CAREER PROFILE OF WOMEN Ph.Ds IN SCIENCE & TECHNOLOGY IN SOUTHERN STATES

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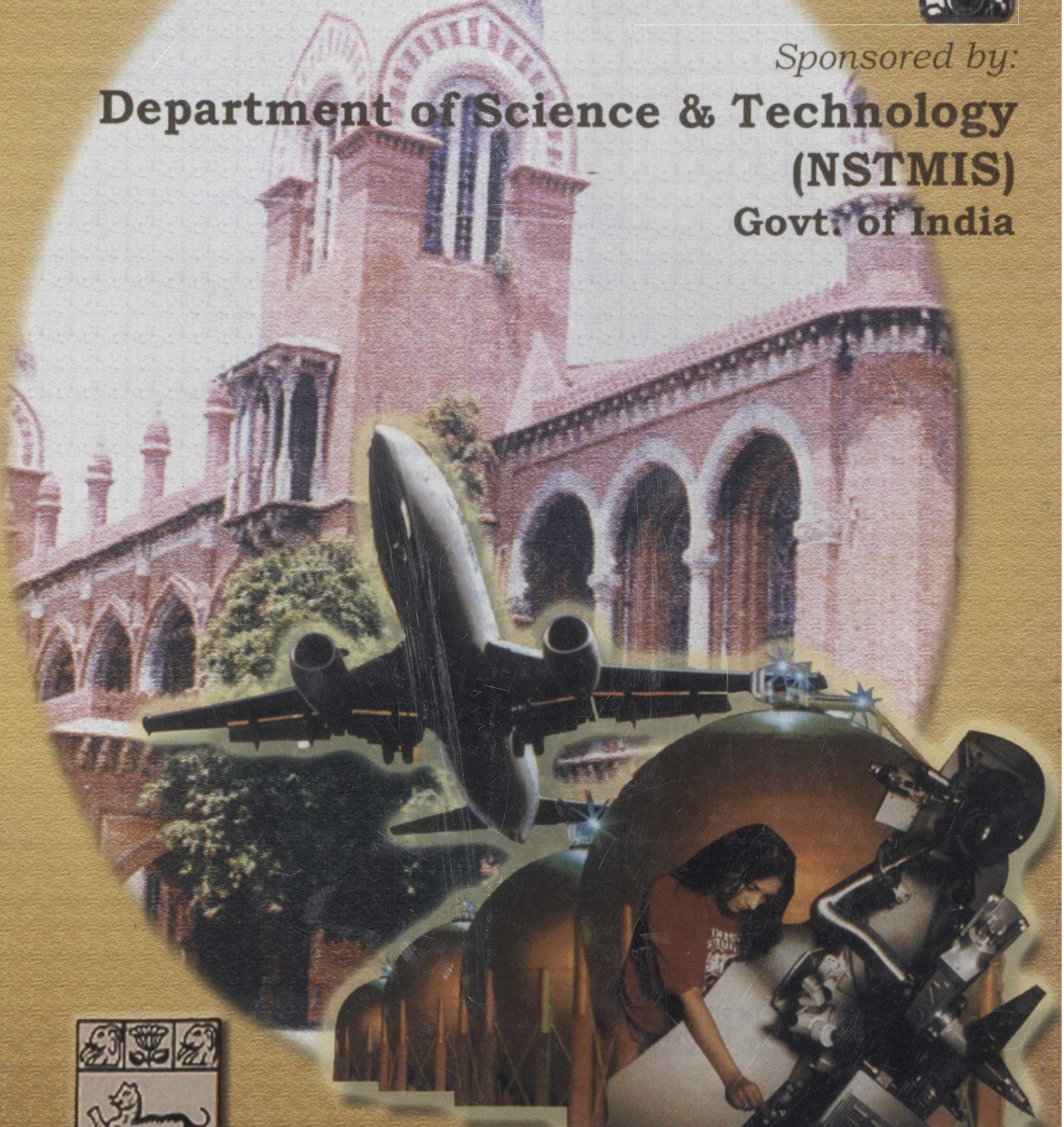

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DST Project on "Career Profile of Women Ph.D. Degree Holders in Science and Technology in Southern States of India"

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PRINCIPAL INVESTIGATOR

Date : August 4, 1999

USAB/DST PRO/ 122

To

Shri. Rakesh Chetal,
Director-NSTMIS Division,
Department of Science and Technology,
Technology Bhavan,
New Mehrauli Road, New Delhi 110 016.

Dear Sir,

Ref. : Your letter No.DST/NSTMIS/5-7-96 dated 28-7-99.

I am sending herewith one copy of the Draft Report entitled on **"Career profile of Women Ph.D. Degree holders in Science and Technology in southern states,"** Department of Science and Technology. On getting of the draft copy back with your comments and corrections we would submit the final report. A floppy of the project will be given to you when we submit the final project report.

Thanks for the two months extension given.

With kind regards,

Yours sincerely

Susila Mariappan

Dr. SUSILA MARIAPPAN

CAREER PROFILE OF WOMEN Ph.D. DEGREE HOLDERS IN SCIENCE AND TECHNOLOGY IN SOUTHERN STATES

A Study Sponsored By

**Department of Science and Technology
under National Science and Technology Management
Information System (NSTMIS)**

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PREFACE

Empowerment to women and synergetic contribution of both men and women in nation building activities and equal opportunity in education and employment have been expressed, printed and dialogued in scientific fora and media all over the world. Education for women is inscribed in the charters released by national and international agencies and conferences on women in development are literally held at one or other part of the world. Education for women has been emphasised in plan documents of the countries. Women education in developing countries like India, Pakistan, Bangladesh, Africa and Phillipines drew sharply the attention of UN bodies although consensus on women and their development has been arrived by both the developed and developing countries the trend of the past has not changed drastically.

Recognising the need for improving the scope for womens' education, National Educational Policy, 1987 of India recommended to the Government, strategies to be adopted by University Grant Commission (UGC). A significant share in the annual budget for education of women was provided. Opportunities for women in higher education were created. Enrolment in higher education increased from about 5% in the year 1977 to about 15% in the year 1987. Enrolment of women in Ph.D. programmes correspondingly increased. Although there was a significant rise in production of Ph.Ds by the Indian Universities the career opportunities for women with advanced degrees in general and science and technology in particular have not been investigated for assessing the effectivity of initiatives of the concerned agencies and reviewing the policies of the National and State Government with special reference to women Ph.Ds in Science and Technology areas. This is also with reference to empowerment to women in all spheres of development.

The department of Science and Technology (DST) in the Ministry of Science and Technology and the Department of Education in the Ministry of Human Resources Development are the nodal Ministries to evolve policies and guidelines in promoting education at all levels. The implementing agencies, Viz., UGC, Universities, Special Institutions, etc. and Scientific Departments including DST, DBT, DOD, DOE, etc. have instituted Scholarships, Fellowships, Associateship etc. and set reservation for women candidates in awarding Fellowship and Scholarship. However, data on the outputs of implemented schemes in terms of women obtaining Ph.D. degrees in Science and Technology and their development are scarcely available. The University Students Advisory Bureau (USAB) of University of Madras established in the year 1909 has from its inception been actively engaged to counselling and guidance to students on higher education in India and positioning itself as beacon of the Universities. Recognising the

credibility of USAB in undertaking studies closely related to education and employment, the DST awarded to it a project on "Career Profile of Women Ph.D. degree holders in Science and Technology" in the Southern Region of the country (Ref. Project No. F.No.DST/NSTMIS/05/03/96 dt.14-11-96).

There are 46 Universities, 7 Deemed Universities and 3 Institutes of National Importance in the states of Andhra Pradesh, Karnataka, Kerala, Pondicherry and Tamil Nadu. The information from the records of Universities of this region showed that about 3993 women received Ph.D. degrees in Science and Technology during 1985-1998. For the convenience of the study and ensuring a certain degree of reliability of the findings of the study, a sample of 1000 women Ph.Ds was chosen from amongst the 56 Universities. The scientifically cast and pretested Questionnaire were circulated amongst the women who passed out with Ph.D. degree from the Universities. The Questions were such that their socio-economic and educational characteristics could be profiled from the time they entered into Universities for their Ph.D. course.

The composition of the project team was carefully formed and the team was fielded to collect the information from the scholars. The co-operation of the University authorities and the candidate respondents was excellent. The data collected from the Universities and the respondents were matched for accuracy and reliability before drawing appropriate conclusion.

The study revealed some interesting informations on sociological and economical fronts. Over 65% of the respondents were from Urban and Semi-urban centres and are the daughters of upper and upper middle class parents. And, the parents seemed to be teachers of Universities/Colleges and Scientists and Engineers in National Laboratories. There were isolated cases wherein the respondents came up into Ph.Ds out of their initiatives. Barring a marginal percentage (<14% of 1000) all of them were married and with one or two children. The background of the families appeared to have strong influence in pursuing Ph.D. degrees and securing jobs of their choice.

The women Ph.Ds were found to be more in biological sciences (41%) followed by agricultural (23%), Chemical (13%) and Physical Sciences (7.6%). A marginal percentage of respondents were found to be in professional degrees (e.g., Engineering and Technology (4.3%), Medicine (3.9%) and Earth Sciences (2.1%). The minimum duration of programme is normally three years irrespective of the discipline and of Universities. The women respondents appeared to be proficient in academic programmes and efficient in completing the degrees in three to five years despite the fact that they were married even before completion of Ph.D. degree. Also, about 57% of them had regional language in school education. English in higher education did not hinder their pursuits in research

in Science and Technology. Surprisingly over 70% of the respondents were the recipients of Scholarships, Fellowships, Stipends etc.

A majority of the women Ph.Ds chosen for the study were in late 30s and early 40s in age. This means that the young ones came out with degrees in the early 1990s. However, 95% of them are employed either in the Colleges, Universities and Special Institutions or National Laboratories. Over 66% of them are found in Colleges engaged to teaching and research. While others (25%) are Scientists/Technicians. Education at advanced level enabled them to secure jobs with guarantee for permanent status. The respondents engaged in Teaching and Research get Salary less than Rs.20,000 per month and those who are in managerial position receive above Rs.20,000/-.

There are some issues and happenings threatening the women teachers and scientists. Apathy of management, non co-operation from men colleagues, non-recognition of talents by both management and men colleagues were reported by 40% of the 1000 respondents. Common group from 90% of the respondents is that they need flexible time schedule to devote some attention to the family.

A bulk of the women Ph.Ds in Educational Institutions appeared to have attended conferences during their scholastic days and published papers. They have been members in professional societies. It is distressing to observe that the women teachers were not encouraged by the management to participate in conferences. Also, they are not given role in decision making bodies and kept away from the power groups.

Career development in the form of promotion, training, deputation etc. was not a critical matter to many who have entered into service five years ago from the date of meeting by the project team. However, popular notion amongst them was that criteria for promotion, special assignment, leaves etc. were suitably cast to benefit the men colleagues.

The study is comprehensive covering a range of issues related to society and academic & professional fronts the women doctorates experience in the men dominated realm. The recommendations made out of this study are exclusively derived from the personal interviews and dialogues with the concerned, records of the Universities and places of employment. The data will in no doubt be extremely useful to decision-makers to evolve strategies in promoting women to demonstrate their talent in occupations other than mere teaching. They could be motivated to compete with men in activities that require more challenges. The result it is believed will give meaning to the word "Empowerment".

Dr. SUSILA MARIAPPAN
Principal Investigator

ACKNOWLEDGEMENTS

I am obliged to place on records my sincere thanks to the Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India, New Delhi for their funding the project entitled **"Career profile of Women Ph.D degree holders in Science and Technology in southern states"** to the **"University Students Advisory Bureau (USAB), University of Madras, Chennai (Tamil Nadu)"**.

The Principal Investigator (PI) and the project team expressed their gratitude to the Vice-Chancellor and Registrar and other colleagues in the administration of the University of Madras for having permitted University Students Advisory Bureau to undertake a project of national importance and provided considerable support and encouragement during the entire period of execution of the project.

The project is of such nature that the co-operation and co-ordination of a large group of personnel in the university administration and the departments in the state and central governments were necessary. My special thanks are due to the authorities of universities based in the states of Andhra Pradesh, Karnataka, Kerela, Pondicherry and Tamil Nadu and to various Heads of the departments in the areas of science and technology, but for whose assistance 1000 women Ph.Ds could not have been reached and information collected.

The number of individuals directly or indirectly associated with this project runs high and PI and team of investigation wish to thank them for their assistance at every stage of execution of the project. **Dr. Laxman Prasad,** Head of the NSTMIS, DST stood as a major support from the DST for successful completion of the project. The consistent encouragement and suggestions in planning and management of the project from the beginning to the end were received from **Shri Rakesh Chetal**, Scientist F of DST. My sincere thanks are due to him.

The project containing a wide range of objectives and enormous data detailing the career profile of women Ph.Ds needed critical review and constructive suggestions. These were fulfilled by **Dr. G. J. Samathanam**, Scientist-D of DST. I thank him profusely for his valuable contribution in shaping the report a resourceful document to benefit decision makers. Whenever I approached him through letters and Telephone, he never hesitated to guide us in proper perspective. His candid comments given now and then helped us enormously to improve our project work. **Dr. A.N.N. Murthy,** Former Joint Advisor, NSTMIS division of DST was very helpful especially in finalising the questionnaire. **Dr. A.N. Rai,** Scientist-C, NSTMIS division of DST gave finishing touches to the Report. I express my sincere thanks to him. The counselling and guidance

of **Dr (Smt). A. R. Rajeswari**, former Advisor of NSTMIS, DST and intellectual support to conceptualise a program of this kind are gratefully acknowledged and my sincere thanks are due to her. I wish to thank **Dr. (Smt) P. P. Parikh,** Professor of Mechanical Engineering , Indian Institute of Technology, Bombay who pioneered a study of this kind and set a precedence in formatting the project components.

The area covered under this study is wide and at distances between them. Volume of sampled individuals was 1000. The questionnaire was comprehensive enough to acquire enormous data. The dedication and hardwork demostrated by Thiru. **P. Baskar,** JRF of this project were highly commendable. He was able to reach the target institutions and personnel in collecting the data which served the base for computational and interpreting needs. The special skills of Thiru. **P. Theerthagiri ,** Data Entry Operator of this project in computational techniques and handling statistical tools helped in development of document. Nevertheless, the services of Thiru. **T. Chinnathurai** and Ms. **A. Thavamani** in organising the data for easy and efficient depiction were extremely useful to PI and Co-investigator in finalising the report. There is no full accomplishment of the tasks without co-ordination between project office and the touring team of investigators. Thiru. **P. Senthil Kumar,** JRF fulfilled this need and maintained the project records for ready reference.

The vast experience and in-depth subject knowledge of **Prof. J. Ranganathan,** Retd. Professor of Statistics, University of Madras and Co- Principal Investigator of the present study was immensely helpful to us in taking us in right direction. He showed unstinted support and co-operation in guiding us throughout the project.

The services of the members of the Project Advisory committtee (PAC) and expert guidance of Professors of the departments, Viz., Statistics, Academic staff College, Library and Information science, Adult and Continuing Education and Econometrics, enabled the PI to successfully complete the project. The PI and the project team members owed their immense thanks to **Dr. G. Gopal, Dr. A. Subbarayan, Dr. Cynthia Pandian, Dr. Manorama Srinath, Dr. Rajini R. Shirur,** and **Dr. A.M. Nallagounden,** for their intellectual inputs peculiar to their disciplines and commensurate with their rich experience in managing project of this kind.

Dr. SUSILA MARIAPPAN

Principal Investigator
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EXECUTIVE SUMMARY

Career Profile of the women Ph.D. degree holders in Science and Technology of Universities in the States of Andhra Pradesh, Karnataka, Kerala, Pondicherry, Tamil Nadu was investigated. A sample of 1000 Ph.D. holders was chosen for the study. Personal interviews were conducted with the educational and employment authorities in the Universities, Governments, Industries and Research and Development Institutions located in the study areas.

The data on the distribution of age indicated that about 44% of the respondents were below 45 years while the rest belonged to age group above 45 years.

About 84% of the respondents are married and have one or two children. Fourteen percent remain single and 2% are separated by the husbands.

The women Ph.D. holders had medium of instruction at school education in both Regional and English language. The percentage of women who had education in English medium was 43% while the rest 57% had the regional language as medium of instruction in their school. Nevertheless, the education in Universities including research studies was in English.

The women who registered for Ph.D. degrees had creditable passes in the post-graduate degree examinations in both Science and Technology areas. One fourth of the sampled respondents had secured less than 60% in aggregate in PG. degree examination .

The driving force and motivation for higher studies to women was from their parents. Also, the husbands of some of the women Ph.Ds encouraged them for pursuing higher studies including Ph.D. degrees.

The major area of study at Ph.D. level appeared to be Life Sciences. The order of preference as observed in the study is as follow:

Biological Sciences > Agriculture > Chemical Sciences > Physical Sciences >

(41%) (23%) (13%) (7.6%)

Medical Sciences > Engineering Sciences > Earth Sciences.

(3.9%) (4.3%) (2.1%)

About a tenth (8.8%) of 1000 women Ph.Ds in Science and Technology of the Universities of the South India, took degrees from the Universities of the Northern region. A marginal percentage (2.8%) of women took their degrees from overseas Universities in U.K., USA, Finland, Korea, Japan etc.

The minimum duration of Ph.D. programmes in Indian Universities is three years. The percentage of women Ph.D. in Science and Technology who completed successfully

Ph.D. programmes in 3 to 5 years was 67%. The women who spent in the programme for more than 5 years were either employed and/or occupied at house for personal reasons.

