, thereby making the correlation co-efficients unrealistic indices. Path analysis permits the separation of direct and indirect effects through the other related variables by apportioning the correlation co-efficient. Hence path analysis was attempted.

The same set of dependent and independent variables were subjected to path analysis in order to find out the direct, indirect and substantial indirect effects by the

Table 30. Path co-efficient showing direct, indirect and substantial indirect effects of independent variables on dependent variable - knowledge gain (Y₁) on fish pickle preparation

Independent variable	Variable code	Direct effect	Indirect effect	Substantial indirect effect		
				I	II	III
Age	X ₁	0.09040	0.14040	-0.06959 (X ₂)	-0.04021 (X ₇)	-0.03438 (X ₁₅)
Educational status	X ₂	0.15698	0.10198	-0.04828 (X ₁₅)	0.04407 (X ₆)	-0.04007 (X ₁)
Occupational status	X ₃	-0.06402	0.02798	-0.02208 (X ₆)	0.01850 (X ₂)	-0.01145 (X ₁₄)
Marital status	X ₄	0.05165	0.00265	-0.04769 (X ₁)	0.03690 (X ₂)	0.02230 (X ₆)
Number of children	X ₅	-0.01988	0.04312	0.04549 (X ₁)	-0.03620 (X ₁₅)	-0.03424 (X ₇)
Annual income	X ₆	-0.24262	-0.21362	0.08478 (X ₁₅)	0.05406 (X ₁₄)	0.04334 (X ₈)
Types of houses owned	X ₇	-0.10871	0.07129	-0.04627 (X ₆)	0.03343 (X ₁)	-0.03156 (X ₁₅)
Farming experience	X ₈	0.08076	-0.26024	0.17489 (X ₁₅)	0.07861 (X ₁₄)	0.06403 (X ₁₃)
Social participation	X ₉	0.01195	-0.00505	-0.03976 (X ₆)	0.02483 (X ₂)	0.02471 (X ₁₅)
Economic motivation	X ₁₀	0.07078	-0.23022	0.15623 (X ₁₅)	-0.10668 (X ₆)	0.06427 (X ₁₄)
Mass media exposure	X ₁₁	0.06433	-0.00667	0.01788 (X ₁₅)	0.01365 (X ₆)	0.01243 (X ₂)
Extension agency contact	X ₁₂	0.05291	-0.35409	0.22339 (X ₁₅)	-0.12094 (X ₆)	0.08132 (X ₁₄)
Involvement in decision-making	X ₁₃	0.09262	-0.33238	0.20739 (X ₁₅)	-0.08669 (X ₆)	0.07371 (X ₁₄)
Level of aspiration	X ₁₄	0.10994	-0.28806	0.21775 (X ₁₅)	-0.11931 (X ₆)	0.06210 (X ₁₃)
Innovativeness	X ₁₅	0.3556	-0.16344	0.06732 (X ₁₄)	-0.05785 (X ₆)	0.05402 (X ₁₃)
Information processing behaviour	X ₁₆	0.04750	-0.31450	0.13724 (X ₁₅)	0.05972 (X ₁₄)	0.05116 (X ₁₃)

Fig 5. Path diagram showing direct, indirect and substantial indirect of independent variables on knowledge gain



independent variables over knowledge gain on fish pickle preparation. The results of the analysis have been presented in Table 30.

Innovativeness, educational status and level of aspiration had a higher positive direct impact while annual income and type of house exhibited a negative impact as evident from the direct effects of the independent variables on the dependent variable.

Among the 48 indirect effect studied, innovativeness (X_{15}) played a dominating role since 13 variables passed through it; annual income (X_6) ranked second as 11 variables passed through it; level of aspiration (X_{14}) ranked third since eight variables passed through it; followed by education (X_2) five variables passed through it; age (X_1) and involvement in decision making (X_{13}) four variables passed through each of them; type of houses owned (X_7) two variables passed through it; and experience (X_8) one variable passed through it.

4.6.2. Socio personal characteristics and knowledge retention (Y_2)

4.6.2.1. Association of independent variable with knowledge retention

The zero order correlation co-efficient of the characteristics of fisherwomen towards knowledge retention on fish pickle preparation was worked out. The results of the correlation analysis are furnished in Table 31. The results show that among the sixteen variables studied, eight variables were found to be associated with knowledge retention.

Table 31. Zero order correlation and multiple regression of independent variables with knowledge retention on Fish pickle preparation

Variable code	Independent variable	'r' Value	Regression		't' Value
			Regression co-efficient	Standard error of 'b' (SE)	
X ₁	Age	-0.057	0.0036	0.0278	0.1296NS
X ₂	Educational status	-0.016	0.1399	0.1730	0.8090 NS
X ₃	Occupational status	-0.037	-0.1309	0.2818	0.4647 NS
X ₄	Marital status	0.013	0.0458	0.6281	0.0729 NS
X ₅	Number of children	-0.064	-0.0399	0.2132	0.1870 NS
X ₆	Annual income	0.120	-0.0163	0.0110	1.4751 NS
X ₇	Types of houses owned	-0.216*	-0.4652	0.3016	1.5426 NS
X ₈	Farming experience	0.412**	0.0623	0.0377	1.6530 NS
X ₉	Social participation	-0.002	-0.0591	0.3524	0.1677 NS
X ₁₀	Economic motivation	0.319**	0.0045	0.0239	0.1867 NS
X ₁₁	Mass media exposure	0.045 NS	0.0321	0.0555	0.5778 NS
X ₁₂	Extension agency contact	0.465**	0.0540	0.0448	1.2068 NS
X ₁₃	Involvement in decision-making	0.341**	-0.0335	0.0518	0.6479 NS
X ₁₄	Level of aspiration	0.418**	0.0368	0.0326	1.1304 NS
X ₁₅	Innovativeness	0.463**	0.0624	0.0291	2.1542 *
X ₁₆	Information processing behaviour	0.200**	-0.1147	0.0908	1.2635 NS

$$R^2 = 0.404810$$

$$F = 3.0879^{**}$$

$$a = 3.9966$$

* - Significant at 5 per cent level

** - Significant at 1 per cent level

NS - Non significant

Type of houses owned (X_7) exhibited a negatively significant association with knowledge retention on fish pickle preparation. Experience (X_8), economic motivation (X_{10}), extension agency contact (X_{12}), involvement in decision making (X_{13}) level of aspiration (X_{14}) innovativeness (X_{15}) and information seeking behaviour exhibited a positively significant association with knowledge retention at one percent level of probability.

The multiple regression analysis was also performed to find out the contribution to find out the contribution of each independent variable to the knowledge retention on fish pickle preparation. The results are presented in Table 31. The coefficient of determination (R^2 value) was found to be 0.404810 which implies 40.48 per cent variation in the knowledge retention on pickle preparation.

It could be concluded from the Table 31 out of sixteen variables taken for analysis of partial regression, only one variable ie, innovativeness (X_{15}) was found to have a positive significant contribution to knowledge retention at 5 per cent level of probability.