The scholarships of Govt. of India or Educational Trusts or Professional Societies and Fellowships of the University Grant Commission (UGC), Council for Scientific Industrial Research (CSIR), Indian Council for Agricultural Research (ICAR), Indian Council for Medical Research (ICMR) etc. appeared to have been availed by women Ph.D. scholars. A 61.1% of the 1000 scholars availed financial assistantship from different sources. Others (38.9%) supported themselves in their pursuits for Ph.D. degrees.

The level of employment of the women Ph.D. appeared to be reasonably high. A 96% of the respondents are employed. A negligibly small percentage (4%) remain unemployed. These unemployed women were either waiting for an employment opportunity or engaged in family business.

The lag period between the time of graduation and securing job varies from 2 to 3 years.

The sources of employment for women Ph.Ds appeared primarily Universities, National Laboratories and Institutions of excellence. A two third of sampled population of women Ph.Ds were able to secure jobs at different levels in Universities, Colleges, Schools and Organisations of advanced studies. Another 25% of the women Ph.Ds are found in Research and Development Organisation.

The popular reasons cited by the women Ph.Ds placed in Colleges and Universities are that they have job satisfaction. They could discharge their duties satisfactory to themselves with no influence from others. And the satisfaction expressed by some women in educational institutions includes, a guaranteed stay along with spouses and children at one station. This facilitates education of the children and care taking of the dependants in the family.

The employment to women Ph.Ds in Science and Technology is secure. However, the emolument they receive particularly from educational institutions are non commensurate with their educational attainments A 61% of the respondents received monthly salary of Rs.20,000 and less. A marginal percentage (2.4%) receives monthly salary of Rs.20,000 – Rs.30,000 and, 1% alone out of 1000 sampled in this study earns more than Rs.30,000 per month.

The reasons for themselves being paid low by the management varied from non availability of vacancies at higher level, inordinate delay in the promotion and noncompliance of the criteria in promotion as set by the management to unpreparedness of women to move out of one station on promotion and shift in duties.

The participation of women with Ph.D. degrees in Science and Technology in academic and professional societies and attending conferences and seminars held

nationally and internationally as observed in the study was encouraging. About a third (39%) of the 1000 women partook in international conference at least once during their residence time in Universities and places of employment. And, all of them attended seminars and workshops held at national level within India.

Opportunities for women Ph.Ds in decision-making bodies within the management and welfare to themselves and their infant children are aggressively argued upon by the women.

The opportunity for women in decision-making bodies including Board of Studies, Academic Councils, Senate, Syndicate, Management Boards and Committees Instituted for routine functions are scarcely available. The academic and research activities though fairly represented by them do not qualify them to claim a role in decision-making bodies.

The women Ph.Ds with five to ten years of active employment in education and research institutes encounter typical problems which could be solved by the management of the organisations. Creche for the babies, recreational facilities for the employees, transport between residences and work place for the handicapped women etc. are seldom provided by the management.

Gender discrimination and harassment were not voiced by the respondents. However, the treatment meted to them by men handicapped their career growth.

Besides they add that lack of Creche facilities, inadequate transport facilities and rigid time schedule do not allow them to pay adequate attention to their family requirements. Majority have expressed their agony towards their non involvement in expert committees; decision-making bodies; Management Committees etc. of their Organisations. Eventhough about one fourth of the respondents made a mention about the gender discrimination, three fourths have not stressed that issue.

Majority of the respondents have said that, they do not reach top positions in their career, mainly because, they do not have many ambitions to achieve. Besides, lack of self confidence, lack of competitive spirit, lack of high aspirations and contentment with the present positions etc. are some of the reasons for women scientists not reaching top positions. The respondents suggested that they could be deputed for in-service training, leadership training and other Management training programmes.

The women doctorates want preference in getting post doctoral fellowships, international fellowships and also in promotions. In general, women doctorates are highly motivated, dedicated and sincere in their day today academic activities. With little encouragement and support from the management side, no doubt they would contribute their maximum towards the development of their organisation and to the Nation as a whole.

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CHAPTER I

INTRODUCTION

WOMEN IN SCIENCE AND TECHNOLOGY

Women in India are now no longer scared of the once considered "tough" subjects like Science, Technology, Engineering, Agriculture and Medicine. They are marching ahead in the so-called male dominated world in understanding and mastering the intricacies involved in exploring the frontiers of sciences. Towards this endeavour they are going for in large or good number year after year and that too even in the interdisciplinary area such as Bio-physics, Bio-chemistry, Bio-technology, Micro-electronics, Computer Science and Management etc. contributing not only to the advancement of science but also towards the socio-economic progress of the country.

It is a healthy sign that opportunities in women for pursuing higher education at the graduate, post graduate and doctoral levels are being provided ever since independence at all the universities and technical Colleges spread all over the country. Women on their part have also responded well to these opportunities thereby increasing many fold their enrolment in all faculties at the educational institutions in the country. The highly specialised and professional courses offered by the academic institutions are no longer the prerogative of men folk.

According to Research and Development Statistics 1994 –95, Department of Science and Technology, Govt. of India, 3.0 lakh S & T personnel are working in the R&D organisations in the country. It is really a matter of pride that out of this 10% (ie.)0.3 lakh are women. Women's enrolment in the fields of science and technology was 8.2% of the total enrolment of 4,80,000 during 1992-93. There has been a remarkable increase in the number of women enrolled in the institutions of higher education from 40,000 to 15 lakhs, their percentage in total enrolment has increased from 31 in 1987 to 33 in 1992-93. An interesting feature is that among women enrolled in the science and technology faculties, 13.6% belong to medicine, 80.3% belong to pure science and 4.8% to engineering. (Research & Development Statistics 1992-93, P.35)

The number of women taking up the engineering courses has increased from one percent in 1975 to about 10% in 1990. As far as the sector of work is concerned, it is the largest as about 30% of the engineers employed in national institutions are women. This is followed by Civil Services (22%) Public Sector (19%) Private Sector (13%) and about 10%

each Private sector (small) and Government R&D sector respectively. Kerala has the largest number of women engineers followed by Tamil Nadu and Karanataka, Maharastra, Andhra Pradesh, Gujarat, Delhi, Madya Pradesh, West Bengal and Uttar Pradesh following the order. The women preferred Electrical Engineering and Electronics formerly and now they have switched over to computer Science then come the preference for Mechanical, Chemical etc.

The issues related to women in Science and Technology have three distinct facts (i) enrolment levels, (ii) employment opportunities and (iii) career development. Reasons for comparatively low enrolment of women in science and technology are usually traced back to sex role conditioning and cultural conditioning to the girls at home and in the schools. In this context school teachers are found to be playing a critical role. It is indicated that contrary to normal expectations more often school teachers discourage girls from taking up technical posts as a career. Thus the need for educating the educators at the middle and the high school levels has rightly been stressed in some studies. The possibility of breaks due to leave requirements during child bearing and rearing are some of the apprehensions stated against employing women scientists. Many researchers mention the need for more effort and efficiency on the part of women scientists to get equal professional recognition and be included in decision making.

For years the belief that women's traditional roles as wives and mothers made serious career outside the home impossible, kept women out of all but a few "acceptably female" professions which were characterised by limited opportunities and low earnings. The science and science-based professions which generally enjoy high status and rewards were deemed particularly unsuitable for women. Such attitudes were rationalised for many years on the ground that women lack ability, interest or both. Women scientists have often argued that the personal and psychological costs imposed on them by curtailed opportunity, discriminatory employment practices and unfairly diminished rewards are so enormous that they find it difficult to function as scientists. In reviewing the data on the causes of death a study in USA revealed that between 1925 and 1979, 11% of the women who committed suicides were women scientists. A study conducted by Lindsay R. Harmon a reader in National Research Council USA, has stated that women with Ph.D. in science and technology have obtained better grades from school studies onwards up to their higher studies compared to their male counterparts. More stringent procedures are adopted in selecting women than men!.(Technology Review: Nov. / Dec. 1984 Copy Rights (c) 1984 by Alumini Association of M.I.T.)

Some special programmes are being initiated by foreign Universities to encourage more women to get into engineering field. Faculty of Technology, British Open University, Yorkshire develops publicity materials to dispel the popular "greasy machines" image of technology and emphasise the accessibility of the courses and their relevance to a job market.

School of Engineering SWE, Purdue University helps women to identify their own potential in relation to their career options. The University also promotes skills which will enable them to meet the demands of such a career, particularly assertiveness and to demonotrate the ways that women engineers incorporate their work into their varied life styles which may also include marriage and children.

University of California, Berkeley offers financial aid to carefully selected women to allow them to participate in graduate engineering studies. It also conducts special academic counselling for women. Boston University has a special element to help and prepare academically women for reentry programmes to build their self-confidence. The University of Dayton provides a mechanism for Career change from science to engineering. Went worth Institute, USA has a mechanism to give educators an opportunity to see women working in non-traditional technical role and to provide information on technical jobs and the educational requirements for training. The institution also offers a forum for sharing concerns in dealing with the psychological barriers young women face in making non-traditional career choices, being female in a mostly male dominated environment and dealing with parental reactions to a non-traditional choice. Many Universities in U.K. take up researches to investigate the reasons for women to avoid technical subjects. (Women Engineers in India by Dr. P.P. Parikh & Dr. S.P. Sukhatme)

The researches confirm the fact that women scientists are quite capable of rising to any heights in their career development provided they get encouragement from their employers in both private and public sectors. The women in position do possess self-confidence, courage, determination, and will power and the only factors they need are the opportunities to make use of their potentials. An advocacy for the change in the status of women scientists, up gradation in their position concomittant to their ability, tolerance for women leadership, involvement of women scientists in decision making process and management strategies are the necessities to bring more women folk to area of science and technology.

NEED FOR THE PRESENT STUDY AND ITS OBJECTIVES

Participation of women in science and technology is not only an important aspect in the social and economic development of the nation, but it is also a critical constituent in the process of improving the quality of life of women themselves. All over the world, the low participation of women in science and technology has been a matter of concern, and the need for correction of the situation is undebatable. Assessment of the existing level of their participation and their contribution to the field of science and technology is the preamble to formulation of appropriate corrective measures. It is also important to study the related issues such as social attitudes of and towards women scientists and technologists, employment opportunities and their professional performance. Precise definition of the problem can emerge only from comprehensive data collection and in-depth analysis of the same. No such effort on a national basis is known to have been made so far. The present work is thus the first attempt in the required direction.

The Statistics of India reveal that the percentage of women in the total number of Ph.D. degree holders is 30% (approx.). Their composition, the employment and status in social and economic fronts is however not comparable with men. Women are disadvantaged. The perceivable grounds which include less scope for migration to prospective centres of employment. obligations to families, gender specificity, etc. are given more importance. It is therefore desirable that a study with broad objectives containing the factors promotive for attaining right status and intimadatory for achievements to women is worth undertaking. Also specific target groups of women with Ph.D. degree in Science & Technology to whom prospects are seemingly bright and could hence be concentrated initially in the envisaged project.

The relevance of the study is justifiable so as to leave behind lasting benefits to the women Ph.D. holders in S & T and a fund of information would be made available to the agencies in the Government e.g., Ministry for Science and Technology/Human Resource and Development, Government of India.

OBJECTIVES

1. To undertake a survey of women Ph.D degree holders in Science and Technology of various Universities in the states of Andhra Pradesh, karnataka, Tamil Nadu, Kerala and Pondicherry. The survey covers those candidates with Ph.D Degree in Science and Technology obtained during a time span of fifteen years (1980 - 1995)
2. To study their socio-economic and cultural background prompting their options to undertake advanced degrees and their professional status.
3. To identify the social and cultural constraints impeding to their career development and highlight the policies and actions of the governments of the states and of the centre, local bodies, industries etc., which are in force for implementation; and,
4. To provide to the concerned agencies in the government a data base containing the potentials of women in Ph.D. degree holders in Science and Technology and suggest avenues for proper harnessing of their potentials.

CHAPTER II

REVIEW OF THE LITERATURE

Higher education is considered important merely because it provides a means of entry for women into the labour force. Even after having obtained a higher education, societal and family factors adversely affect Women's chances of using their education (Krishnaraj, 1977).

A well-known longitudinal survey of professional women's attitudes towards education, employment and family situations reveals that most of the women retain traditional values despite their education (Blumberg and Dwaraki, 1980) p.25. Misra (1977) was quite certain that the role-person-system conflict would be resolved with time as the woman anchored herself to a different, more stable, set of values. From the late 1980s, scholars have begun to recognize that it is important that the emphasis on the individual woman must shift to discussions about institutions, structures and systems. The responsibility for progress or the lack of it need not be placed upon the woman herself; there may be other barriers in the workplace or at home that have not been studied. For instance, Chanana (1988) found that women's ambitions are low because the cultural process of socialization fosters a low self-image. This lack of confidence is perhaps one reason why they do not progress well. Women evolve adequate coping syles, although these tend to be conflict-avoidance rather than action-oriented. Israney (1989b), points out the structural barriers to women's entry into education. p.26.

Women scholars in western nations, point to the traditional majority of women in the arts, literature and languages, their lesser presence in mathematics and natural sciences and their near absence in engineering and technology. Just as a case in India, even if there is increased participation of women in advanced education, as is seen in the case of Australia, it does not mean enhanced labor market chances (Craney and O'Donnell, 1983).p.26. Women faculties are found in larger numbers in the less prestigious disciplines and institutions and at the lower career levels (Chamberlain, 1988; Freeman, 1977). According to Sidanius and Crane (1989), students tend to evaluate female faculty on criteria that are different from those for males, while at the same time being less generous to them. In a detailed study of women university teachers in several European nations (Sutherland (1985) compares women in Britain, France, Finland and West and East Germany.p.27. She has interviewed women to understand their career problem. She has pointed out in a study that inspite of the higher education of women the problems they confront in the society and in their career are almost

similar. Studies by Christine De Pizan (1405) Giovanni Boccaccio (1963) and Mozans (1974) have stated in their studies that women are capable of great achievement". Although Keller's biography of Barbara McClintock (1983) is basically about one famous woman, she discusses in depth how that woman's life is interwoven with the history of the scientific field of molecular physics. P.28.

A National Science Foundation report paints a dismal picture of women scientists in the United States (Crowley, 1988), which is unfortunately very similar to that in other countries. The report points out the following findings. The proportion of women in science is very low; only one in four scientists are women and only one in 25 engineers are women. There are wide differences by field; there are more women in those fields that are less prestigious. Women are more likely than men to be unemployed or under-employed. They are generally younger with fewer years of professional experience. Hence they occupy positions of lower status in the hierarchy and earn lower salaries. Over the years, women have made tremendous strides, but there is still a long way to go before any equity is achieved.

The Liberal feminist arguments place the onus on the women themselves and focus on how participation is related to individual characteristics such as level of confidence, commitment and choice of the right husband. Many of these studies follow a status attainment or human-capital theoretical approach, investigating the extent to which women's entry, advancement, and contributions in science-based professions depend upon supply side characteristics. Studies also look at the interlinkages between career and personal life (Haas and Perrucci, 1984; Lips and Temple, 1990; Mattfield and van Aken, 1965). Some scholars have used quantitative methods to study how marriage, motherhood and geographical mobility affect research performance (Cole and Zuckerman, 1987). There has been few studies gender specific in our country. The Department of Science and Technology, Govt. of india under National Science and Technology Management Information System (NSTMIS), has sponsored few studies in this direction such as

- Women Engineers in India by Prof. P. P. Parikh & Prof. S.P. Sukhatme, Dept. of Mechanical Engineering, Indian Institute of Technology, Mumbai (1992)
- Professional Women in Agriculture by Dr. Rama Rao, National Academy of Agricultural Research Management (NAARM), Hyderabad (1999)
- Science Post- Graduates of Northern India by Dr. Manju Sharma, Banaran Hindu University (BHU) (1998)
- The present study is the Fourth study on Science and Technology Women.

CHAPTER – III

METHODOLOGY

The Project attempts to undertake a study of Women Ph.D. degree holders in Science and Technology areas who obtained their degrees from Universities and Institutes of National Importance located in Southern States of India. The work of the project has been carried out in four stages. The first stage involved attempts to identify the target population and to determine the sample members. In the second stage, the preparation of a structured questionnaire was taken up. A pilot study was launched to pretest the questionnaire, and the questionnaire was finalised. Collection of the data through questionnaire constituted the third stage. The fourth stage involved the data entry, data analysis and preparation of the report.

TARGET POPULATION

The focus of the study is on the population of the women Ph.Ds in Science & Technology who obtained degree from recognised Universities in the States of Tamil Nadu, Karnataka, Kerala, Andhra Pradesh and Pondicherry during the time-span 1980-1995.

There are 46 Universities, 7 Deemed Universities and 3 Institutes of National Importance located in the Southern States which provide facilities for research in Science & Technology leading to Ph.D. degrees.

List Showing the Names of Universities/Institutions in Southern States (As per Directory of R&D institutions 1994)

Andhra Pradesh

Universities

1. Andhra Pradesh Agriculture University
2. Dr. B.R. Ambedkar Open University
3. Andhra University
4. Jawarlal Nehru Technological University
5. Kakatiya University
6. Nagarjuna University
7. Nizam's Institute of Medical Science
8. Osmania University

9. Sri Krishnadevaraya University
10. Sri Padmavathi Mahila Viswavidyalam
11. Sri Venkateswara University
12. Telugu University
13. University of Health Sciences, Vijayawada
14. University of Hyderabad

Deemed Universities

15. Central Institute of English and Foreign Languages
16. Sri Sathya Sai Institute of Higher Learning
17. Rastriya Sanskrit Vidyapith

Karnataka

Universities

1. Bangalore University
2. Gulbarga University
3. Karnataka University
4. Kannada University, Hampi
5. Kuvempu University
6. Mangalore University
7. National Law School of Indian University
8. University of Agriculture Sciences, Bangalore
9. University of Agriculture Sciences, Dharwad
10. University of Mysore

Deemed Universities

11. Indian Institute of Science, Bangalore
12. National Institute of Mental Health and Neuro Sciences

Kerala

Universities

1. Cochin University of Science and Technology
2. Kerala Agriculture University
3. Kerala State Open University
4. Mahathma Gandhi University
5. University of Calicut
6. University of Kerala
7. Shankaracharya Sanskrit University, Kaladi

Institute of National Importance

8. Sree Chitra Tirunal Institute for Medical Science and Technology

Pondicherry

1. Pondicherry University

Tamil Nadu

Universities

1. Alagappa University
2. Anna University
3. Annamalai University
4. Bharathiyar University
5. Bharathidasan University
6. Dr. M.G.R. Medical University
7. Madurai Kamaraj University
8. Mother Teresa Women's University
9. Tamil Nadu Agricultural University
10. Tamil Nadu Veterinary and Aninal Sciences University
11. Tamil University
12. Madras University
13. Periyar University
14. Manonmaniam Sundaranar University

Deemed Universities

15. Avinashilingam Institute of Home Science and Higher Education for Women
16. Gandhigram Rural University

Institute of National Importance

17. Indian Institute of Technology, Madras
18. Dakshina Bharat Hindu Prachar Sabha, Chennai

The data relating to women Ph.Ds in various fields of Science & Technology were obtained from the primary source, namely from the Annual Reports and official records of the Universities and Institutions. The Annual Reports of the Universities contained the lists of men and women Ph.Ds in a combined form. So, steps were taken to locate the women Ph.Ds and to find out details such as guide's name, the Department where the doctoral research was carried out and the field of study. Considerable time and efforts were involved in this task. The data thus collected constituted the target population & are presented in the following Table I(a to ao).

Total Number of Women Ph.Ds. from Southern States in Science and Technology: University-Wise, Discipline-Wise and Year-Wise Distribution

ANDRA PRADESH

(I.a) Osmania University

S.No.	Discipline	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	Total
1	Physics	2			4		2		2	2	2	3	1	1	3	2	24
2	Chemistry		3	5	1	5	10	12	11	10	12	12	11	13	12	14	131
3	Botany	5	7	10	8	5	5	6	7	8	8	17	11	10	9	10	126
4	Zoology	3	4	6	2	10	18	14	16	15	14	12	11	14	18	19	176
5	Biochemistry	1		2	1	2	2	9	5	4	3	3	8	4	9	11	64
6	Genetics	6	3	5	8	1	3	8	9	3	6	6	7	5	5	6	81
7	Astronomy			1													1
8	Microbiology				1	2		2	5	4	2	6		1	2	3	28
9	Anatomy						1										1
10	Pharmacology						1										1
11	Mathematics				1		1	4		2	3		1		3	2	17
12	Geophysics											1		1			2
13	Geology								1				1		1		3
14	Statistics											2			1		3
	Total	17	17	29	26	25	43	55	56	48	50	62	51	49	63	67	658

(I.b) Kakatiya University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Botany	2		4		1	2			2	1	5	2	4	1	2	1	4	11	2	44
2	Chemistry		1	2		1	1	3	1	1	1		3	2	2	2	3	1			24
3	Physics					1		1											1	1	4
4	Zoology			3	2	2	2	1	1		1	1	3	5	2	2	2	2		1	30
5	Mathematics													2							2
6	Pharmacy				1		1														2
	Total	2	1	9	3	5	6	5	2	3	3	6	8	13	5	6	6	7	12	4	106

(I.c) Sri Venkateswara University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Physics	1		2	1		1		1				2	1	1	3	1			2	16
2	Chemistry				1	1		2	1	1	2	4	2	3	4	5	1		1		28
3	Botany				1	1				1	2	2	3	3		1		3	1	1	19
4	Zoology	2	4	2	1	7	6	6	3	3	11	5	2	4	3	4	5	3	3	2	76
5	Mathematics		1		1			1			1	2		2	1	1	3				13
6	Home Science	2	1	1		1			2	1		2	1	6	3	2	1	3	4		30
7	Statistics						1								1						2
8	Biochemistry												1							1	2
9	Geography							1				1	1		1				1		5
10	Virology																	1			1
11	Applied Geology																	1			1
	Total	5	6	5	5	10	8	10	7	6	16	16	12	19	14	16	11	11	10	6	193

(I.d) Andhra University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	91	92	93	94	95	96	97	Total
1	Physics		2	1			2	2									2	9
2	Chemistry	5	1	1	1	1		2	1	1	1	3	2	1	3	2	2	27
3	Botany			4	5	5	4	2	4	4	2	1	5	2		2	1	41
4	Zoology	1	3	5	4	5	2		6	4	4	4	2	2	2	6	3	53
5	Nuclear Physics		1											1				2
6	Marine Living Resources	1		1														2
7	Human Genetics & Phy.Ap.		2									1			1		1	5
8	Meteorology & Oceanography			1		1			1									3
9	Bio-Chemistry					1							1				1	3
10	Engg. Chemistry						1											1
11	Mathematics								2		1				1			4
12	Applied Mathematics		1						1	1	1							4
13	Environmental Sciences											1	1		1	1		4
14	Elec. & Commn. Engg.											1					1	2
15	Pharmaceutical Sciences											1		2	1			4
16	Chemical Engineering											1					1	2
17	Computer Sci. & Sys.Engg.													1				1
18	Geophysics															1		1
19	Mechanical Engineering																1	1
20	Geography	1	3	1					1			1						7
	Total	8	13	14	10	13	9	6	16	10	9	14	11	9	9	12	13	176

(I.e) University of Hyderabad

S.No.	Discipline	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Mathematics				2				2				1	1			1	2	13
2	Computer Science											2			2				
3	Physics	1	2	1		1				1	1	2		2	1	2	1	3	18
4	Chemistry				1		1	1	3		1	1	1		2	1	4	6	22
5	Life Science	1	1	1	3	1	1	1		4	4	4	1						22
6	Biochemistry												1	1	2	2	3	5	14
7	Plant Science													2	2	2	2	4	12
8	Animal Science															2	2	1	5
	Total	2	3	2	6	2	2	2	5	5	6	9	4	6	9	9	13	21	**106**

(I.f) Nagarjuna University

S.No.	Discipline	81	82	83	84	85	86	90	91	93	94	95	96	97	98	Total
1	Mathematics													1		1
2	Physics											1				1
3	Chemistry		1		1					1	2					5
4	Botany				2	1		1	1				1	1	1	8
5	Zoology	2	1	1	1	2	2			4		3				16
6	Earth & Space Science														1	1
	Total	2	2	1	4	3	2	1	1	5	2	4	1	2	2	**32**

(I.g) Sri. Padmavati Mahila Vishvavidyalayam

S.No.	Discipline	94	96	97	98	Total
1	Applied Mathematics	1	1			2
2	Applied Microbiology			1		1
3	Home Science			2		2
4	Sericulture			1	2	3
	Total	1	1	4	2	8

Note: There were No women Ph.Ds. in Science and Technology during the years 1980-93 and 95

(I.h) Andhra Pradesh Agriculture University (1980-98)

S.No.	Discipline	Total
1	Agriculture	34
2	Home Science	10
3	Veterinary Science	6
	Total	50

Note: Year of award of Ph.D. not furnished

(I.i) Jawaharlal Nehru Technological University (1980-98)

S.No.	Discipline	Total
1	Physics	1
2	Chemistry	1
3	Biotechnology	3
	Total	5

Note: Year of award of Ph.D. not furnished

(I.j) Nizams' Institute of Medical Sciences

S.No.	Discipline	87	Total
1	Gastroentrology	1	1
	Total	1	1

Note: No women Ph.Ds. in Science & Technology during the years 1980-86 and 88-95.

(I.k) Gulbarga University

S.No.	Discipline	80	83	84	85	88	90	91	93	94	95	96	97	98	Total
1	Geology	1	1												2
2	Chemistry			1											1
3	Organic Chemistry			1											1
4	Biochemistry						1			2		1			4
5	Microbiology				2	1		1	1						5
6	Botany								1		1			1	3
7	Zoology						2			1			1		4
8	Mathematics												2		2
9	Statistics										1				1
10	Applied Electronics						1								1
	Total	1	1	2	2	1	4	1	2	3	2	1	3	1	24

Note: There were no women Ph.Ds. in Science & Technology during the years 1981, 82, 86, 87, 89 and 92.

(I.l) Mangalore University

S.No.	Discipline	87	88	90	91	92	93	94	95	96	97	98	Total
1	Bioscience	1		1	2	1	3	2	1	1	1	2	15
2	Material Science						1						1
3	Physics								1	1			2
4	Chemistry		1					1			1	1	4
5	Applied Botany											1	1
6	Applied Zoology										1		1
7	Mathematics								1	1			2
8	Civil Engineering							1					1
	Total	1	1	1	2	1	4	4	3	3	3	4	27

Note: There were no women Ph.Ds. in Science & Technology during the years 1980-86 and 89.

(I.m) Bangalore University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Physics	2	1	2	1			1		1		2	1	2	2			1			16
2	Chemistry					2				1	3	3	1	1	1		1		2	3	18
3	Botany	2	1	2	3	2		1	1	1	4	1	3	4	1	5	1	1	1		34
4	Zoology	2	1		5	2	1	3	1		3	4	3			6	3	1	1	1	37
5	Home Science				1											2	5				8
6	Sericulture										1					1	1				3
	Total	6	3	4	10	6	1	5	2	3	11	10	8	7	4	14	11	3	4	4	116

(I.n) Mysore University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Physics		1	1							1		1	1	2	3	1		2	1	14
2	Chemistry			2			1			2				2	3		1		1	1	13
3	Botany											1		1	2		2	1	2		9
4	Applied Botany			1	1	1		2	1	4	4	2			3	4	2	2	2	5	34
5	Zoology	1	2	2			1			4	1	3	3	1	2	2	1				23
6	Mathematics								1	1					2		1				5
7	Home Science			2	1		1		1		3			1	1		1				11
8	Statistics																	1			1
9	Biochemistry	2	1	2	1	1		1	3	4	2	1	1	1	4	4	5	4	5	4	46
10	Biotechnology																		1		1
11	Food Science	1	2	3	1			3		2	5		2	2		5	1	2	2	1	32
12	Food Science and Nutrition																	1			1
13	Food Technology				1										1						2
14	Geology				1						1				1		1		2		6
15	Sericulture															1				1	2
16	Speech & Hearing		1	1				1			1	1	1			1	2		1	2	12
	Total	4	7	14	6	2	3	7	6	17	18	8	8	9	21	20	18	11	18	15	212

(I.o) Indian Institute of Science, Bangalore

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Mechanical Engineering	1					1								1						3
2	Management Studies			1							1			1		1	2	2	1		9
3	Computer Sc. Automation			1			1								1			1			4
4	Civil Engineering				1					1	1										3
5	Electrical & Communication Engineering									1	1		1		1			1			5
6	Metallurgy									1							1	1	1	1	5
7	High Voltage Engineering												1							1	2
8	Aerospace Engineering												1	1					1		3
9	Instrumentation														1						1
10	Chemical Engineering														1						1
11	Electrical Engineering																		2	1	3
12	SERC																			1	1
13	CEDT																			1	1
14	Inorganic Physical Chemistry	2	3	2	2	1	2	2	1	2	2	2	2	1	3	3	5	6	2	3	46
15	Organic Chemistry	1	3			1	3	1		4	2	2		1	1	1	1		2	1	24
16	Solid State Structural Chem.	1		1										1			1	1	5		10
17	Mathematics		2			1	1		1	1				3	1		2		3		15
18	Physics		3	1		2	3	1	1	3		1	7	4	1	2	3	5	1	2	40
19	Biochemistry		2	2	1	1	8	2	4	6	4	1	2	2	5	6	4	8	5	5	68
20	Molecular & Cell Biology		1	2	2	1	2	1	2	2	2	1			1	3	2	2	4	3	31
21	Molecular Biophysics			2			1		1	2	2		1	1	2	2	2			1	17
22	Foreign Language Sciences						1												1		2
23	CES																1		1	1	3
24	MRC																	2		2	4
25	MRDG																		1	2	3
	Total	5	14	12	6	7	23	7	10	23	15	7	15	15	19	18	24	29	30	25	304

(I.p) Karnataka University (1980-98)

S. No.	Discipline	No. of Ph.D
1	Physics	5
2	Chemistry	22
3	Botany	14
4	Zoology	22
5	Marine Biology	5
6	Mathematics	6
7	Statistics	5
	Total	79

Note: Year of award of Ph.D. not furnished

(I.q) National Institute of Mental Health and Neuro Sciences, Bangalore (1980-98)

S.No.	Discipline	No. of Women Ph.D
1	Speech Pathology	1
2	Psychiatric Nursing	1
3	Biophysics	2
4	Clinical Psychology	3
5	Human genetics	1
6	Psychiatric Social Work	1
7	Psychopharmacology	1
8	Mental health Education	1
9	Neuro – physiology	3
10	Neuro-Chemistry	1
	Total	15

Note: Year of award of Ph.D. not furnished

(I.r) University of Agricultural Sciences, Dharwad

S.No.	Discipline	87	90	92	93	95	97	Total
1	Foods and Nutrition		1				3	4
2	Plant Pathology	1						1
3	Agricultural Extension			1		1	1	3
4	Agricultural Microbiology		1				1	2
5	Agronomy			1			1	2
6	Horticulture				1			1
7	Agricultural Economics						1	1
	Total	1	2	2	1	1	7	14

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-86, 88, 89, 91, 94 and 96

(I.s) University of Agricultural Sciences Bangalore

S.No.	Discipline	91	92	93	94	95	96	97	98	Total
1	Horticulture	1		2	2	1	1	2	4	13
2	Sericulture					1	2			3
3	Agricultural Microbiology	1							1	2
4	Craft Physiology	2	1	1				1		5
5	Agricultural Chemistry						1	1	1	3
6	Agricultural Entomology	2	1						1	4
7	Genetics and Plant Breeding	2	1	1				1		5
8	Plant Pathology						1	1	1	3
9	Agricultural Economics							1	1	2
10	Seed Technology			1						1
11	Agricultural Extension						1	1	1	3
12	Poultry Science				1			1		2
13	Dairy Microbiology					1				1
14	Aquaculture								1	1
15	Fish Processing Technology					1				1
	Total	8	3	5	3	4	6	9	11	49

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-90.

KERALA

(I.t) Calicut University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	Total
1	Physics											1					1	2
2	Chemistry	1		1	1			2			1	3	1	2	1	2		15
3	Botany			1	1	1	1	1	4			1		3	3	2	3	21
4	Zoology		1		1	1	1	1	1	5	1	1	5	3	2	1	1	25
5	Mathematics										1							1
6	Medicine											1						1
7	Biochemistry												1	1	1			3
8	Microbiology														1			1
9	Immunology												1					1
	Total	1	1	2	3	2	2	4	5	5	3	7	8	9	8	5	5	70

(I.u) Kerala Agricultural University

S.No.	Discipline	83	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Agricultural Sciences	1	1	2	2	1	2	5	4	4	6	9	14	19	15	18	103

I.v University of Kerala

S.No.	Discipline	89	90	91	92	93	94	95	96	97	98	Total
1	Mathematics			1					1	1		3
2	Computer Science					1						1
3	Statistics				1							1
4	Physics		1	2	2	2	4	6	2	4	1	24
5	Chemistry	5		2	6	5	5	6	12	9	7	57
6	Botany	2	2	3	2	4	2	2	4	4	4	29
7	Zoology		1	1	4	1	5		2	4	4	22
8	Aquatic Biology	7	2	4	7	1	8	5	6	8	4	52
9	Biochemistry	2	4	2	4	5	7	6	2	3	6	41
10	Demography						2			2		4
11	Geology							1		2	2	5
12	Home Sciences			1				1	1			3
13	Architecture							1				1
	Total	16	10	16	26	19	33	28	30	37	28	243

(I.w) Cochin University of Science and Technology (1980-98)

S.No.	Discipline	No. of Women Ph.D
1	Physics	19
2	Chemistry	16
3	Biochemistry	1
4	Science	2
5	Marine Science	78
6	Technology	16
7	Biotechnology	1
8	Applied Chemistry	3
9	Mathematics	18
10	Statistics	2
11	Environmental Studies	4
	Total	160

Note: Year of award of Ph.D. not furnished.

(I.x) Mahatma Gandhi University, Kottayam

S.No.	Discipline	93	94	95	Total
1	Physics	1			1
2	Astro Physics		1		1
3	Polymer Chemistry		1		1
4	Inorganic Chemistry			1	1
5	Botany		1	2	3
6	Zoology		1		1
	Total	1	4	3	8

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-92.

(I.y) Sree Chitra Tirunal Institute for Medical Sciences and Technology

S.No.	Discipline	89	90	91	93	94	98	Total
1	Medical Sciences	1	1	1	1	1	2	7

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-88, 92, 95, 96 & 97.