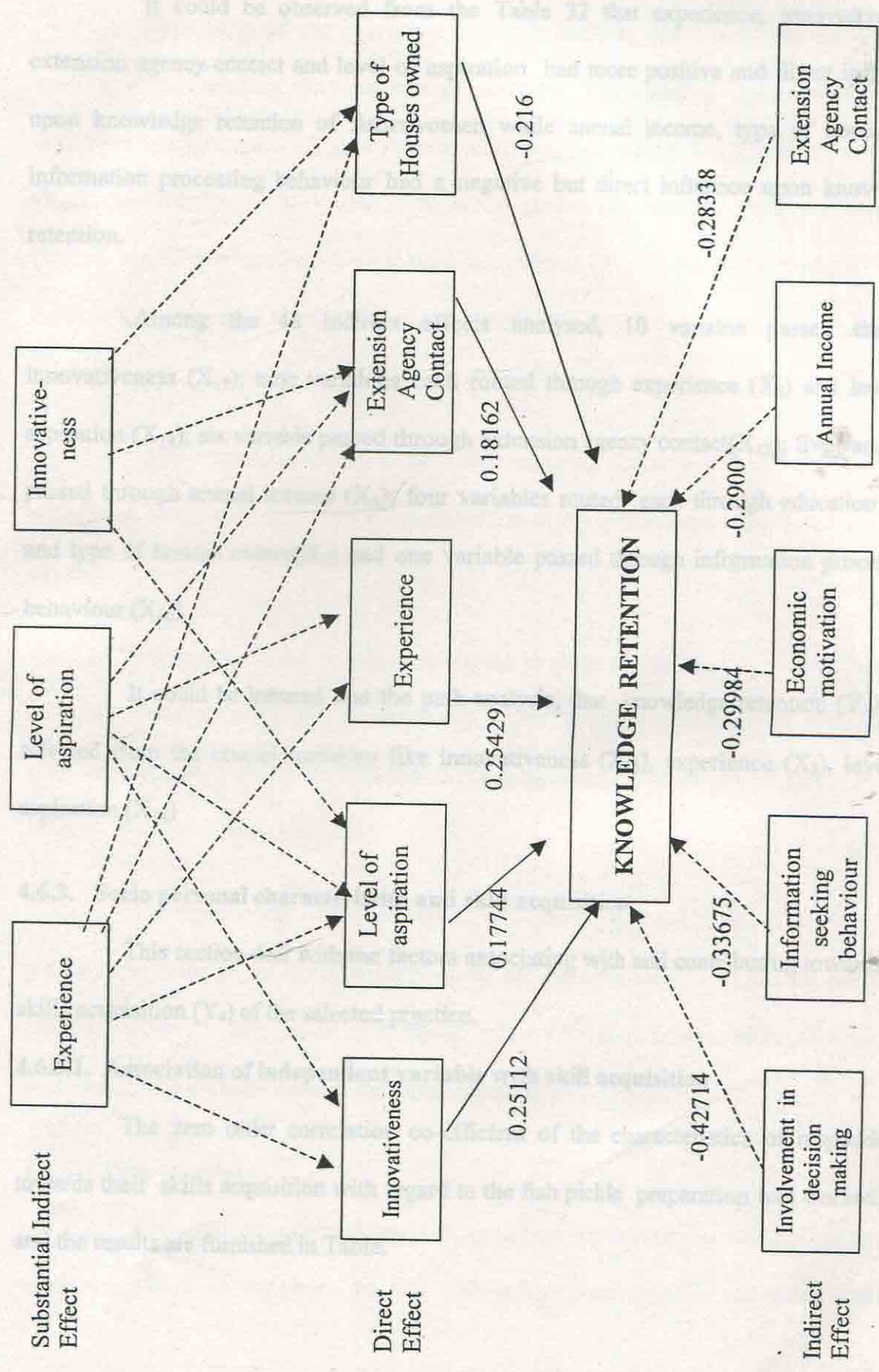
4.6.2.2. Path analysis

Knowledge retention has been associated with a number of variables and these variables are inter-related. Path co-efficient analysis permits the separation of direct and indirect effect through the other related variables apportioning the correlation. Hence path co-efficient analysis was performed.

Table 32. Path co-efficient showing direct, indirect and substantial indirect effects of independent variables on dependent variable knowledge retention (Y₂) on fish pickle preparation

Independent variable	Variable code	Direct effect	Indirect effect	Substantial indirect effect		
				I	II	III
Age	X ₁	0.01759	0.07459	0.07040 (X ₈)	-0.05629 (X ₇)	-0.03472 (X ₂)
Educational status	X ₂	0.07832	0.09432	-0.06846 (X ₈)	0.03088 (X ₆)	-0.03474 (X ₁₄)
Occupational status	X ₃	-0.03948	-0.00248	0.02473 (X ₁₆)	-0.01848 (X ₁₄)	-0.01547 (X ₆)
Marital status	X ₄	0.00694	-0.00606	-0.04562 (X ₈)	0.02804 (X ₇)	0.01841 (X ₆)
Number of children	X ₅	-0.01874	0.04526	0.04991 (X ₈)	-0.04794 (X ₇)	0.02689 (X ₂)
Annual income	X ₆	-0.17000	-0.29000	0.09053 (X ₁₂)	0.08726 (X ₁₄)	0.05988 (X ₁₅)
Types of houses owned	X ₇	-0.15220	0.06380	-0.03242 (X ₁₆)	0.02229 (X ₁₅)	-0.01882 (X ₁₂)
Farming experience	X ₈	0.25429	-0.15771	0.12904 (X ₁₂)	0.12688 (X ₁₄)	0.12352 (X ₁₅)
Social participation	X ₉	-0.01438	-0.01238	-0.02786 (X ₆)	-0.02476 (X ₂)	0.01745 (X ₁₅)
Economic motivation	X ₁₀	0.02116	-0.29784	0.11692 (X ₁₂)	0.11034 (X ₁₅)	0.10374 (X ₁₄)
Mass media exposure	X ₁₁	0.04730	0.00230	-0.01262 (X ₁₅)	0.00957 (X ₆)	0.00620 (X ₂)
Extension agency contact	X ₁₂	0.18162	-0.28338	0.18068 (X ₈)	0.15777 (X ₁₅)	0.13126 (X ₁₄)
Involvement in decision-making	X ₁₃	-0.08614	-0.42714	0.17579 (X ₈)	0.14647 (X ₁₅)	0.12224 (X ₁₂)
Level of aspiration	X ₁₄	0.17744	-0.24056	0.18183 (X ₈)	0.15379 (X ₁₅)	0.13435 (X ₁₂)
Innovativeness	X ₁₅	0.25112	-0.21188	0.12508 (X ₈)	0.11410 (X ₁₂)	0.10866 (X ₁₄)
Information processing behaviour	X ₁₆	-0.13657	-0.33675	0.11549 (X ₈)	0.09692 (X ₁₅)	0.09639 (X ₁₄)

Fig. 6. Path diagram showing direct, indirect and substantial indirect of independent variables on knowledge retention



It could be observed from the Table 32 that experience, innovativeness, extension agency contact and level of aspiration had more positive and direct influence upon knowledge retention of fisherwomen while annual income, type of house and information processing behaviour had a negative but direct influence upon knowledge retention.

Among the 48 indirect effects analysed, 10 variable passed through innovativeness (X_{15}); nine variables each routed through experience (X_8) and level of aspiration (X_{14}); six variable passed through extension agency contact(X_{12}); five variables passed through annual income (X_6); four variables routed each through education (X_2) and type of houses owned(X_7) and one variable passed through information processing behaviour (X_{16})

It could be inferred that the path analysis, that knowledge retention (Y_2) was affected from the crucial variables like innovativeness (X_{15}), experience (X_8), level of aspiration (X_{14})

4.6.3. Socio personal characteristics and skill acquisition

This section deal with the factors associating with and contributing towards the skills acquisition (Y_4) of the selected practice.

4.6.3.1. Association of independent variable with skill acquisition

The zero order correlation co-efficient of the characteristics of respondents towards their skills acquisition with regard to the fish pickle preparation was worked out and the results are furnished in Table.

The results of the correlation analysis indicate that among the 16 variables studied, eight variables viz., number of children (X_5), types of houses owned (X_7), extension agency contact (X_{12}), involvement in decision making (X_{13}), level of aspiration (X_{14}), innovativeness (X_{15}) and information processing behaviour (X_{16}) exhibited a positive significant association with skills acquisition (Y_4) of fish pickle practice taught to the fisher women. This significant association was found to occur at one per cent level of probability.

The correlation values of the remaining eight variables showed non-significant association with the skills acquisition of the respondents with regard to pickle practice.

4.6.3.2 Contribution of independent variables to skills acquisition

Multiple regression analysis was performed to establish the contribution of each independent variable towards the skills acquisition. The results of the regression analysis are furnished in Table 33.

The co-efficient of determination (R^2 -value) was 0.411434 indicating 41.14 per cent variation in the skills acquisition of the fisherwomen. It could be concluded from the Table 33 that out of 16 variables taken for analysis, none of the variable had contributed significantly towards the skills acquisition.

4.6.3.3. Path analysis

Path analysis was performed to apportion the correlation co-efficient for the skills acquisition on fish pickle practice with independent variables into direct, indirect

effects which contributed significantly towards the dependent variable. The results of the path analysis have been tabulated and presented in Table 34.

The variables, involvement in decision making, experience, marital status, economic motivation and level of aspiration had more direct and positive influence upon skills acquisition. But extension agency contact had more direct but negative impact.

Table 33. Zero order correlation and multiple regression of independent variables skill acquisition on fish pickle preparation.