TAMIL NADU

(I.z) Madras University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	Total
1	Physics		2	1	1	4	2		7	3	1	3		1	3	2	2	32
2	Chemistry	1	4	3	4	1	3	1	1	2	3	2	1	2	3	2	8	41
3	Botany	3	1	6	3	7	2	5	6	4	5	5	3	1	4	6	1	62
4	Zoology		4	3	6	6	5	5	4	4	11	5	4	8	5	5	6	81
5	Analytical Chemistry	1		1			1	1	1	1					1	1		8
6	Biochemistry	3	7	10	4	4	6	9	8	5	7	8	6	6	6	5	8	102
7	Home Science	2		2	2	3	2	2	1	1	3	1	1		1	1	2	24
8	Foods and Nutrition		1							1								2
9	Faculty of Medicine		2	1			1		1		1			1			1	8
10	Physiology(Nonmedical	2			1					1	1			1		3		9
11	Textiles and Clothing		1		2		1											4
12	Mathematics	3	2	2	1	2	2	2	1	3	1	2	1	2	1	1	5	31
13	Inorganic Chemistry			1		1												2
14	Microbiology			1			1	1	1	1	3		4	2		1		15
15	Anatomy(Non clinical)			1		1	1											3
16	Endocrinology				1			1		2			1		1	1		7
17	Mathematical Engg.				1									1				2
18	Genetics				1			1		1	2		1		2	1	2	11
19	Geology					1												1
20	Physical Chemistry			1		1	1		1						1		1	6
21	Leather science						1											1
22	Forensic Science							1							1			2
23	Molecular Biology							1										1
24	Nuclear Physics									1					1	1	1	4
25	Pharmacology									3		1						4
26	Marine Biology												1					1
27	Entomology												1			1		2
	Total	15	24	33	27	31	29	30	32	33	38	27	24	25	30	31	37	466

(I.aa) Tamil Nadu Veterinary and Animal Sciences University

S.No	Discipline	85	90	91	92	93	94	95	96	Total
1	Preventive Medicine	1								1
2	Poultry Science		1							1
3	Physiology			2						2
4	Anatomy				1					1
5	Diary Science				1					1
6	Obstetrics & Gynecology					1				1
7	Parasitology					1		1		2
8	Biotechnology						1			1
9	Microbiology						1		1	2
10	Animal Biotech						1			1
11	Pathology						1			1
	Total	1	1	2	2	2	4	1	1	14

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-84 and 86-89.

(I.ab) Gandhigram Rural Institute (Deemed University)

S.No.	Discipline	92	93	95	96	98	Total
1	Chemistry		2				2
2	Biology	1		1			2
3	Home Science				1	1	2
4	Sericulture					1	1
	Total	1	2	1	1	2	7

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-91, 94 and 97.

(I.ac) Alagappa University (1980-98)

Serial No.	Discipline	No. of Women Ph.Ds.
1	Physics	1
2	Industrial Chemistry	6
	Total	7

Note: Year of award of Ph.D. not furnished.

(I.ad) Tamil Nadu Agricultural University

S.No	Discipline	93	94	95	96	97	98	Total
1	Crop Physiology	1			1			2
2	Horticulture		1		2	1	1	5
3	SS & AC			5	2	2		9
4	Agrl. Extension			2	3		1	6
5	Forestry				1			1
6	Plant Breeding and Genetics				2	4	1	7
7	Environ. Science				2	3		5
8	Agronomy				3	2	1	6
9	Seed Technology				1	2		3
10	Plant pathology				1			1
11	Agrl. Economics					1		1
12	Agrl. Entomology					1	1	2
13	Agrl. Microbiology				1		1	2
14	Biotechnology				2			2
15	Soil Science				1			1
	Total	1	1	7	22	16	6	53

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-92.

(I.ae) Annamalai University

S.No	Discipline	82	84	86	87	88	89	92	93	94	95	96	97	98	Total
1	Physics													1	1
2	Chemistry		1		1		1			1	3	1	1		9
3	Botany		1	1	1	2		1	1	1			3	1	12
4	Zoology	1	1	1				2		2	4		1		12
5	Bio-Chemistry												1	1	2
6	Marine Biology	2	1		2	2	3	2	1	3	3		1		20
7	Microbiology									1					1
8	Mathematics	1								1				1	3
9	Anatomy										1				1
	Total	4	4	2	4	4	4	5	2	9	11	1	7	4	61

Note: There were no women Ph.Ds. in Science and Technology during the years 1980, 81, 83, 85, 90 and 91.

(I.af) The Tamil Nadu Dr. M.G.R. Medical University

Discipline	93	95	96	97	98	Total
Medical Science	1	2	5	7	15	30

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-92 and 94.

(I.ag)Avinashilingam Institute for Home Science and Higher Education for Women

S. No.	Discipline	No. of Women Ph.Ds.
1	Science	8
2	Home Science	42
	Total	50

Note: Year of Ph.D. not furnished.

(I.ah) Tamil University

Discipline	98
Biological Sciences	2

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-97.

(I.ai) Indian Institute of Technology, Chennai.

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	Total
1	Mathematical Sciences	1		1	1	2		2	1	3	1		3	1	1	4	2			23
2	Physical Sciences	1	5	2	1			5	1	5	3	1	4	4	4	1	2	2	3	44
3	Chemical Sciences	2	4	1	3		3	3	4	4	7	8	4	1	3	6	1	8	8	70
4	Technological Sciences	2	2		1						4	1	3	2	3	3	3	3	3	30
	Total	6	11	4	6	2	3	10	6	12	15	10	14	8	11	14	8	13	14	167

(I.aj) Anna University

S.No.	Discipline	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Mathematical Sciences	1				1	3	2			2		2			11
2	Physical Sciences								1	1			5	1	3	11
3	Chemical Sciences				1		1	1	1		1	2	1	1	1	10
4	Biological Sciences			1							2	11	4	1	2	21
5	Technological Sciences	1					2		1	3		3	2	2	3	17
	Total	2		1	1	1	6	3	3	4	5	16	14	5	9	70

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-84.

(I.ak) Madurai Kamaraj University

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
1	Physical Sciences		2													1	2				5
2	Chemical Sciences		1						2		1			1	2	2	1			1	11
3	Biological Sciences	3	2	4	2	3	6	11	5	5	5	5	3	7	5	3	5	9	10	10	103
4	Agricultural Sciences											1									1
5	Medical Sciences					1			1	2				1							5
6	Technological Sciences															2	1	1	3		7
	Total	3	5	4	2	4	6	11	8	7	6	6	3	9	7	8	9	10	13	11	132

(I.al) Bharathidasan University

S.No.	Discipline	90	91	92	93	94	95	96	97	Total
1	Physics				1		1		3	5
2	Chemistry		1		6	6	2	4	2	21
3	Botany	1		1	3	2	4	1		12
4	Zoology				2	2	1	1	2	8
5	Life Science					1		1		2
6	Plant Science								1	1
7	Animal Science							1	3	4
8	Environment Biology					1				1
9	Nutrition & Dietitics						1			1
10	Mathematics					1	1			2
11	Educational Technology			1						1
	Total	1	1	2	12	13	10	8	11	58

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-89.

(I.am) Bharathiyar University (1980-98)

S.No.	Discipline	No. of Women Ph.Ds.
1	Mathematical Sciences	11
2	Physical Sciences	2
3	Chemical Sciences	6
4	Biological Sciences	61
5	Agricultural Sciences	7
6	Technological Sciences	2
	Total	89

Note: Year of award of Ph.D. not furnished.

(I.an) Manonmanium Sundaranar University

S. No.	Discipline	97	98	Total
1	Mathematics	1		1
2	Chemistry		1	1
3	Biochemistry		1	1
4	Zoology	1	3	4
	Total	2	5	7

Note: There were no women Ph.Ds. in Science and Technology during the years 1980-96.

(I.ao) Pondicherry University (1980-98)

S. No.	Discipline	No. of Women Ph.D
1	Mathematical Sciences	2
2	Physical Sciences	3
3	Chemical Sciences	1
4	Biological Sciences	8
	Total	14

Note: Year of award of Ph.D. not furnished

SRI KRISHNADEVARAYA UNIVERSITY

"This University has not awarded Ph.D. Degree in Science and Technology to women candidates as there is no Ph.D. Programme in the subject of Science and Technology" (The Controller of examination) letter No.SKU/Exams/Ph.D/B1-1/98 dated 30-12-98.

TELUGU UNIVERSITY

"I am to inform you that our University is established to promote Telugu Literature and Culture. Therefore, the question of Ph.D. degree holders in Science and Technology does not arise. (Dr. Bittu Venkateswarlu, Controller of Examination) letter No.PSTU/Exams./Mis./98 dated 12-10-1998.

UNIVERSITY OF HEALTH SCIENCES

"This University is not conducting any Ph.D. degree courses." (Dr. K.S.N. Prasad, Deputy Registrar, Exams) Letter dated 14.08.98.

SRI SATYA SAI INSTITUTE OF HIGHER EDUCATION (Deemed University)

We do not have any female Ph.D. degree holder in Science and Technology from 1980-till date. (The Registrar, letter dated 13.08.98)

CENTRAL INSTITUTE OF ENGLISH AND FOREIGN LANGUAGES

"All our degrees are on Language Teaching, Literature and Linguistics" (Priya Hosali, Dean of Studies in English) Letter No.CIEFL/DSE/F.13/98/1699 dated 22 July 1998.

KUVEMPU UNIVERSITY

There are no women Ph.D. degree holders in Science and Technology from 1980-till date. (The Registrar (Evaluation) letter dated 28.08.98)

MOTHER TERESA WOMEN'S UNIVERSITY

Our university is offering Ph.D. only in Social Science, Humanities and Languages. So I am not in a position to provide a list of Ph.D. holders in Science and Technology (Dr. A. Surya Kumari, Controller of Examination, letter dated 03.03.98)

Consolidated List of Women Ph.Ds. in Science and Technology: State-Wise, Discipline-Wise and Year-Wise Distribution

The target population for present study consisted of 3993 women doctorates. Tables II(a to e) present the distribution of the target population. Cross-classified according to year of qualifying for Ph.D., Discipline of study for each of the Five states.

Table (II.a) Andhra Pradesh

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	*YNK	Total
1	Mathematical Sciences		2		1	1	3	2	7	1	5	5	4	5	5	7	8	1	2	2		61
2	Physical Sciences	1	5	4	4	6	3	6	1	2	2	3	6	4	2	9	5	2	4	6	1	76
3	Chemical Sciences	5	2	7	7	5	8	17	16	15	16	16	19	20	23	22	23	4	7	6	1	239
4	Biological Sciences	6	21	51	38	46	42	40	54	57	49	51	64	57	54	59	68	29	30	17	3	836
5	Earth and Space Sciences	1	3	2		1		1	2	1		1	2	2	2	1		2	1	1		23
6	Agricultural Sciences	2	1	1		1			2	1		2	1	6	3	2	1	3	7	2	50	85
7	Medical Sciences				1		1	2	1					1		2	1					9
8	Technological Sciences													2		1			3			6
	Total	15	34	65	51	60	57	68	83	77	72	78	96	97	89	103	106	41	54	34	55	1335

* **YNK** – Year of award of Ph.D not furnished

Target Population of Women Doctorates Andhra Pradesh (Table II.a)

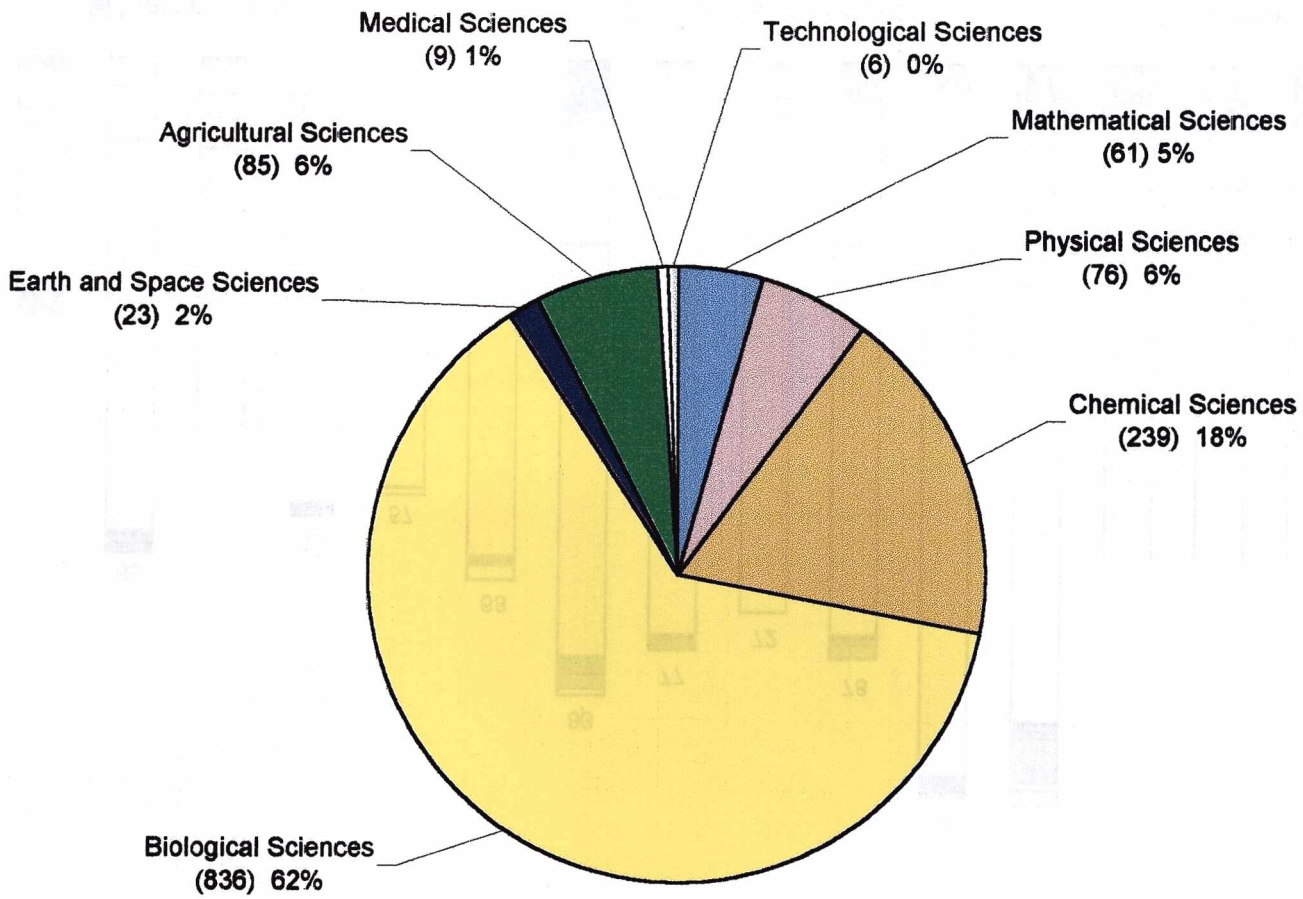


Figure 1

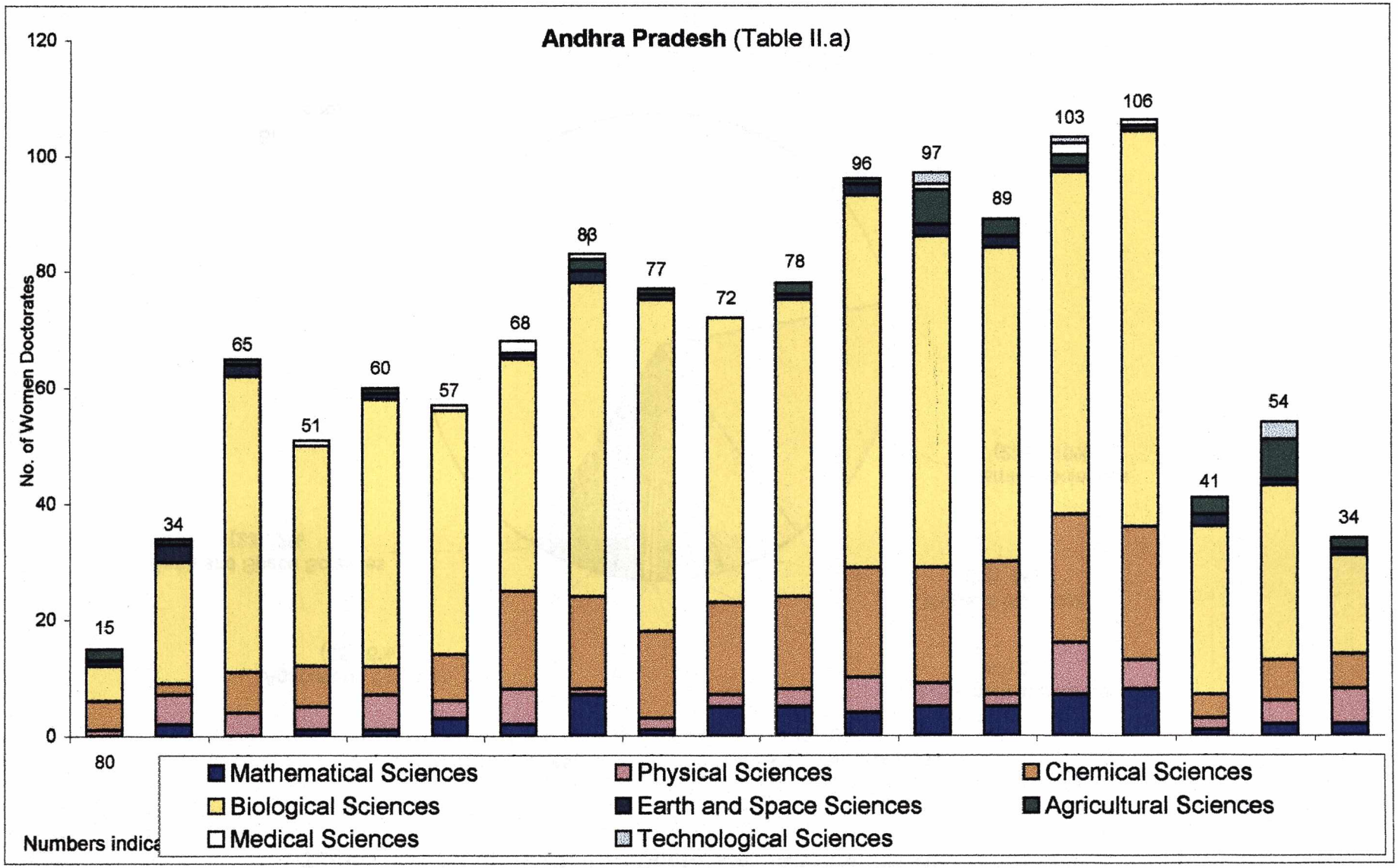

Andhra Pradesh (Table II.a)
No. of Women Doctorates
120
100
80
60
40
20
0
15
34
65
51
60
57
68
83
77
72
78
96
97
89
103
106
41
54
34
80
Mathematical Sciences
Physical Sciences
Chemical Sciences
Biological Sciences
Earth and Space Sciences
Agricultural Sciences
Medical Sciences
Technological Sciences
Numbers indica

Figure 2

Table (II.b) Kerala

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	*YNK	Total
1	Mathematical Sciences										1		1	1	1			1	1		20	26
2	Physical Sciences											2	2	2	3	5	7	2	4	1	19	47
3	Chemical Sciences	1		1	1			2			6	3	3	8	6	8	7	12	9	7	19	93
4	Biological Sciences	1		1	2	2	2	2	5	5	12	11	17	24	18	27	19	14	19	18	81	280
5	Earth and Space Sciences															2	1		4	2		9
6	Agricultural Sciences				1		1	2	2	1	2	5	5	4	6	9	15	20	15	18		106
7	Medical Sciences										1	2	1		1	1				2		8
8	Technological Sciences																1				21	22
	Total	2	0	2	4	2	3	6	7	6	22	23	29	39	35	52	50	49	52	48	160	591

Table (II.c) Karnataka

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	*YNK	Total
1	Mathematical Sciences		2			1	1		2	2				3	3		5	2	5		11	37
2	Physical Sciences	2	5	4	1	2	3	2	1	4	1	4	9	7	5	5	5	7	3	3	5	78
3	Chemical Sciences	4	6	5	2	6	6	3	1	10	7	7	3	6	8	5	9	7	13	9	22	139
4	Biological Sciences	7	8	13	13	8	16	10	14	24	22	18	16	11	26	37	25	23	26	28	41	386
5	Earth and Space Sciences	1			2						1				1		1		2			8
6	Agricultural Sciences	1	2	5	3		1	3	2	2	9	2	10	8	7	12	13	9	18	13		120
7	Medical Sciences		1	1				1			1	1	1			1	2		1	2	15	27
8	Technological Sciences	1		2	2		2			3	3		3	2	6	2	3	5	6	5		45
	Total	16	24	30	23	17	29	19	20	45	44	32	42	37	56	62	63	53	74	60	94	840

*** YNK** – Year of award of Ph.D not furnished

Kerala (Table II.b)

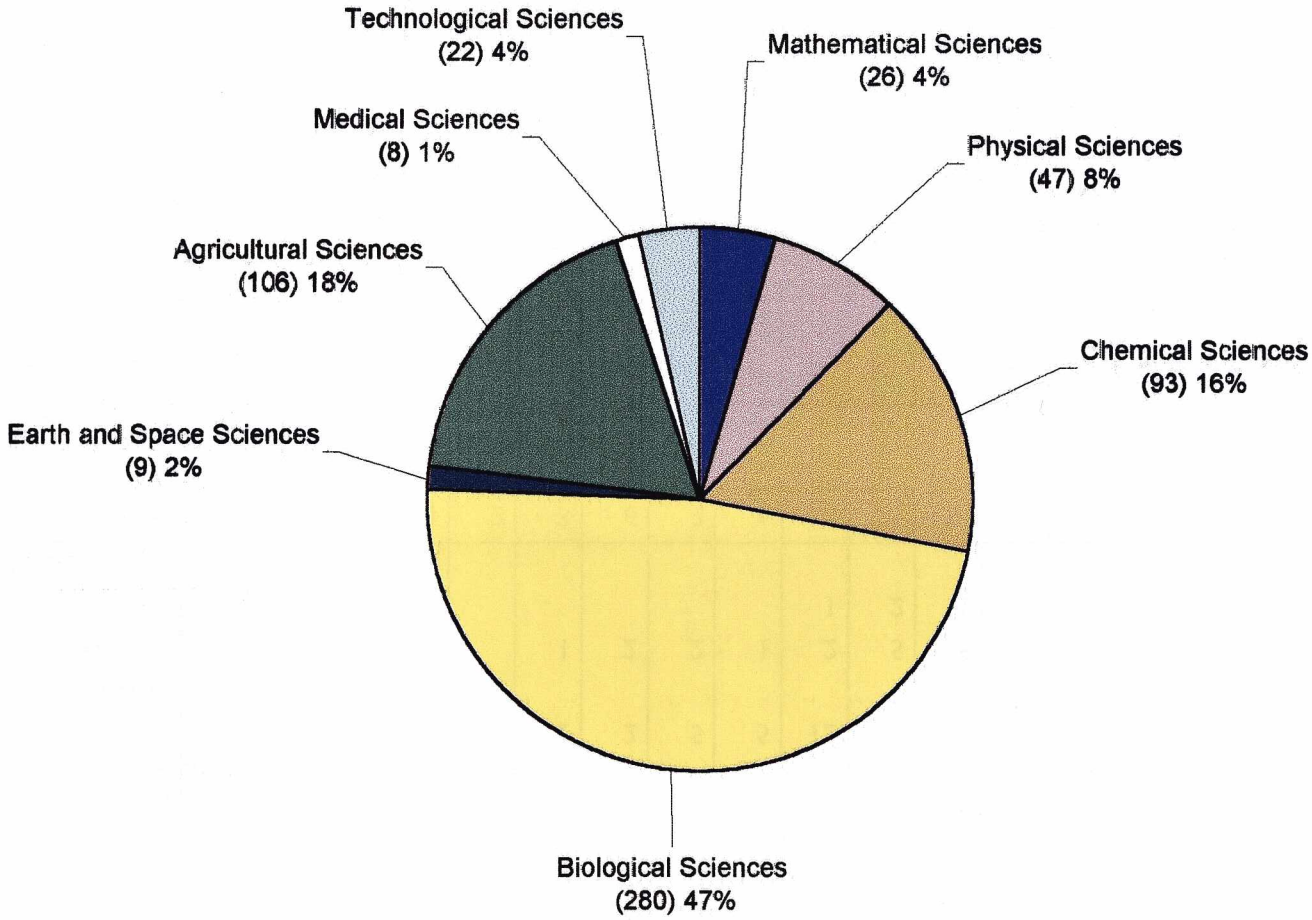
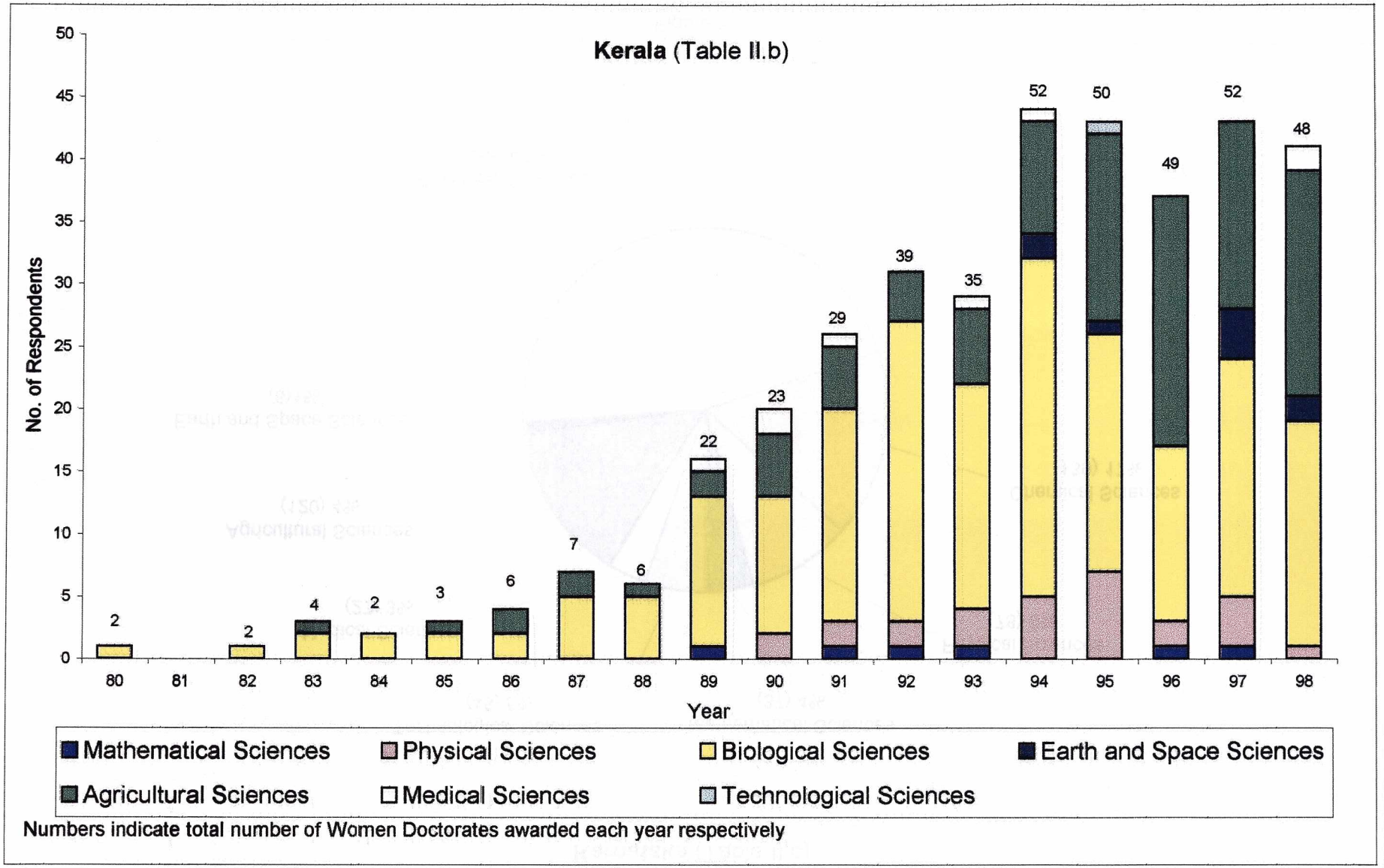


Figure 3



Numbers indicate total number of Women Doctorates awarded each year respectively

Figure 4

Karnataka (Table II.c)

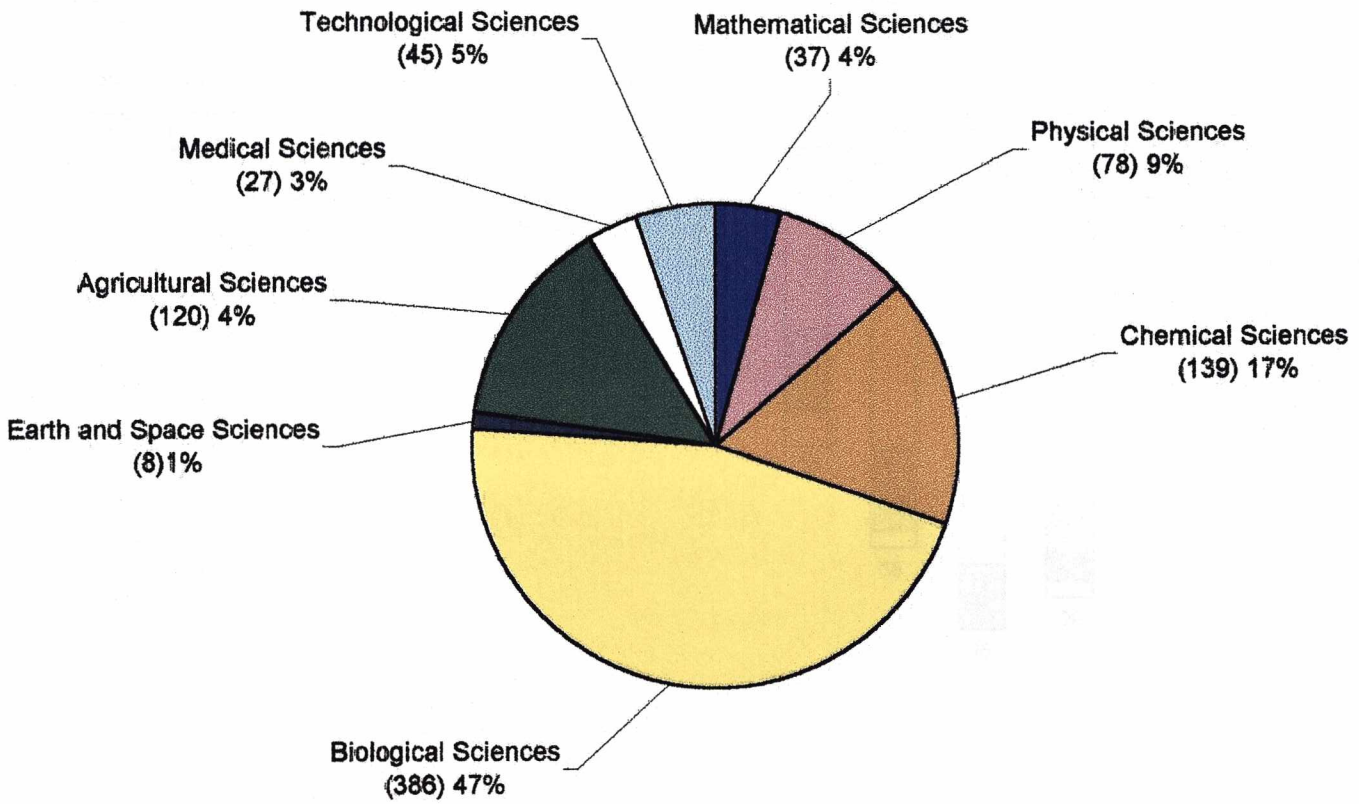
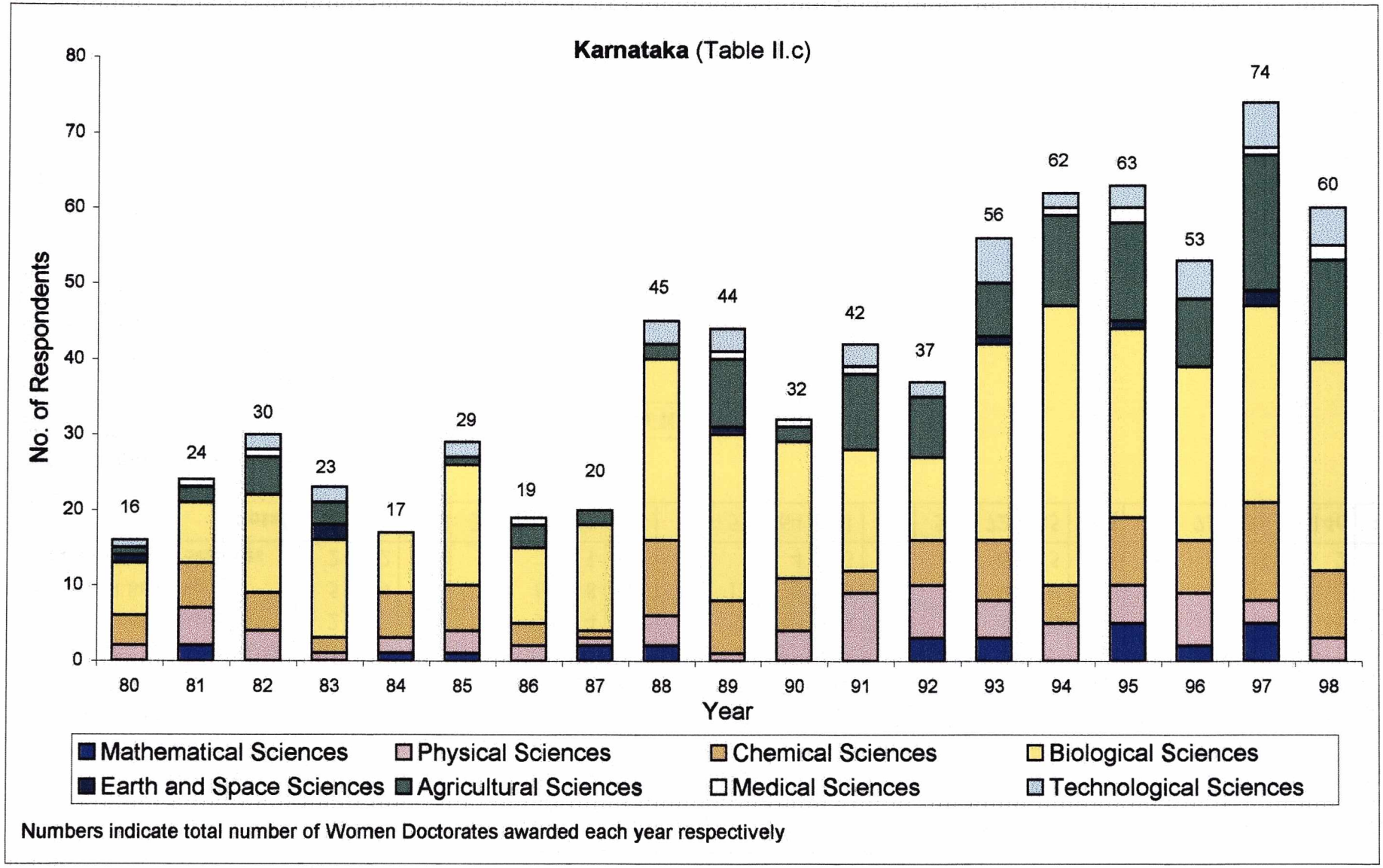


Figure 5



Numbers indicate total number of Women Doctorates awarded each year respectively

Figure 6

Table (II.d) Tamil Nadu

S.No.	Discipline	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	*YNK	Total
14	Mathematical Sciences	4	2	4	2	4	3	4	2	6	3	5	6	3	2	9	8	2	1	1	11	82
15	Physical Sciences	1	9	3	2	4	2	5	8	9	4	4	4	6	10	5	8	7	7	4	3	105
16	Chemical Sciences	4	9	7	7	4	8	5	10	8	12	11	7	5	18	19	18	14	13	4	12	195
17	Biological Sciences	6	7	17	12	19	15	26	20	19	29	16	17	25	23	32	40	17	23	19	69	451
18	Earth and Space Sciences					1																1
19	Agricultural Sciences	2	2	2	4	3	4	2	1	2	3	3	3	2	4	6	10	24	16	8	49	150
20	Medical Sciences	5	9	12	6	6	8	11	10	13	9	9	7	9	9	9	11	5	7	15		170
21	Technological Sciences	2	2		2		1				4	3	3	5	6	5	7	6	8	3	2	59
	Total	24	40	45	35	41	41	53	51	57	64	51	47	55	72	85	102	75	75	54	146	1213

Table (II.e) Pondicherry University

Sl. No.	Discipline	* (YNK)Year Not Known
1	Mathematical Sciences	2
2	Physical Sciences	3
3	Chemical Sciences	1
4	Biological Sciences	8
	Total	14

* **Note:** Year of award of Ph.D. not furnished
* **YNK –** Year not known.