Variable code	Independent variables	'r' value	Regression		'r' value
			Regression co-efficient (b)	Standard error of 'b' (SE)	
X ₁	Age	0.049NS	0.0042	0.0069	0.6134 NS
X ₂	Educational status	-0.170 NS	-0.0152	0.0426	0.3563 NS
X ₃	Occupational status	-0.124 NS	-0.0565	0.0695	0.8128 NS
X ₄	Marital Status	-0.001 NS	0.2699	0.1548	1.7428 NS
X ₅	Number of children	0.258**	-0.0621	0.0525	1.1827 NS
X ₆	Annual income	-0.024 NS	0.0022	0.0027	0.833 NS
X ₇	Type of house owner	0.441 **	-0.0082	0.0743	0.1099 NS
X ₈	Farming experience	-0.058 NS	0.0105	0.0093	1.1339 NS
X ₉	Social Participation	0.375**	-0.1076	0.0869	1.2391 NS
X ₁₀	Economic Motivation	0.066 NS	0.0079	0.0059	1.3431 NS
X ₁₁	Mass media exposure	0.337 **	0.0130	0.0137	0.9469 NS
X ₁₂	Extension agency contact	0.444 **	-0.0175	0.0110	1.5860 NS
X ₁₃	Involvement in decision-making	0.429 **	0.0225	0.0128	1.7623 NS
X ₁₄	Level of aspiration	0.335 **	0.0066	0.0080	0.1864 NS
X ₁₅	Innovativeness	0.323 **	0.0048	0.0072	0.6754 NS
X ₁₆	Information processing behaviour		0.0073	0.0224	0.3276 NS

$$R^2 = 0.411434$$

$$F = 3.2494^{**}$$

$$a = -1.7143$$

* - Significant at 5 per cent level

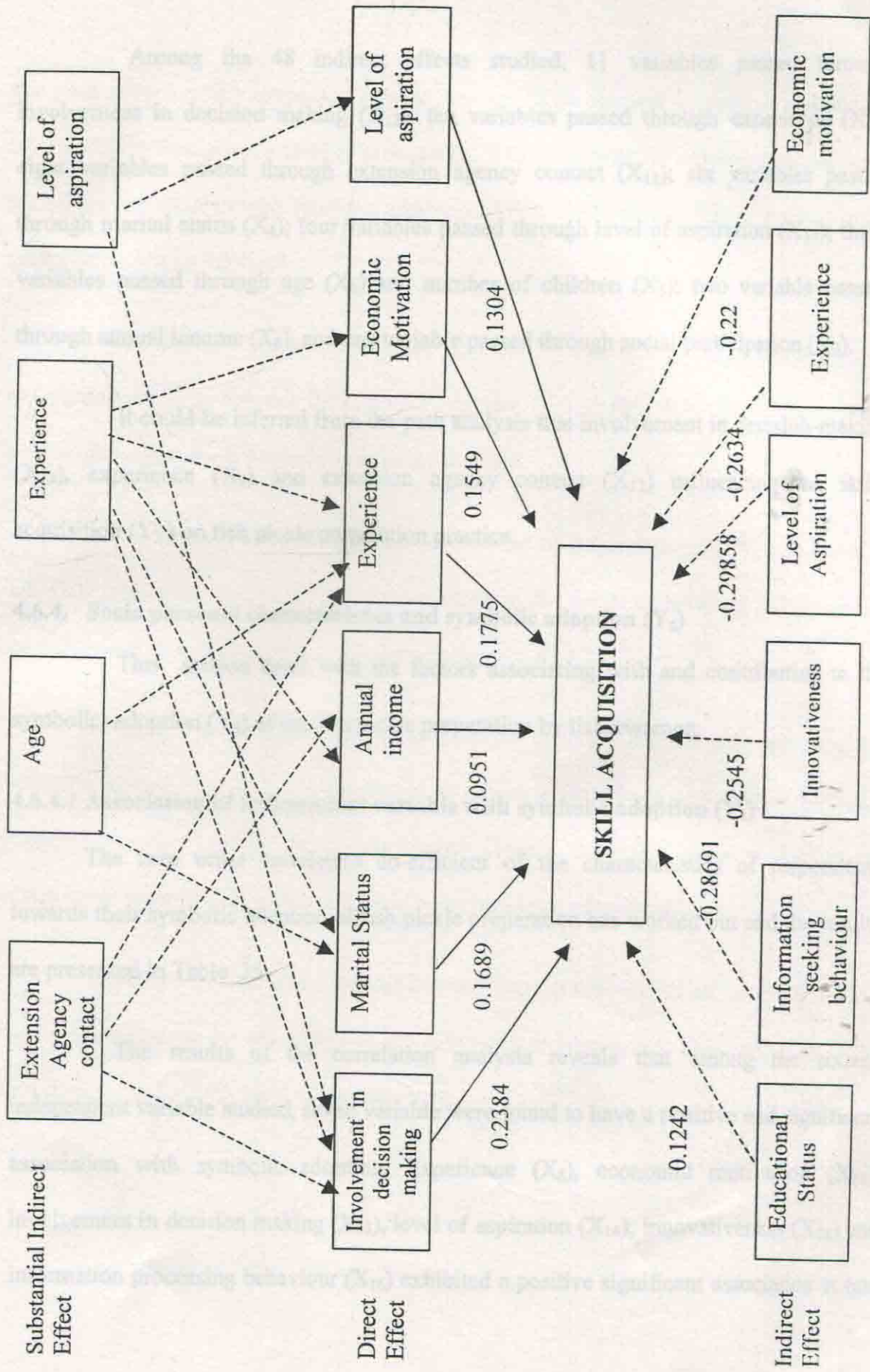
** - Significant at 1 per cent level

NS - Non significant

Table 34. Path co-efficient showing direct, indirect and substantial indirect effects of independent variables on dependent variable skill acquisition (Y₃) on fish pickle preparation

Independent variable	Variable code	Direct effect	Indirect effect	Substantial indirect effect		
				I	II	III
Age	X ₁	0.08474	0.03574	-0.08910 (X ₄)	-0.06069 (X ₅)	0.04914 (X ₈)
Educational status	X ₂	- 0.03511	0.13489	-0.04779 (X ₈)	0.03970 (X ₄)	-0.03903 (X ₁₃)
Occupational status	X ₃	- 0.07029	0.05371	-0.01358 (X ₁₄)	0.00866 (X ₆)	0.00759 (X ₁₃)
Marital status	X ₄	0.16890	0.10090	-0.04470 (X ₁)	-0.03341 (X ₁₃)	-0.03185 (X ₈)
Number of children	X ₅	- 0.12061	-0.11961	-0.04401 (X ₄)	0.04264 (X ₁)	0.03566 (X ₁₃)
Annual income	X ₆	0.09512	-0.16288	-0.12107 (X ₁₂)	0.09527 (X ₈)	0.08520 (X ₁₃)
Types of houses owned	X ₇	- 0.01103	0.01297	-0.03799 (X ₅)	-0.03111 (X ₄)	0.03134 (X ₁)
Farming experience	X ₈	0.17752	-0.26348	-0.17258 (X ₁₂)	0.16484 (X ₁₃)	0.09326 (X ₁₄)
Social participation	X ₉	- 0.10814	-0.05014	0.01755 (X ₄)	0.01617 (X ₅)	0.01559 (X ₆)
Economic motivation	X ₁₀	0.15495	-0.22005	-0.15637 (X ₁₂)	0.12255 (X ₁₃)	0.10430 (X ₈)
Mass media exposure	X ₁₁	0.07889	-0.01289	-0.01796 (X ₁₀)	0.00824 (X ₁₂)	-0.00558 (X ₉)
Extension agency contact	X ₁₂	- 0.24290	-0.57990	0.16349 (X ₁₃)	0.12613 (X ₈)	0.09975 (X ₁₀)
Involvement in decision-making	X ₁₃	0.23845	-0.20555	-0.16349 (X ₁₂)	0.12272 (X ₈)	0.08744 (X ₁₄)
Level of aspiration	X ₁₄	0.13042	-0.29858	-0.17968 (X ₁₂)	0.15987 (X ₁₃)	0.12694 (X ₈)
Innovativeness	X ₁₅	0.08047	-0.25453	-0.15260 (X ₁₂)	0.13908 (X ₁₃)	0.08732 (X ₈)
Information processing behaviour	X ₁₆	0.03609	-0.28691	0.13170 (X ₁₃)	-0.10525 (X ₁₂)	0.08062 (X ₈)

Fig 7 Path diagram showing direct, indirect and substantial indirect of independent variables on skill acquisition



Among the 48 indirect effects studied, 11 variables passed through involvement in decision making (X_{13}); ten variables passed through experience (X_8); eight variables passed through extension agency contact (X_{12}); six variables passed through marital status (X_4); four variables passed through level of aspiration (X_{14}); three variables passed through age (X_1) and number of children (X_5); two variable passed through annual income (X_6), and one variable passed through social participation (X_9).

It could be inferred from the path analysis that involvement in decision-making (X_{13}), experience (X_8) and extension agency contact (X_{12}) influencing the skills acquisition (Y_3) on fish pickle preparation practice.

4.6.4. Socio personal characteristics and symbolic adoption (Y_4)

This section deals with the factors associating with and contributing to the symbolic adoption (Y_4) of the fish pickle preparation by fisherwomen.