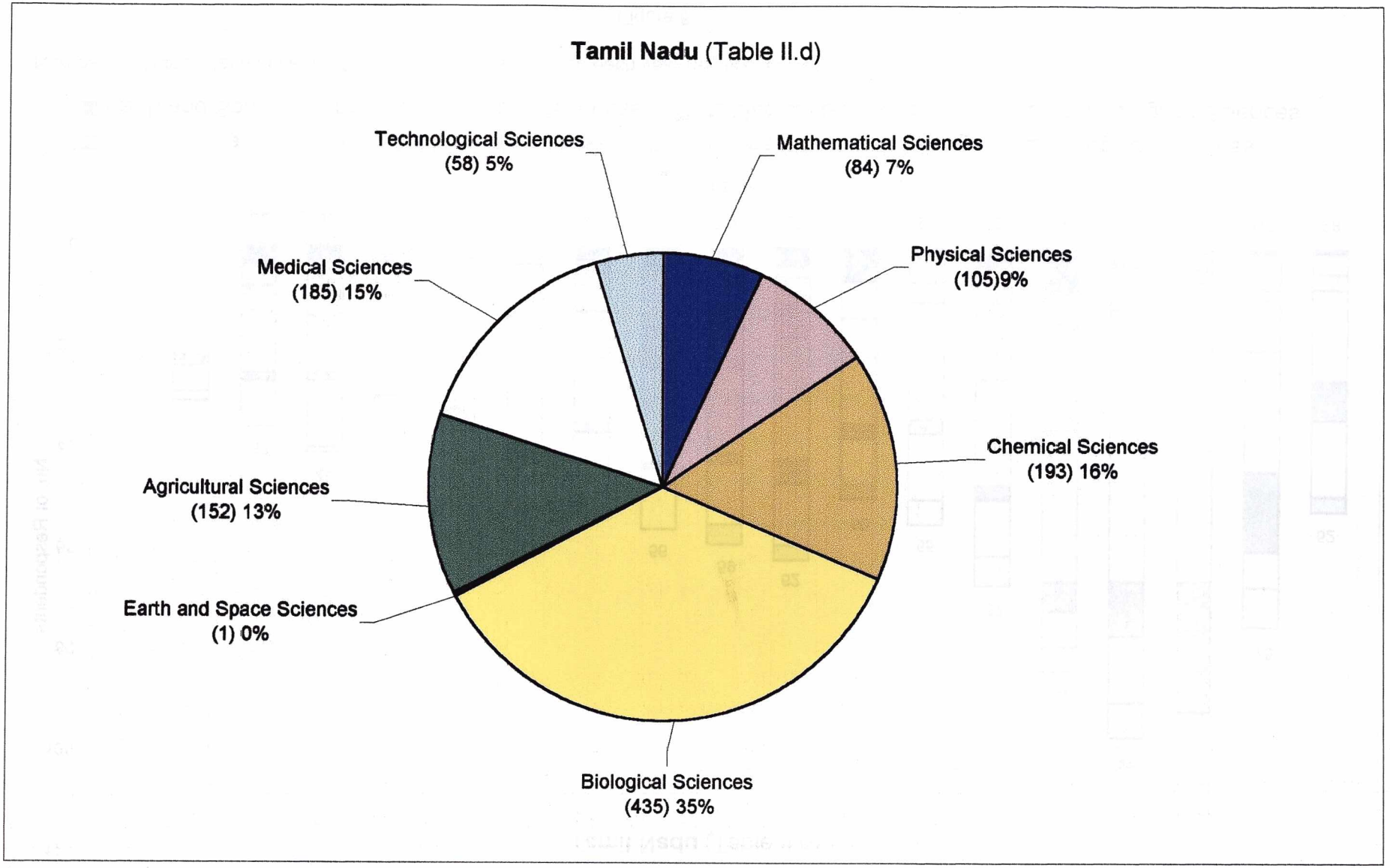
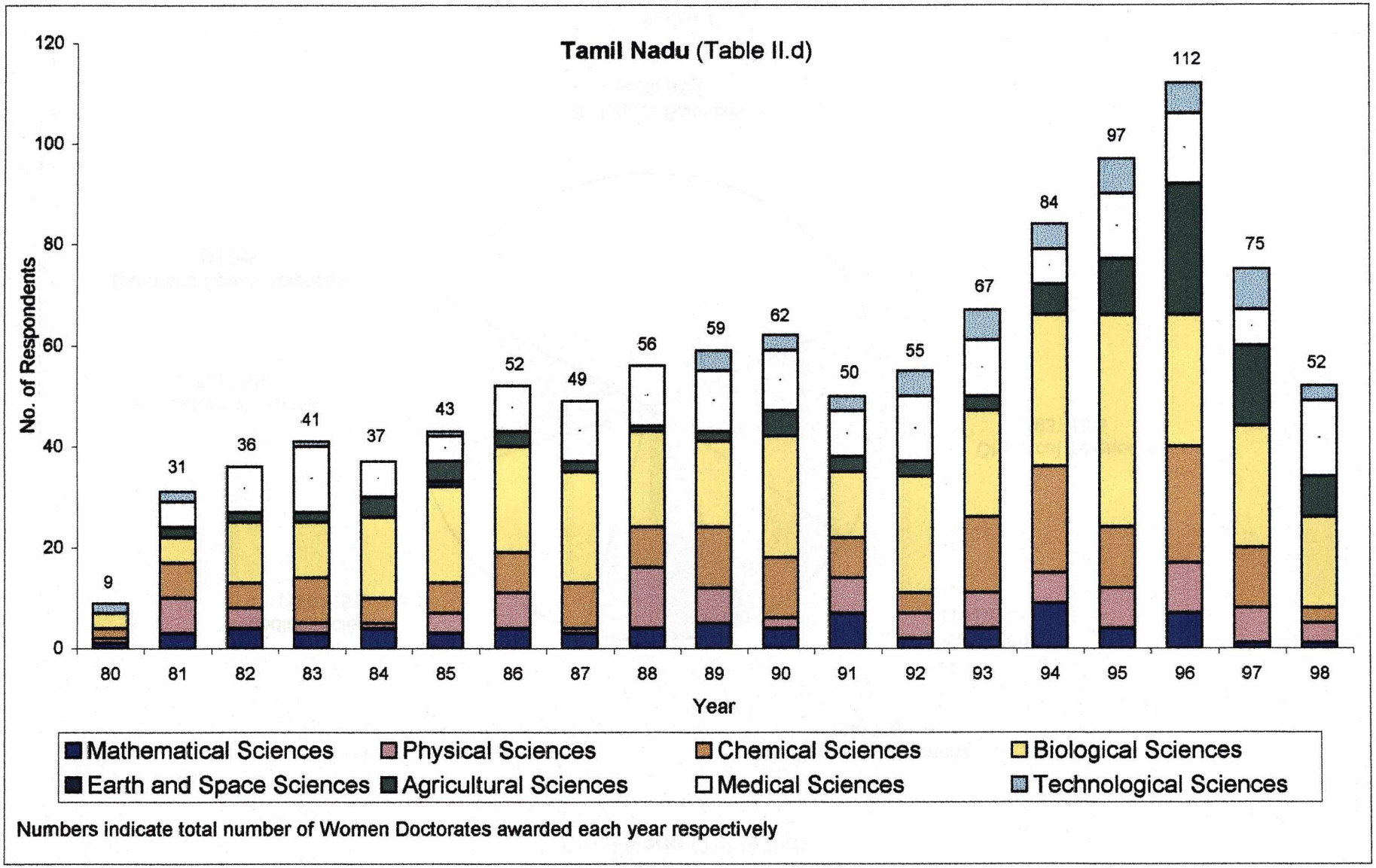

Tamil Nadu (Table II.d)
Technological Sciences
(58) 5%
Mathematical Sciences
(84) 7%
Physical Sciences
(105)9%
Medical Sciences
(185) 15%
Chemical Sciences
(193) 16%
Agricultural Sciences
(152) 13%
Earth and Space Sciences
(1) 0%
Biological Sciences
(435) 35%

Figure 7



Numbers indicate total number of Women Doctorates awarded each year respectively

Figure 8

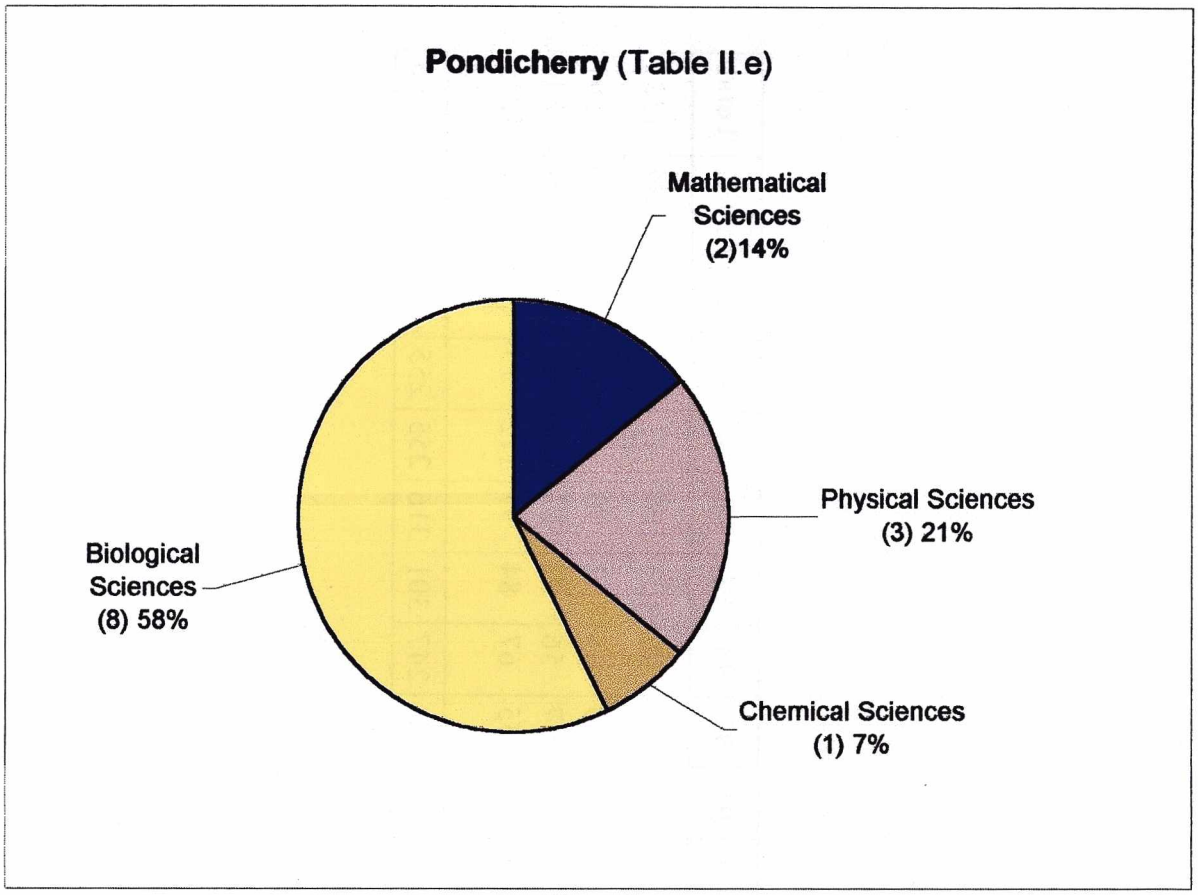


Figure 9

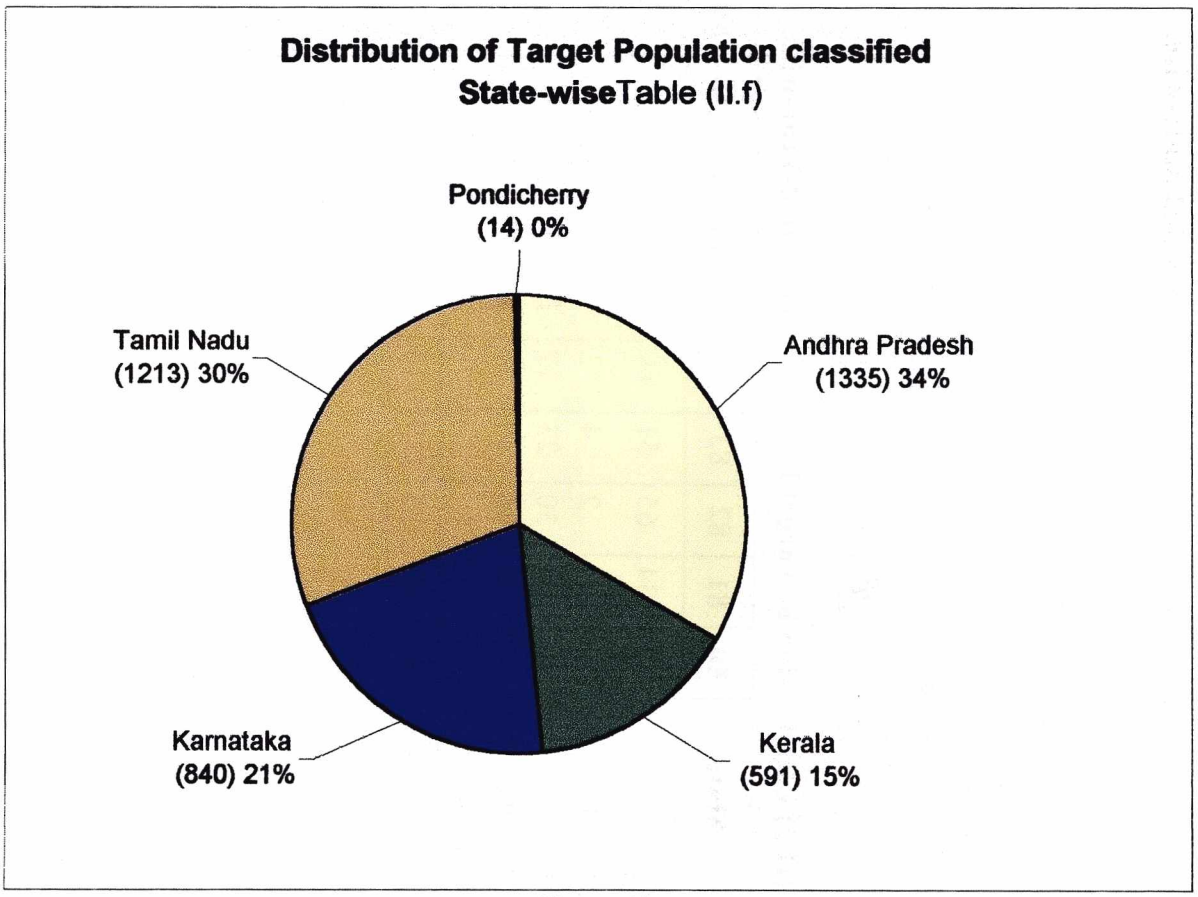


Figure 10

Table (II.f) Distribution of Target Population classified State-wise.

Sl. No.	State	Target Population
1	Andhra Pradesh	1335
2	Kerala	591
3	Karnataka	840
4	Tamil Nadu	1213
5	Pondicherry	14
	Total	3993

Table (II.g) Distribution of Target Population classified Year-wise.

S.No.	State	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	*YNK	Total
1	Andhra Pradesh	15	34	65	51	60	57	68	83	77	72	78	96	97	89	103	106	41	54	34	55	1335
2	Kerala	2		2	4	2	3	6	7	6	22	23	29	39	35	52	50	49	52	48	160	591
3	Karnataka	16	24	30	23	17	29	19	20	45	44	32	42	37	56	62	63	53	74	60	94	840
4	Tamil Nadu	9	31	36	41	37	43	52	49	56	59	62	50	55	67	84	97	112	75	52	146	1213
5	Pondicherry																				14	14
	Total	42	89	133	119	116	132	145	159	184	197	195	217	228	247	301	316	255	255	194	469	3993

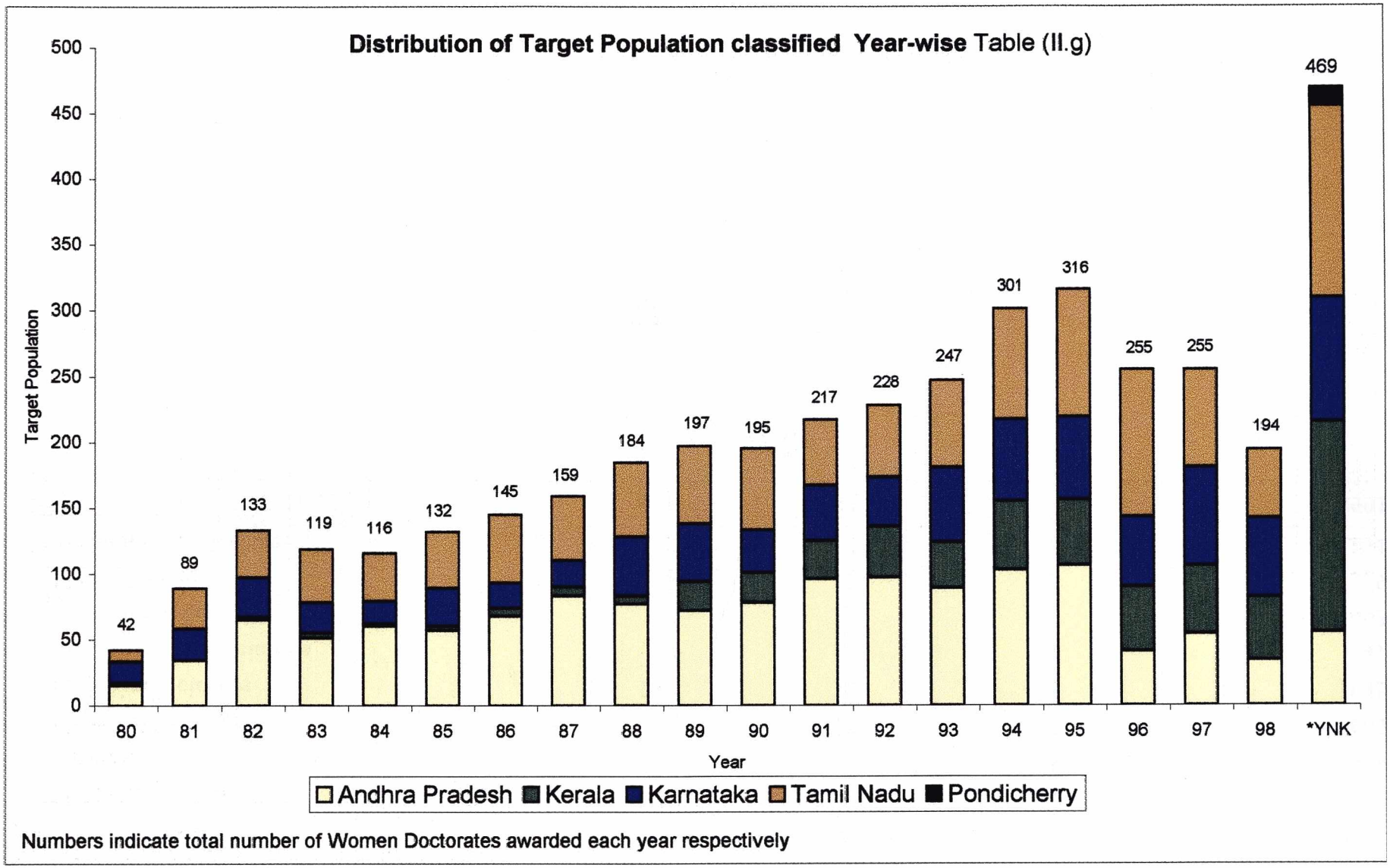

Distribution of Target Population classified Year-wise Table (II.g)
Target Population
500
450
400
350
300
250
200
150
100
50
0
42
89
133
119
116
132
145
159
184
197
195
217
228
247
301
316
255
255
194
469
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
*YNK
Year
Andhra Pradesh
Kerala
Karnataka
Tamil Nadu
Pondicherry
Numbers indicate total number of Women Doctorates awarded each year respectively

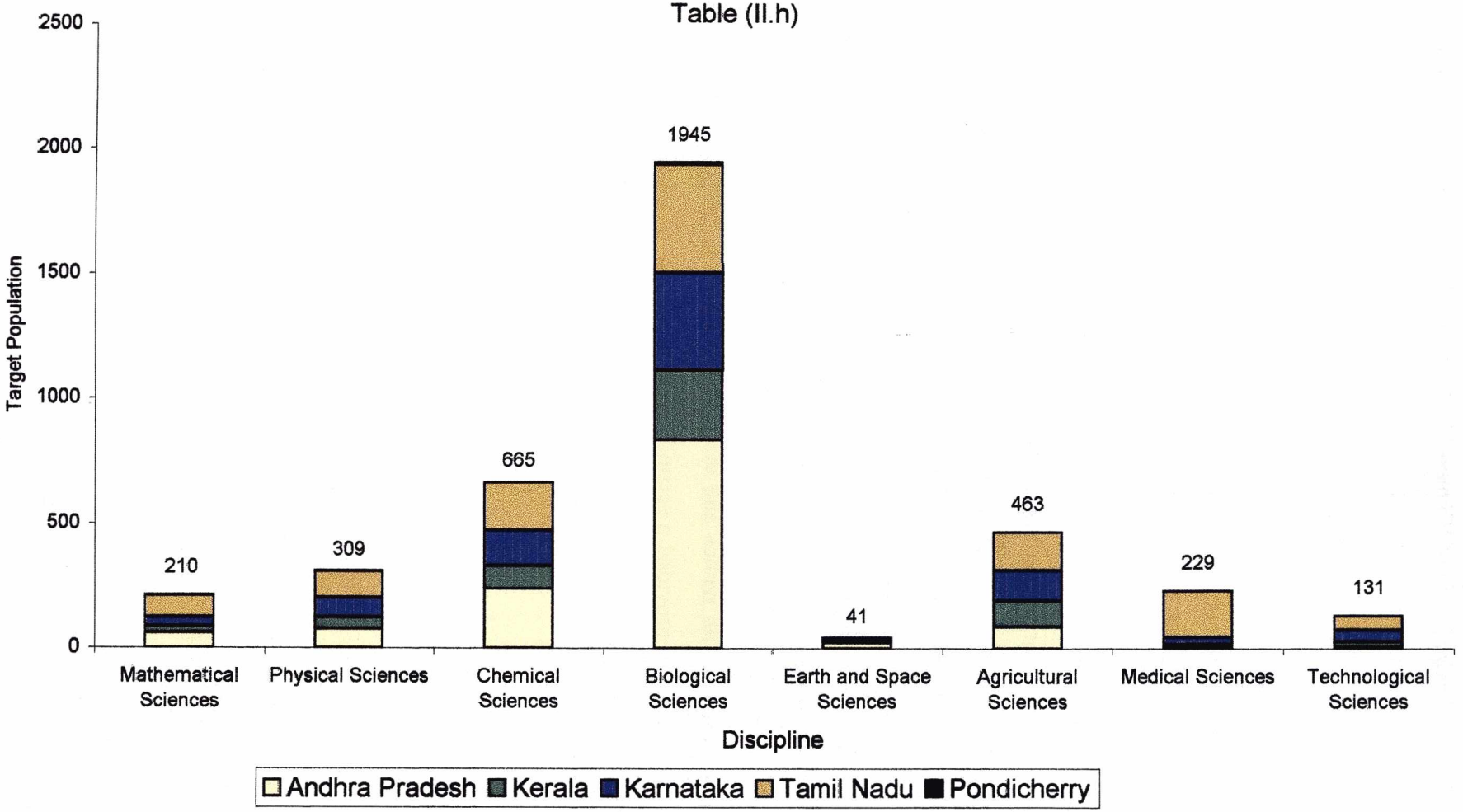
Figure 11

Table (II.h) Distribution of Target Population classified according to Discipline-wise and State-wise.

S.No.	Discipline	Andhra Pradesh	Kerala	Karnataka	Tamil Nadu	Pondicherry	Total
1	Mathematical Sciences	61	26	37	84	2	210
2	Physical Sciences	76	47	78	105	3	309
3	Chemical Sciences	239	93	139	193	1	665
4	Biological Sciences	836	280	386	435	8	1945
5	Earth and Space Sciences	23	9	8	1		41
6	Agricultural Sciences	85	106	120	152		463
7	Medical Sciences	9	8	27	185		229
8	Technological Sciences	6	22	45	58		131
	Total	**1335**	**591**	**840**	**1213**	**14**	**3993**

Distribution of Target Population classified Discipline-wise and State-wise

Table (II.h)



Numbers indicate total number of Women Doctorates awarded each discipline and state wise respectively

Figure 12

Determination of Sample Members

From the target population of Women Ph.Ds it was decided to cover a sample of 1000 members for the present study. For the determination of sample members, it was planned to select a stratified random sample from the population in order to give due representation to the year of graduation, discipline of study and states where research was carried out. Though this is the scientific method of selecting the sample, it was found to be very difficult to adopt in our investigation due to constraints of time and funds.Though the names of the women doctorates could be identified from the list of target population by the sampling technique, their current address could not be obtained. The reason being that most of the women doctorates have moved away from their old addresses namely the addresses relating to the period of research due to marriage, taking up jobs or transfer of parents/husbands. Hence it was proposed to select the sample members through the following method known as **SNOWBALL SAMPLING TECHNIQUE**. (Berg, S. 1988) The project officers visited a few of the universities, colleges and organisations relating to Public Sector and Private Sector and identified women doctorates in Science and Technology belonging to the target population. These members constituted **the Initial Sample.** This is the first step of **Snowball Sample Selection Process.** In the next step members of the initial sample were requested to provide us with names and current addresses of women doctorates in S & T known to them. This step provided a second group of women PhDs for our study. This list was added to the initial sample resulting in an enlarged sample which is the sample selected by two step Snowball sampling technique. Repeating the steps, a sample of required size was obtained.

The Questionnaire

In the second stage, a questionnaire was prepared keeping in view the objectives of this study. There were direct questions relating to personal and professional information along with the particulars of their career and job status. The draft questionnaire was pretested on 40 women Ph.Ds who were employed in Madras University departments and two women P.G. Colleges in the Madras City. Comments and suggestions received from these members were incorporated and appropriate modifications were made on the questionnaire. Important inputs were also recovered from Shri. Rakesh Chetal, Director, Dr. A.N.N. Murthy, Joint Advisor, Dr. Parikh, Professor, IIT, Bombay and Dr. Samathanam, Principal Scientific Officer, DST.

The questionnaire consisted of Six sections covering all aspects of professional and personal information needed for the study. The six sections are:

1. Personal Background (Q.11 to 1.18)
2. Academic Career (Q 2.1 to Q 2.11)
3. Personal Achievements, Job Status and current work (Q3.1 to 3.20)
4. Career Expectations and Values (Q 4.1 to 4.4)
5. Career Problems (Q 5.1 to 5.5)
6. General (Q 6.1 to 6.6)

Most of the questions were of the objective and/or ranking type, many of the questions contained provisions for more than one response. Some open-ended questions eliciting comments, opinions and suggestions were included in the questionnaire.

During the pretesting of the questionnaire, it was found that on an average 30-40 minutes were required for providing a reasonable response to the questionnaire.

Collection of Data

In the third stage, steps were launched for the collection of data through the questionnaire from the sample members obtained by the Snowball sampling method. Project officers visited various Universities and organisations, distributed questionnaires and collected them. Questionnaires were also mailed to some of the sample members with a covering letter to send back the completed questionnaire in a week's time. Reminders were sent after a fortnight to some of the sample members. Personal visits were also made to collect some of questionnaire sent earlier by post. With great effort, patience and perseverance it was possible to collect around 1081 questionnaires. Among these 81 were incomplete questionnaire which were removed from our study. Even though we want to have a sample of 1000 due to constraints of time and funds, only 684 came under purview of the period during 1980-1995. Hence the Local Project Advisory Committee thought that it is desirable to include 316 respondents belonging to the period before 1980(62) and after 1995(254). However the sample members of 1000 respondents are currently employed in the area of our study.

DATA STORAGE AND ANALYSIS

The data received was stored in database file using **Micro Soft Access** on **Pentium 133MHz**. The data collected in all the stages was stored in a file named **Women-Master .mdb.** Analysis of data and inferences have been presented separately for the **Total Sample and Direct Sample (Section III).**

The information received in the replies to questionnaire was stored in a five Data Tables in the same above mentioned Database file. Structured programming was done for inputting and editing the data. The information was broken down into a number of fields as per the requirement of the questions and for optimal space utilisation. Responses given to some of the questions in the form of comments were stored either in a field of characters 256 or in memos, optimising on the answers of the respondents.

Data Tables

PER_BACK	1. Personal Background
ACADEMIC CAREER	2. Academic Career
PERSONAL ACHIEVEMENT	3. Personal Achievements, Job Status & Current Work
CAREER EXPECTATION	4. Career Expectation and Values
CAREER PROBLEMS	5. Career Problems & 6. General

An extensive structured programming was carried out for data entry using Micro Soft Access forms. Analysis of information was done question-wise and for generating tables SPSS for Windows Version 6.0. was used. An HP Laser Jet 1100A Printer was used for complete printing of tables and the report.

The space occupied on the hard disk by tables, forms, queries and macros were included in the same database was 5.5 MB.

Micro Soft Excel 97 was used to generate graphs and **Micro Soft Word 97** was used to print the report.

The distribution of 1000 women doctorates included for present study is classified according to (a) Discipline-wise of study, (b) Year of qualifying for Ph.D. and (c) Universities/Institutions in which doctoral research was carried out and are presented in the following tables III (a to c).

Table (III.a) (Q1.5) Discipline-wise Distribution of the Respondents:

Discipline	No. of Respondent	Percentage
Mathematics	50	5.0
Physical Sciences	76	7.6
Chemical Sciences	131	13.1
Biological Sciences	409	40.9
Earth and Space Sciences	21	2.1
Agricultural Sciences	231	23.1
Medical Sciences	39	3.9
Technological Sciences	43	4.3
Total	**1000**	**100.0**

Majority (41.0%) have done their Ph.D. in Biological Sciences. 23.1% have done in Agriculture Sciences while (13.1%) have specialised in Chemical Sciences. About ¼th of the respondents have done their doctoral research in Agricultural Sciences.Table (III.b).

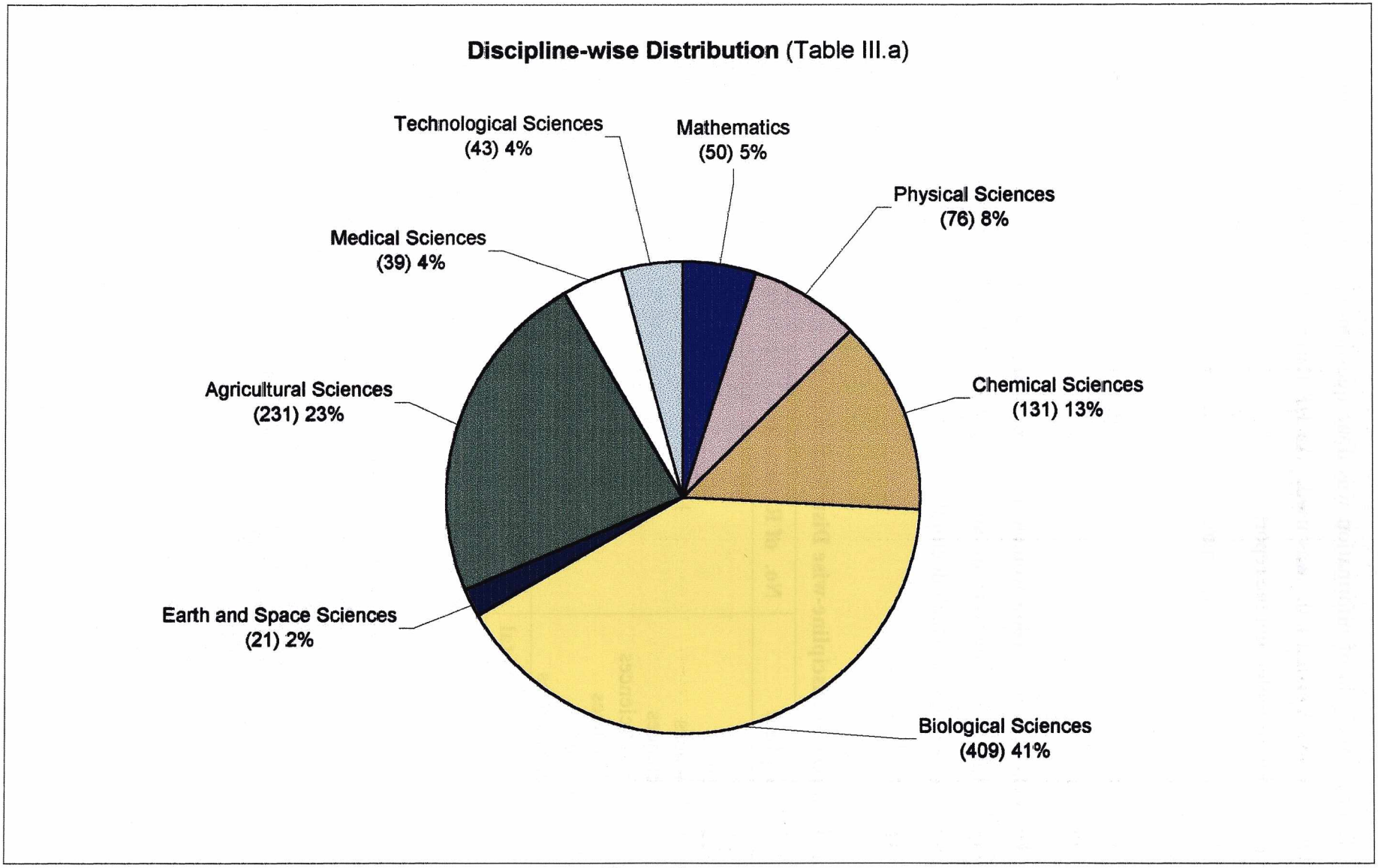

Discipline-wise Distribution (Table III.a)
Technological Sciences (43) 4%
Mathematics (50) 5%
Physical Sciences (76) 8%
Medical Sciences (39) 4%
Agricultural Sciences (231) 23%
Chemical Sciences (131) 13%
Earth and Space Sciences (21) 2%
Biological Sciences (409) 41%