4.6.4.1 Association of Independent variable with symbolic adoption (Y_4)

The zero order correlation co-efficient of the characteristics of respondents towards their symbolic adoption of fish pickle preparation has worked out and the results are presented in Table 35.

The results of the correlation analysis reveals that among the sixteen independent variable studied, seven variable were found to have a positive and significant association with symbolic adoption. Experience (X_8), economic motivation (X_{10}), involvement in decision making (X_{13}), level of aspiration (X_{14}), innovativeness (X_{15}) and information processing behaviour (X_{16}) exhibited a positive significant association at one

per cent level while extension agency contact (X_{12}) showed a positive significant association at five percent level of probability. The remaining 9 variables showed non-significant association with symbolic adoption of fish pickle preparation as evident from their correlation co-efficient.

The multiple regression was also performed to find out the contribution of each independent variable towards the symbolic adoption (Y_3) of fish pickle preparation. The results of the regression analysis have been tabulated.

The Table 35 reveals that the co-efficient of determination (R^2 - value) was 0.403704 indicating that 40.37 per cent variation in the symbolic adoption behaviour of the fisherwomen with regard to pickle preparation.

It might be concluded that among the 16 variables studied only one variable extension agency contact (X_{12}) was found to exhibit a significant contribution towards symbolic adoption (Y_3). Extension agency contact showed a negative significant contribution towards symbolic adoption at 5 per cent level of probability.

It could be interpreted that the frequent contact with extension agency enabled the fisher women to get conviction on any new practice / enterprise. The conviction thus envisaged them for such symbolic adoption.

Table 35. Zero order correlation and multiple regression of independent variables with symbolic adoption on fish pickle preparation

Variable code	Independent variable	'r' Value	Regression		't' Value
			Regression co-efficient (b)	Standard error of 'b' (SE)	
X ₁	Age	-0.019 NS	-0.0005	0.0066	0.0697 NS
X ₂	Educational status	0.036 NS	0.0521	0.0410	1.2706 NS
X ₃	Occupational status	-0.124 NS	-0.0762	0.0668	1.1415 NS
X ₄	Marital status	0.038 NS	0.0418	0.1489	0.2810 NS
X ₅	Number of children	0.079 NS	0.0632	0.0505	1.2513 NS
X ₆	Annual income	-0.018 NS	-0.0045	0.0026	1.7030 NS
X ₇	Types of houses owned	-0.167 NS	-0.1371	0.0715	1.9182 NS
X ₈	Farming experience	0.306 **	0.0117	0.0089	1.3098 NS
X ₉	Social participation	0.083 NS	0.1181	0.0835	1.4135 NS
X ₁₀	Economic motivation	0.291**	0.0091	0.0057	1.6090 NS
X ₁₁	Mass media exposure	0.05 NS	0.0045	0.0132	0.3427 NS
X ₁₂	Extension agency contact	0.209*	-0.0233	0.0106	2.1957 *
X ₁₃	Involvement in decision-making	0.355**	0.0165	0.0123	1.3412 NS
X ₁₄	Level of aspiration	0.322**	0.0092	0.0077	1.1961 NS
X ₁₅	Innovativeness	0.306**	0.0092	0.0069	1.3280 NS
X ₁₆	Information processing behaviour	0.296**	0.0022	0.0215	0.1038 NS

$$R^2 = 0.403704$$

$$F = 3.3079^{**}$$

$$a = -0.5791$$

* - Significant at 5 per cent level

** - Significant at 1 per cent level

NS - Non significant

4.6.4.2. Path analysis

The Table 36 indicate that the variables experience, level of aspiration, economic motivation, involvement in decision making, innovativeness and education had exerted more direct and positive influence upon symbolic adoption of pickle preparation practice, while extension agency contact, annual income and type of house owned showed a negative impact.

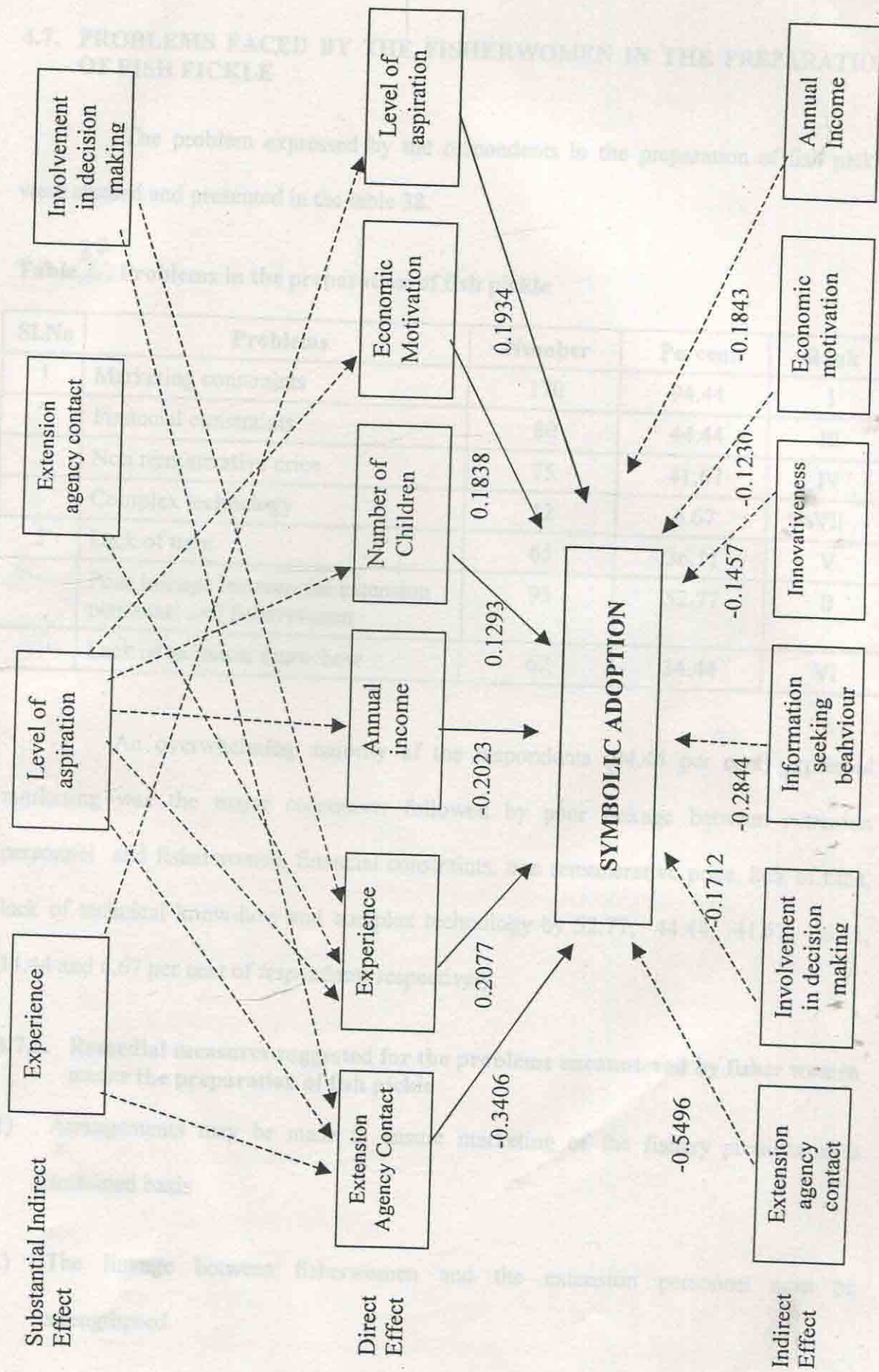
Among 48 indirect effects analysed, ten variables each passed through farming experience (X_8) and economic motivation (X_{10}); nine variables passed through level of aspiration (X_{14}), four variables each passed through type of houses owned, annual income and involvement in decision making; three variables passed through number of children; and two variables passed through education.

The path analysis reveals that experience (X_8), economic motivation (X_{10}) and level of aspiration (X_{14}) were the crucial variables with regard to the symbolic adoption behaviour (Y_3) on fish pickle preparation.

Table 36. Path co-efficient showing direct, indirect and substantial indirect effects of independent variables on dependent variable symbolic adoption (Y_4) on fish pickle preparation

Independent variable	Variable code	Direct effect	Indirect effect	Substantial indirect effect		
				I	II	III
Age	X_1	-0.00976	0.00924	-0.07217 (X_7)	0.06505 (X_5)	0.5750 (X_8)
Educational status	X_2	0.12682	0.09082	-0.05592 (X_8)	0.04348 (X_{12})	-0.03756 (X_{10})
Occupational status	X_3	-0.09999	0.02401	-0.02016 (X_{14})	-0.01841 (X_6)	0.01495 (X_2)
Marital status	X_4	0.02758	-0.01042	-0.03726 (X_8)	0.03594 (X_7)	-0.03368 (X_5)
Number of children	X_5	0.12927	0.05027	-0.06145 (X_7)	0.04077 (X_8)	0.02934 (X_{14})
Annual income	X_6	-0.20232	-0.18432	-0.16979 (X_{12})	0.11148 (X_8)	0.09518 (X_{14})
Types of houses owned	X_7	-0.19512	-0.02812	0.04071 (X_5)	-0.03859 (X_6)	0.03529 (X_{12})
Farming experience	X_8	0.20772	-0.09828	-0.24203 (X_{12})	0.13841 (X_{14})	0.12708 (X_{13})
Social participation	X_9	0.12497	0.04197	-0.03315 (X_6)	-0.03174 (X_7)	0.02006 (X_2)
Economic motivation	X_{10}	0.18804	-0.10296	-0.21929 (X_{12})	0.12205 (X_8)	0.11316 (X_{14})
Mass media exposure	X_{11}	0.02892	-0.02208	-0.02179 (X_{10})	0.01155 (X_{12})	0.01139 (X_6)
Extension agency contact	X_{12}	-0.34064	-0.54964	0.14759 (X_8)	0.14318 (X_{14})	0.12374 (X_{13})
Involvement in decision-making	X_{13}	0.18383	-0.17117	-0.22927 (X_{12})	0.14359 (X_8)	0.12977 (X_{14})
Level of aspiration	X_{14}	0.19356	-0.12844	-0.25198 (X_{12})	0.14853 (X_8)	0.12325 (X_{13})
Innovativeness	X_{15}	0.16026	-0.14574	-0.21401 (X_{12})	0.11853 (X_{14})	0.10217 (X_8)
Information processing behaviour	X_{16}	0.01158	-0.28442	-0.14759 (X_{12})	0.10575 (X_{14})	0.10154 (X_{13})

Fig. 8. Path diagram showing direct, indirect and substantial indirect of independent variables on symbolic adoption



4.7. PROBLEMS FACED BY THE FISHERWOMEN IN THE PREPARATION OF FISH PICKLE

The problem expressed by the respondents in the preparation of fish pickle were studied and presented in the table 38.

Table 37. Problems in the preparation of fish pickle

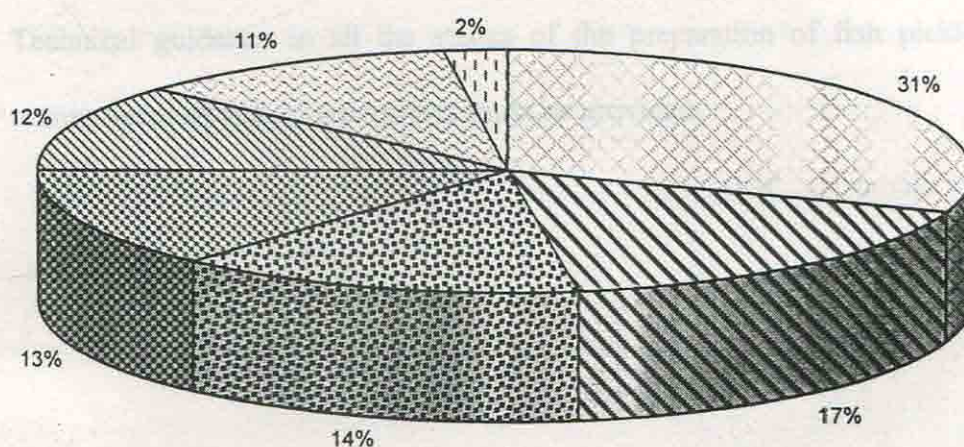
Sl.No	Problems	Number	Percent	Rank
1	Marketing constraints	170	94.44	I
2	Financial constraints	80	44.44	III
	Non remunerative price	75	41.67	IV
	Complex technology	12	6.67	VII
5	Lack of time	65	36.11	V
	Poor linkage between the extension personnel and fisherwomen	95	52.77	II
	Lack of technical know-how	62	34.44	VI

An overwhelming majority of the respondents (94.44 per cent) expressed marketing was the major constraints followed by poor linkage between extension personnel and fisherwomen, financial constraints, non remunerative price, lack of time, lack of technical know-how and complex technology by 52.77, 44.44, 41.67, 36.11, 34.44 and 6.67 per cent of respondents respectively.

4.7.1. Remedial measures suggested for the problems encountered by fisher women under the preparation of fish pickle

- 1) Arrangements may be made to ensure marketing of the fishery products on a sustained basis
- 2) The linkage between fisherwomen and the extension personnel must be strengthened.

Fig. 5. Problem faced by the respondents



☐ Marketing constraints

☐ Poor linkage between the extension personnel and fisherwomen

☐ Financial constraints

☐ Non remunerative price

☐ Lack of time

☐ Lack of technical know-how

☐ Complex technology

- 3) Women extension workers may be preferred for the extension service.
- 4) Timely financial support by the governmental and non-governmental organisations may be made available adequately to fisherwomen
- 5) Project profiles may be prepared and provided to the agencies which can extend support for establishing cottage/small-scale fisheries.
- 6) Technical guidance in all the stages of the preparation of fish pickle including management of fishery enterprises must be provided

CHAPTER - V

SUMMARY AND CONCLUSION

In developing countries like India, fish plays a vital role in the economic development of the nation. This is true with India which has a vast coastline of 7516 kms on all the three sides. Nearly 60.00 percent of the total fish production in India comes from the marine resources. Importance of fisheries in India hardly needs emphasis. Fish and its preparations are excellent sources of dietary essentials such as proteins, minerals and vitamins. Fish provides 193 kilo calories, while beef provides 114 kilo calories and egg provides 173 kilo calories of energy for every 100 g their consumption., The protein content in most tropical species is around 20.00 per cent and is available at low cost of production. Due to high iodine content in marine fish, fish eating people seldom get goitre. It is recommended in preventing bone diseases more than 50.00 per cent of the dietary protein requirement of the body could be satisfied from 100 gm fish intake.

It is needless to emphasis that the rural population that accounts for about 80.00 per cent of the total population has a definite influence on the economic development of India. Though a women constitute about half of the total population, the proportion of female labour force to total labour force is about one –third only.

The present involvement of women in predominantly shore-based activities is frequently not a result of deliberate attempts to exclude them from fish capture, though there is some bias against recruiting women for commercial fishing. However, the women do play an active and sometime dominant role in fish marketing and processing.

Lack of awareness and knowledge regarding technical know-how and do-how have been observed as one of the important constraints in the involvement of women in fisheries activity. They must be trained in appropriate training methods on post-harvesting technology in fisheries. Keeping the above aspects in mind, this study on “Effectiveness of Training Methods on Fisher Women in Coastal Districts of Tamil Nadu” was attempted with the following objectives:

1. To find out the effectiveness of different training methods in terms of knowledge gain and retention
2. To study the level of skill acquisition by the fisherwomen through different training methods.
3. To study the symbolic adoption of the technology by fisherwomen
4. To find out the relationship of socio-personal characteristics and selected psychological variables with knowledge gain, knowledge retention, skill acquisition and symbolic adoption.
5. To identify the problems faced by fisherwomen and their remedial measures.

The study was carried out in six fishing villages randomly selected from Thoothukudi, Tirunelveli and Kanyakumari districts of Tamil Nadu with a sample size of 180 fisher women selected by simple random sampling technique.

Knowledge gain, knowledge retention, symbolic adoption and skills acquisition were the four dependent variable taken up to study the effectiveness of training methods - lecture aided literature, method demonstration, video show, lecture aided literature +

method demonstration, lecture aided literature + video show, and method demonstration+ video show. The practice taken for the study was fish pickle preparation.

Besides this, sixteen independent variable viz., age, education, occupational status, marital status, number of children, annual income, type of houses owned, experience, social participation, economic motivation mass media exposure, extension agency contact, involvement in decision making, innovativeness, information processing behaviour and scientific orientation were selected to study their influences on the dependent variables.

The data about the socio-personal characteristics were collected with a pre tested interview schedule. The design adopted for the study was “one-group before-after(pre-test, post test) design. Teacher-made test was used to assess the knowledge level of the participants at pre-exposure, immediate post-exposure and 15 days after exposure to different training methods so as to measure their knowledge gain and knowledge retention capacity. The symbolic adoption and skill acquisition were also assessed for the practice learnt through training methods. The tool for data collection was interview schedule . The data gathered were subjected to appropriate statistical tools for analysis.

The salient findings of the study have been summarised and presented hereunder.

5.1. SALIENT FINDINGS

5.1.1. Socio-personal characteristics of fisherwomen

Following are the major socio-personal characteristics of the fisherwomen respondents selected for this study.

- 10
- (i) Majority of the participants were young aged (54.44 percent) and educated upto primary school level (56.66 per cent)
 - (ii) Fisheries alone was the main occupation for 76.67 percent of the respondents, among the rest 15 percent had both fisheries and labour and 8.33 per cent had fisheries and business as their occupation.
 - (iii) Three-fifth (60.56 per cent) of the respondents were married followed by unmarried (35 percent) and 4.44 percent of them were widowed and more than half of the respondents (56.88) percent had two children.
 - (iv) Majority of the respondents (53.33 percent) were belonged to low- income group. Among the rest, 30.55 per cent were in medium, and 16.11 percent were in high annual income group.
 - (v) The respondents had low level of experience (54.44 percent) and extension agency contact (66.67 per cent)
 - (vi) Nearly three-fourths (73.33 per cent) of the respondents took joint decisions regarding fisheries activities.
 - (vii) Majority of the fisherwoman (47.27 per cent) had medium level of Innovativeness.
 - (viii) The fisherwomen selected for the study had low level of information seeking behaviour (52.88 percent) followed by medium (31.66 percent) and high (15.56 percent) levels of information seeking behaviour.
 - (ix) Majority of the (51.11 percent) fisherwomen had high level of social participation.
 - (x) Medium level of economic motivation (43.33 percent) was observed among the fisherwoman.

- (xi) 60.06 percent of the total fisherwomen had medium level of mass medium exposure.
- (xii) More than 50 percent of the fisherwoman had thatched type of house.

5.1.2. Knowledge gain

The result of 't' indicates that there existed significant differences between the pre exposure and post-exposure knowledge levels of the respondents on each of the selected training method.

- (xiii) The knowledge gain was more in Method demonstration + video show training method.

5.1.3 Knowledge retention

- (xiv) Nearly three-fourths (73.12 per cent) of knowledge were retained by the respondents due to the training by method demonstration + video show.

5.1.4. Symbolic adoption of learned practice

- (xv) Among the fisherwomen, one-third (32.78 percent) of the respondents had symbolically accepted to adopt the fish pickle preparation.

5.1.5. Socio-personal characteristics with knowledge gain

- (xvi) The variables, experience, economic motivation, extension agency contact, involvement in decision-making, innovativeness, information processing behaviour and scientific orientation showed a positive and significant association with knowledge gain at 1 per cent level while type of houses owned exhibited a negative significant association at 5 per cent level.

- (xvii) The variables, innovativeness, annual income and scientific orientation were the crucial variables affecting the knowledge gain on fish pickle preparation.

5.1.6. Socio personal characteristics with knowledge retention

- (xviii) The variables, experience, economic motivation extension agency contact, involvement in decision making, scientific orientation and innovativeness exhibited a positive and significant association with knowledge retention at one per cent level while innovativeness was found to have a positive significant contribution to knowledge retention at 5 per cent level of probability.
- (xix) Path analysis indicates that innovativeness, experience and scientific orientation were the crucial variables determining the knowledge retention.

5.1.7 Socio personal characteristics with skill acquisition

- (xx) The variables, annual income, experience, extension agency contact, involvement in decision making scientific orientation, innovativeness and information processing behaviour exhibited positive significant association at 1 per cent level.
- (xxi) Path analysis indicates that involvement in decision making, experience and extension agency contact were the crucial variables influencing the skill acquisition on fish pickle preparation.

5.1.8. Socio personal characteristics with symbolic adoption

- (xxii) Experience, economic motivation, involvement in decision-making scientific orientation, innovativeness and information processing behaviour exhibited a positive and significant association at one per cent level.

(xxiii) The path analysis reveals that experience, economic motivation and scientific orientation were the crucial variables with regard to the symbolic adoption behaviour.

5.2. IMPLICATIONS

The findings of the study have many implications.

Different training methods were employed to assess the knowledge gain among the Fisherwomen respondent. Among the methods, method demonstration + Video show had brought about a significant knowledge gain (74.16 percent) followed by method demonstration (62.83 percent) among the Fisherwomen. It implies that the method demonstration + Video show play a vital role in increasing the knowledge level of the fisherwomen. The Fisherwomen expressed method demonstration + video show was also found to be most effective in terms of knowledge retention to the tune of 73.12 percent with regard to the preparation of fish pickle, 15 days after exposure. Out of six training methods, method demonstration + Video show helped the respondents to acquire more skill as well as in case of the symbolic adoption.

Significant association with the acknowledge gain resulted by experience, economic motivation, extension agency contact, involvement in decision making, innovativeness, information processing behaviour and level of aspiration towards the fisherwomen in the preparation of Fish pickle. Significant and highly positive direct effect exerted on knowledge gain through the variables innovativeness, educational status and level of aspiration of the fisherwomen.

Similarly, significant association with the efficiency of knowledge retention resulted by experience, economic motivation, extension agency contact, involvement in decision making, level of aspiration, innovativeness and information seeking behaviour which exhibited a positive association at one percent level of probability, it, therefore, implies that those fisherwomen who lag behind in knowledge could be geared up by improving their knowledge level and expertness in knowledge about the preparation of Fish pickle practice through method demonstration + Video show. Therefore, this training method should be employed invariably in all the training programs of fisherwomen. The Fisherwomen participation needs to be acknowledged and meaningfully incorporated in planning. Fisheries development, Planners and decision makers, must perceive the important role of women in Fisheries and bring women into the main stream of fisheries by providing more training by using Method demonstration + Video show to the Fisherwomen, and also involving them in planning and decision making in all levels.

5.3. SUGGESTIONS FOR FUTURE STUDIES

- (i) The study was conducted in a limited scale confining to a particular fishco-physical and socio-cultural conditions. With a view to generative the findings in a larger context, it may be necessary to repeat this study under varying socio cultural environment.
- (ii) Comparative evaluation of the relative effectiveness of other media like radio and television may be taken up.
- (iii) The study was conducted at micro level, similar studies may be attempted at meso and macro levels.

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INTERVIEW SCHEDULE

Effectiveness of Training Methods on fisherwomen in coastal districts of Tamil Nadu Part – I

Village :

Division :

Respondent No.

District :

Date :

1. Name of the Respondent :

2. Age :

3. Father's / Husband's Name :

4. Educational Status : Illiterate/ Functionally Literate / Primary
education/ Middle education / Secondary
Education/Collegiate Education.

5. Occupational Status : Fisheries alone / Fisheries + Other business.

6. Marital Status : Married/Widowed / Divorced / Destitute /
Unmarried

7. Annual income Rs. : Rs. per annum

8. Experience :Yrs
9. House owned (in no.) : Thatched / Thatched + Tiled / Tiled / Tiled + Terraced / Mudwalls / Brick / Stone house
10. Social Participation : - No membership
- Membership in one organisation.
- Membership in more than one organisation.
- Office bearer in one organisation.
- Office bearer in more than one organisation.
11. Innovativeness

Please give your agreement, disagreement or undecided about each of the following.

Sl. No.	Statement	SA	A	UD	DA	SDA
1	A good fisherwoman experiments with new ideas in fisheries					
2	Though it takes time for a fisherwoman to learn new methods it is worth taking the efforts					
3	As soon as you get information regarding a new fisheries practice will you take immediate step to put into practice.					
4	If the government were to help you to establish a fisheries elsewhere would you move ?					
5	Do you think a fisherwoman experimenting with her own new ideas but maintaining her team/enterprise without loss could be called innovative ?					

SA - Strongly Agree

A - Agree

UD - Undecided ness

DA - Disagree

SDA - Strongly Disagree

12. Involvement in decision making

Sl. No.	Type of Decision	Participation	
		Self	Joint
I	INVESTMENT DECISIONS		
a)	Purchase / Sale / Leasing of Land		
b)	Hiring / Purchase of machinery		
c)	Investment in farm and non farm assets		
d)	Credit		
II	PRODUCTION DECISIONS		
a)	Choice of Variety for pickling		
b)	Input management		
c)	Marketing		
d)	Labour management		
e)	Accounts management		
f)	Seeking outside employment		
III	OTHER ENTERPRISES (AGRI, POULTRY, DAIRY ETC.)		
a)	Purchase		
b)	Fading		
c)	Health Care / Maintenance		
d)	Marketing		

13. Contact with extension Agency

Sl. No.	Agency	Frequency							Percentage
		M1/W	1/W	1/15	1/30	1/3m	1/6m	1/y	
1	Fisheries Extension Officer								
2	Sub-Inspector of Fisheries								
3	Inspector of Fisheries								
4	Assistant Director of Fisheries								
5	Fisheries Training Officials								
6	Extension officials of co-operatives								
7	Social Welfare Officials								
8	Parish Priest								

M1/W - More than once in a week

1/W - Once in a week

1/15 - Once in 15 days

1/30 - Once in thirty days

1/3m - Once in 3 months

1/6m - Once in 6 months

1/Y - Once in a Year

14. Level of aspiration

i. What would be the level of education you want to expect.

Sl. No.	Particulars	Primary	Middle	High	Secondary	College	Professional
1	Your sons to have						
2	Your daughters to have						

ii. What would be the type of work you expect ?

Sl. No.	Particulars	Fisheries	Government Job	Business	Professional
1	Your sons to have				
2	Your daughters to have				

- iii. What would be the increase in the annual income (in rupees) you expect to get in next by improving or extending your work.

One Year :

Two Year :

Three Year :

- iv. What would be the type of house you expect to have in the next three years ?

- v. What would be the fisheries implements you expect to possess in the next years ?

- vi. What would you expect to be your general contentment (satisfaction) in life in the next three years ?

Somewhat better

Mostly better

Certainly better

15. Mass media Exposure

Sl. No.	Media	Frequency				Extent of use of Message			Purpose of Message	
		D	O	1/Week	1/LW	R	P	N	R	E
1.	Newspaper									
2.	Magazine									
3.	Newsletter									
4.	Journal									
5.	Periodicals									
6.	Posters									
7.	Radio									
8.	Television									
9.	Meetings									

D - Daily

O - Often

1/W - Once in a week

R - Regular

N - Never

E - Educational

P - Partly

Re- Recreational

16. Economic Motivation

Sl. No.	Statements	SA	A	UD	DA	SDA
1.	A fisherwomen works towards higher productivity and profitability					
2.	The most successful fisherwomen is one who makes more profit					
3.	A fisherwomen should try any new Fisheries Technology					
4.	It is difficult for a fisherwomen's children to make a good start unless the provides them with economic assistance					
5.	A fisherwomen must earn her living but the most important things in life cannot be defined only in economic terms					

SA - Strongly Agree

A - Agree

UD - Undecided ness

DA - Disagree

SDA - Strongly Disagree

17. Information seeking behaviour

A. Information evaluation

When your receive a new information about the improved practices on fisheries how do you react to it ?

- Accept unreserved
- Weighed in the light of past experience
- Discussed with fellow fisherwomen
- Judged in the light of socio-economic conditions
- Judged in the light of climatic conditions
- Discussion with state fisheries departmental staff
- Others

B. Information Storage

How do you preserve the scientific information for future use ?

- a) By memorising
- b) By maintaining classified notes books
- c) By conveying to family members and asking them to remember
- d) Others

C. Information Transfer

In what ways you try to spread that the new technologies received by you among other fisher women ?

- a) Giving radio talk
- b) Writing in farm magazine / journal
- c) Speaking in local meeting
- d) Conveying to other members at farm or home
- e) By demonstration
- f) Lending printed information to others
- g) Any other form

PART – II

KNOWLEDGE TEST

1. What are the fishes to be used for fish pickle preparation ?
2. Which size of fish suitable for pickling ?
3. Is it necessary to use only the fresh fish for pickle preparation ?
4. How the fishes are washed ?
5. What is the purpose of washing ?
6. Why intestine and gills are removed ?
7. How and why the size cutting is done ?
8. What is the purpose of Frying the fish ?
9. How to determine the optimum level of frying ?
10. List out and state the quantity of each ingredient / groceries required for preparation of one Kg of fish meat ?
11. How to clean and cut the green chillies, ginger and garlic ?
12. How to prepare mustard, cumin seed, Asafotida and fenugreek for preparation.
13. How to determine the optimum level of frying of green chillies, garlic and ginger.
14. What is the purpose of frying the above items ?

15. Necessity of frying the above items ?
16. What is the purpose of adding Karimashal ?
17. What is the purpose of adding Vinegar ?
18. What is the purpose of adding Citric Acid ?
19. What is the purpose of adding Sodium Benzoate ?
20. What should be the pH level to be maintained in pickle ?
21. What is the purpose of adding Salt other than taste ?
22. What kind of salt (size) to be added to the pickle ?
23. What is the purpose of adding Turmeric Powder in Pickle ?
24. What is the maturation time required for pickle ?
25. What kind of detergent used for cleaning of bottle ?
26. What is the level of Chlorine for bottle cleaning ?
27. Mention the duration of heating the bottle in boiling water ?
28. What is the contact time for Chlorine treatment ?
29. Why the lids are applied with Vinegar at the time of packing ?
30. How to store the pickle bottles ?

1. எந்தெந்த வகையான மீன்கள் ஊறுகாய் செய்ய பயன்படுத்தப்படுகிறது ?
2. எந்த அளவு மீன்கள் ஊறுகாய்க்கு உபயோகப்படுத்துகிறார்கள் ?
3. மீன் ஊறுகாய்க்கு கண்டிப்பாக நல்ல மீன்கள் தான் பயன்படுத்தப்பட வேண்டுமா?
4. மீன்களை எவ்வாறு கழுவ வேண்டும் ?
5. மீன்களை கழுவுவதின் அவசியம் என்ன ?
6. குடல் மற்றும் செதில்களை ஏன் நீக்க வேண்டும் ?
7. மீன்களை எவ்வாறு வெட்ட வேண்டும் ?
8. மீன் சதையைப் பொரிப்பதன் அவசியம் என்ன ?
9. மீன் சதை சரியான அளவில் பொரிப்பக்கப்பட்டுள்ளதா என எவ்வாறு அறிவீர்கள் ?
10. ஒரு கிலோ மீன் சதைக்குத் தேவையான இதர சேர்க்கைப் பொருட்கள் என்னென்ன ?
11. மீன் ஊறுகாய் தயாரிக்கத் தேவையான சேர்க்கைப் பொருட்களின் அளவினை எழுதுக ?
12. பச்சை மிளகாய், இஞ்சி மற்றும் வெள்ளைப் பூண்டை எப்படி சுத்தம் செய்வீர்கள்?
13. சீரகம், பெருங்காயம், கடுகு, வெந்தயம் போன்றவற்றை எவ்வாறு தயார் செய்வீர்கள்?
14. பச்சை மிளகாய், இஞ்சி, பூண்டு போன்றவற்றை சரியாக பொரிந்துள்ளதா என்பதை எப்படி அறிவீர்கள் ?

15. பச்சை மிளகாய், இஞ்சி, பூண்டு ஆகியவற்றை பொரிப்பதன் அவசியம் என்ன ?
16. கரிமசால் சேர்ப்பதன் காரணம் என்ன ?
17. வினிகர் சேர்ப்பதன் அவசியம் என்ன ?
18. சிட்ரிக் அமிலம் ஏன் சேர்க்க வேண்டும் ?
19. சோடியம் பென்சோவேட் எனும் வேதிப் பொருளை மீன் ஊறுகாயுடன் ஏன் சேர்க்கிறார்கள் ?
20. மீன் ஊறுகாயில் கார அமிலத்தன்மை எந்த அளவில் இருக்க வேண்டும் ?
21. உப்பு, ருசிக்குத் தவிர வேறு எந்த காரணத்திற்காக சேர்க்கிறார்கள் ?
22. எந்த வகையான உப்பு சேர்க்க வேண்டும் ?
23. மஞ்சள் தூள் சேர்ப்பதின் அவசியம் என்ன ?
24. மீன் ஊறுகாய் முழு பருவம் அடைய ஆகும் கால அளவு எவ்வளவு ?
25. பாட்டிலைக் கழுவ எவ்வகையான சோப்பை பயன்படுத்த வேண்டும் ?
26. பாட்டிலைக் கழுவ குளோரின் எந்த அளவில் இருக்க வேண்டும் ?
27. பாட்டிலை வெந்நீரில் எவ்வளவு நேரம் கொதிக்க வைக்க வேண்டும் ?
28. குளோரின் கரைசலில் பாட்டிலை எவ்வளவு நேரம் வைக்க வேண்டும் ?
29. பாட்டில் மூடியை ஏன் வினிகர் கொண்டு துடைக்க வேண்டும் ?
30. மீன் ஊறுகாய் பாட்டிலை எவ்வாறு பாதுகாக்க வேண்டும் ?

PART – III SKILL ACQUISITION

1. Can you identify the following fish
a) Seela b) Velameen c) Vaval d) Panna e) Sardine Yes / No
If yes, identify them
2. Can you fry the groceries / ingredients ? Yes / No
If yes, fry the groceries
3. Can you fry the fish in optimum quality ? Yes / No
If yes, fry the fish
4. Can you mix the frying groceries with fried fish muscles Yes / No
If yes, demonstrate it
5. Will you mix the Vinegar, Citric acid and Sodium Benzovate ? Yes / No
If yes, demonstrate it
6. How long will you keep the prepared pickles ? Yes / No
7. Can you pack the pickle bottles ? Yes / No
If yes, demonstrate it

PART – IV SYMBOLIC ADOPTION

Sl. No.	Items	Decided to adopt (1)	Reasons for adoption	Decided not to adopt (o)	Reasons for Not to adopt
1.	Fresh fish selection				
2.	Frying of fish till reaching golden colour				
3.	Inclusion of Recommended groceries				
4.	Quantity of ingredients to be added				
5.	Addition of Vinegar				
6.	Adding of Citric Acid				
7.	Mixing of Sodium benzoate				
8.	Keeping period for pickle bottle (maturation period)				
9.	Cleaning of bottle gap with vinegar				
10.	Bottle boiling period (10 min)				

PART – V

- 1) List out the problem faced by the fisherwomen ?

- 2) Give the Remedial measures for the problem ?

மீன் ஊறுகாய் தயாரித்தல்

நம் நாட்டில் பல வகையான ஊறுகாய்கள் குறிப்பாக எலுமிச்சை, நார்த்தங்காய், மாங்காய், நெல்லிக்காய் போன்ற அமிலத் தன்மையுள்ள காய் வகைகளில் தயாரிக்கப்பட்டு உணவுடன் உட்கொள்ளப்படுகின்றன. கடல் பொருட்களில் இருந்து ஊறுகாய் தயாரிப்பது என்பது ஒரு புதிய உத்தியாகும். தமிழ்நாட்டின் கடல் மீன் உற்பத்தியானது 3.5 லட்சம் மெட்ரிக் டன்களாகும். இதில் 40 விழுக்காடு மீன்கள் உலர்பதனம் மற்றும் கால்நடை போன்ற விலங்கினங்களுக்கு தீவனமாக்கப்படுகின்றன. மீதமுள்ள 60 விழுக்காடு மீன்களை மனித உணவுக்கு பயன்படும் வகையில் மீன் ஊறுகாய் தயாரிக்கலாம்.

மீன் ஊறுகாயை தயாரிக்க காரை, பண்ணா, கத்தாளை, கலவா, நவரை, சங்கரா, லோமியோ மற்றும் குருவா மீன்களை பயன்படுத்தலாம்.

தயாரிக்கும் முறை :

1. ஊறுகாய் செய்ய தரமான மீன்களை உபயோகப்படுத்த வேண்டும்.
2. மீன்களை அழுக்கு மற்றும் மண் நீக்கி ஓடும் நீரில் கழுவ வேண்டும்.
3. செதில், தலை மற்றும் குடல் ஆகியவற்றை அப்புறப்படுத்த வேண்டும்.
4. பெரிய மீன்களை சிறிய துண்டுகளாக வெட்டித் தோல் மற்றும் முட்களை நீக்க வேண்டும்.
5. மீண்டும் ஒரு முறை இரத்தம் நீக்கி சுத்தம் செய்ய வேண்டும்.
6. சுத்தம் செய்யப்பட்ட மீனை 5 விழுக்காடு உப்புக் கரைசலில் 5 முதல் 8 நிமிடம் வேக வைத்து பின் எண்ணெயில் சில விநாடிகள் பொரிக்க வேண்டும்.

7. இஞ்சி, பச்சை மிளகாய், காய்ந்த பூண்டு ஆகியவற்றை தோல் நீக்கி அவற்றை தனித்தனியாக கை அரைப்பான் (Chilli cutter) அல்லது மின் உரல் அரைப்பானிலோ (Grinder) அரைக்க வேண்டும். பின் குறைந்த தட்பவெப்பத்தில் பொன்னிறமாகும் வரை கிண்ட வேண்டும். (30-40 நிமிடம்)
8. கடுகு, சீரகம், வெந்தயம், பெருங்காயம், உப்பு ஆகியவற்றை தனித்தனியாக வாணலியில் சிறிது எண்ணெய் விட்டு நன்கு வறுத்து பொடி செய்து கொள்ள வேண்டும். (5 நிமிடம்)
9. வினிகரை குறைந்த அளவு வெப்பநிலையில் சேர்க்க வேண்டும்.
10. மிளகாய் தூள், கரிமசாலா, சிட்ரிக் அமிலம் சேர்க்க வேண்டும். (5 நிமிடம்)
11. பொரித்த சதைப் பகுதியை சேர்த்து கிண்டவும். (10 நிமிடம்)
12. ஊறுகாயின் வெப்பநிலை 40° சென்டிகிரேட் அளவில் உள்ளபோது, சோடியம் பென்சோவேட் சேர்க்க வேண்டும்.

பாட்டில்களில் சேமித்தல் :

புதிய அல்லது பழைய பாட்டில்களை ஊறுகாய் சேமித்தலுக்கு பயன்படுத்தலாம். பழைய பாட்டில்களை பயன்படுத்தும் போது அவற்றை கவனத்துடன் கழுவி கிருமிகள் எதுவும் இல்லாமல் தூய்மை படுத்த வேண்டும்.

பாட்டில்களை முதலில் நீரில் ஊற வைக்க வேண்டும். பின்னர் பிரஸ்ஸின் உதவியுடன் சோப்பு கரைசலை பயன்படுத்தி பாட்டில்களின் உட்பகுதிகளை நன்கு தேய்த்து கழுவ வேண்டும். குளோரின் கலந்த நீரில் (50 பிபிஎம்) கழுவிய பின் நீருள்ள பெரிய பாத்திரத்தில் பாட்டில்களை அடுக்கி நீரை கொதிக்க செய்து 10 நிமிடம் கொதி நீரில் பாட்டில்களை இருக்க செய்த பின்னர் இடுக்கியின் உதவியால் அவற்றை எடுக்க வேண்டும். பின்னர் தூய்மையான பரப்பில் பாட்டில்களை தலைகீழாக வைக்கவும். நன்கு உலர்ந்த பின் பாட்டில் உட்புறத்தை வினிகர் நனைத்த துணியினால் துடைக்கவும். நன்கு கழுவப்பட்ட பாட்டில்களை வெப்ப காற்று அறையில் (80° சென்டிகிரேட்) சுமார் 2 மணி நேரம் சூடு செய்தபின் உபயோகப்படுத்தலாம்.

பாட்டில்களின் வாய்புறத்தை பிளாஸ்டிக் மூடி கொண்டோ, அலுமினிய மூடி கொண்டோ அல்லது லக் முறை மூடி கொண்டோ முடுவதன் மூலம் முறையே சுமார் 90, 95, 100 சதவிகித ஊறுகாய் எண்ணெய் கசிவானது தவிர்க்கப்பட வாய்ப்புள்ளது.

அலுமினிய தகடு கொண்டு இருபுறமும் பாலிபுரோப்பிலின் அல்லது அதிக அடர்வு பாலிஎத்திலின் கொண்டு லேமினேட் செய்யப்பட்ட பாலித்தீன் பைகளில் அடைக்கலாம்.

பாட்டில்களில் அல்லது பாலித்தீன் பைகளில் அடைக்கப்பட்ட ஊறுகாய் சாதாரண ரும் வெப்பநிலையில் ஆறு மாத காலம் வரை கெடாமல் வைத்துக் கொள்ளலாம். குளிர்ந்த மற்றும் ஈரப்பசையற்ற இடத்தில் வைத்து பாதுகாக்க வேண்டும்.

வ.எண்	தேவையான பொருட்கள்	அளவு
1.	மீன் சதை (சுத்தம் செய்யப்பட்டது)	1 கிலோ
2.	இஞ்சி (தோல் உரிக்கப்பட்டது)	200 கி
3.	பூண்டு (தோல் உரிக்கப்பட்டது)	200 கி
4.	பச்சை மிளகாய்	100 கி
5.	கடுகு	25 கி
6.	சீரகம்	25 கி
7.	வெந்தயம்	5 கி
8.	பெருங்காயம்	10 கி
9.	மிளகாய் தூள்	100 கி
10.	உப்பு	70 கி
11.	மஞ்சள் தூள்	10 கி
12.	வினிகர்	300 மிலி
13.	எண்ணெய் (சுத்தகரிக்கப்பட்டது)	400 மிலி
14.	சிட்ரிக் அமிலம்	10 கி
15.	சோடியம் பென்சோவேட்	5 கி
16.	கறிவேப்பிலை	5 கி