Figure 13

Table (III.b) (Q1.5) Year of qualifying Ph.D. of the Sample members

Year	No. of Respondents	Percentage
Before 1980	62	6.2
1980	20	2.0
1981	30	3.0
1982	38	3.8
1983	29	2.9
1984	28	2.8
1985	29	2.9
1986	30	3.0
1987	28	2.8
1988	41	4.1
1989	44	4.4
1990	41	4.1
1991	53	5.3
1992	60	6.0
1993	55	5.5
1994	68	6.8
1995	90	9.0
1996	101	10.1
1997	88	8.8
1998	65	6.5
Total	**1000**	**100.0**

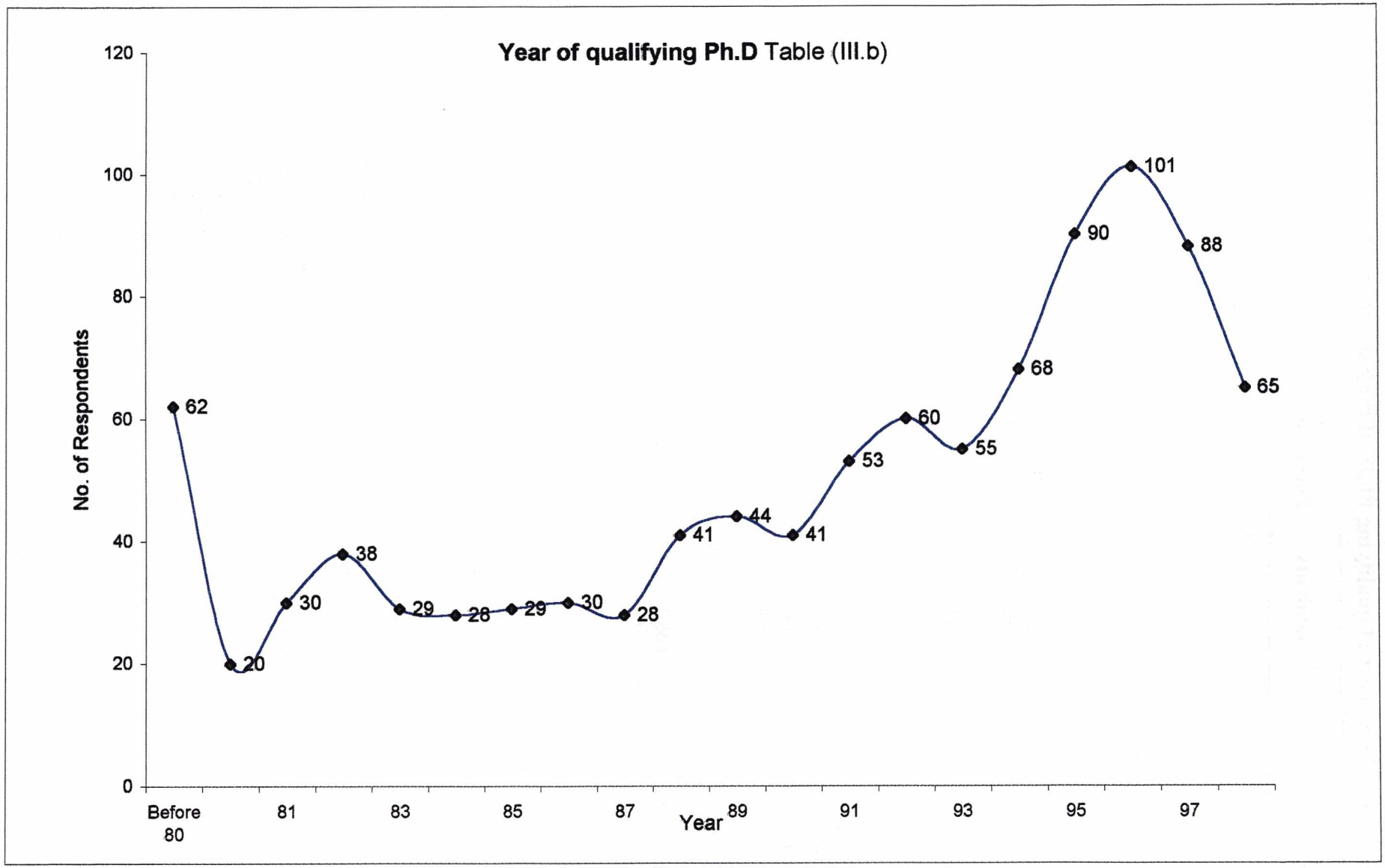

Year of qualifying Ph.D Table (III.b)
No. of Respondents
120
100
80
60
40
20
0
62
20
30
38
29
28
29
30
28
41
44
41
53
60
55
68
90
101
88
65
Before 80
81
83
85
87
89
91
93
95
97
Year

Figure 14

Table (III.c) (Q1.6) Universities where the Doctoral Research was carried out by the sample members.

State	Name of the University	No. of Resp.(%)	Total	%
Andhra Pradesh	Andhra Pradesh Agricultural University	28 (2.8)		
	Andhra University	18 (1.8)		
	Jawaharlal Nehru Technological Univ.	2 (0.2)		
	Kakatiya University	22 (2.2)		
	Nagarjuna University	4 (0.4)		
	Osmania University	125 (12.5)		
	Sri Krishnadevaraya University	1 (0.1)		
	Sri Padmavathi Mahila Viswa Vidayalaya	1 (0.1)		
	Sri Venkateswara University	10 (1.0)		
	University of Hyderabad	6 (0.6)		
	Centre for Cellular & Molecular Biology	1 (0.1)	218	21.8
Karnataka	Bangalore University	47 (4.7)		
	Karnataka University	6 (0.6)		
	Mangalore University	6 (0.6)		
	University of Agricultural Sciences, Bl'ore	17 (1.7)		
	Univ. of Agricultural Sciences, Dharwad	5 (0.5)		
	Mysore University	51 (5.2)		
	Indian Institute of Sciences	23 (2.3)		
	NIMHANS	4 (0.4)	159	15.9
Kerala	Cochin Univ. of Science and Technology	28 (2.8)		
	Kerala Agriculture University	43 (6.1)		
	Mahathma Gandhi University	17 (1.7)		
	Calicut University	17 (1.7)		
	University of Kerala	71 (7.1)		
	Sree Chitra Tirunal Inst. for Medical Sscience and Tech. (National Institute)	1 (0.1)	177	17.7
Pondicherry	Pondicherry University	4 (0.4)	4	0.4
Tamil Nadu	Alagappa University	6 (0.6)		
	Anna University	8 (0.8)		
	Annamalai University	11 (1.1)		
	Bharathiyar University	37 (2.9)		
	Bharathidasan University	33 (3.3)		
	Dr. M.G.R. Medical University	1 (0.1)		
	Madurai Kamaraj University	29 (2.9)		
	Mother Teresa University	6 (0.5)		

State	Name of the University	No. of Resp.(%)	Total	%
	Tamil Nadu Agricultural University	42 (4.2)		
	Tamil Nadu Veterinary and Animal Sciences University	5 (0.5)		
	University of Madras	103 (10.3)		
	Manonmaniam Sundaranar University	1 (0.1)		
	Avinashilingam Institute for Women	24 (2.4)		
	Gandhigram Rural Institute	4 (0.4)		
	Indian Institute of Technology, Madras	16 (1.6)	326	32.6
	Otherthan South India			
West Bengal	I.I.T. , Kharagpur	3 (0.3)		
	Calcutta University	1 (0.1)		
	Jadavpur University	2 (0.2)		
Maharashtra	Bombay University	8 (0.8)		
	Pune University	2 (0.2)		
	SNDT University	3 (0.3)		
	International Institute of Population Studies	1 (0.1)		
	Tata Institute of Fundamental Research	1 (0.1)		
Uttar Pradesh	Banaras Hindu University	9 (0.9)		
	University of Roorkee	4 (0.4)		
	Kumaun University, Nainital	1 (0.1)		
	Govind Ballabh Pant University of Agriculture & Technolgy, Pantnagar	1 (0.1)		
	Allahabad University	1 (0.1)		
Gujarat	University of Baroda	1 (0.1)		
	M.S. University of Baroda, Vadodara	3 (0.3)		
	Gujarat University, Ahmedabad	1 (0.1)		
	Guru Nanak Dev University	1 (0.1)		
	South Gujarat University, Surat	1 (0.1)		
New Delhi	Delhi University	3 (0.3)		
	I.A.R.I., New Delhi	25 (2.5)		
	Jawaharlal Nehru University	2 (0.2)		
	All India Institute of Medical Sciences	1 (0.1)		

State	Name of the University	No. of Resp.(%)	Total	%
Madhya Pradesh	Bhopal University	1 (0.1)		
	Jivagi University	1 (0.1)		
	Vikram University	2 (0.2)		
Rajasthan	Udaypur University	1 (0.1)		
	Rajasthan University	1 (0.1)		
Haryana	Krukshetra University	1 (0.1)		
Punjab	Punjab University, Chandigarh	2 (0.2)		
Megalaya		1 (0.1)		
Jammu & Kashmir	Jammu University	1 (0.1)		
	Kashmir University	1 (0.1)		
Manipur	Manipur University	1 (0.1)	88	8.8
	Other Country			
U.S.A.	Univ. of South Carolina	1 (0.1)		
	State Univ. of New York	2 (0.2)		
	Baylor Univ.,Texas , Univ. of Maryland, Univ. of Nebvaska & Ohio State Univ.	4 (0.4)		
	Boston Univ., Boston	2 (0.2)		
	Staford University, Duke University and University of Utah, U.S.A.	3 (0.3)		
Phillipines	University of Phillipines	1 (0.1)		
United Kingdom	University.of Cambridge, London School of Hygions & Tropical Medicine and St. Andrews University, U.K.	3 (0.3)		
	Edinburgh University, Scotland, U.K.	2 (0.2)		
Poland	Medical academy	1 (0.1)		
France	University of Paris	1 (0.1)		
	University of Louis Pasteur,Strabourg	2 (0.2)		
Japan	GIFU University	1 (0.1)		
Germany	University of Freiburg	1 (0.1)		
Canada	University of Gudph	1 (0.1)		
Finland	University of Tampere	1 (0.1)		
Norway	University of Trondheim, Norway	1 (0.1)		
South Korea	Kyungpook National University	1 (0.1)	28	2.8
	Total		**1000**	**100.0**

The distribution of sample members cross-classified Year-wiseand discipline-wise, Discipline-wise and Statewise and Statewise and yearwise are presented in the following tables IV (a to c).

Table (IV.a) (Q1.5) Year-wise and discipline-wise distribution

Year	Discipline								Total
	1	2	3	4	5	6	7	8	
Before 1980	2	7	11	33		5	4		62
1980	2	1	2	14		1			20
1981	1	4	5	14	1	4	1		30
1982	3	4	5	22		4			38
1983	2	2	6	13		5		1	29
1984		3	4	13	1	6	1		28
1985		2	9	12	1	5			29
1986	1	1	2	12	1	9	3	1	30
1987		1	7	13		6	1		28
1988	3	3	7	17		6	1	4	41
1989	3	3	4	22	1	7	3	1	44
1990	3	3	2	18	1	13	1		41
1991	3	1	7	22	2	11	2	5	53
1992	3	5	7	21	4	12	2	6	60
1993	4	4	12	20	1	12		2	55
1994	4	6	10	26	3	13	5	1	68
1995	5	8	9	33	2	22	5	6	90
1996	5	6	12	35	1	33	3	6	101
1997	2	8	6	28	2	32	6	4	88
1998	4	4	4	21		25	1	6	65
Total	50	76	131	409	21	231	39	43	**1000**

Discipline:

1. Mathematical Sciences
2. Physical Sciences
3. Chemical Sciences
4. Biological Sciences
5. Earth and Space Sciences
6. Agricultural Sciences
7. Medical Sciences
8. Technological Sciences

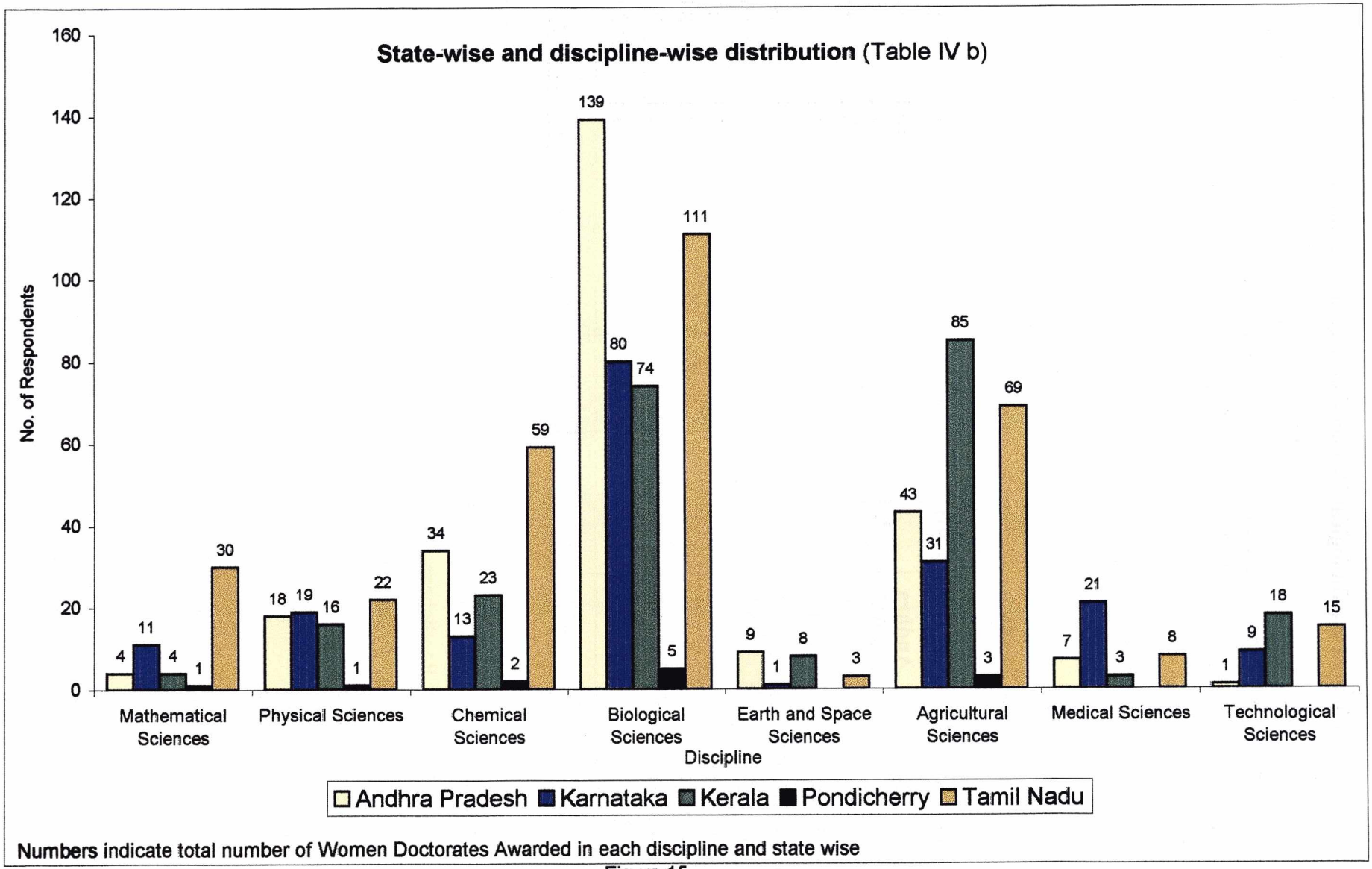
The doctorates theses have been submitted by the respondents between 1980-98 Majority has concentrated on Biological Sciences then come the order of importance as below

I. Agricultural Sciences
II. Chemical Sciences
III. Physical Sciences
IV. Mathematical Sciences
V. Technological Sciences
VI. Medical Sciences
VII. Earth and Space Sciences

Table (IV.b) (Q 1.5) State-wise and discipline-wise distribution.

Discipline	Andhra Pradesh	Karnataka	Kerala	Pondicherry	Tamil Nadu	Total
Mathematics	4	11	4	1	30	50
Physical Sciences	18	19	16	1	22	76
Chemical Sciences	34	13	23	2	59	131
Biological Sciences	139	80	74	5	111	409
Earth and Space Sc.	9	1	8		3	21
Agricultural Sc.	43	31	85	3	69	231
Medical Sciences	7	21	3		8	39
Technological Sc.	1	9	18		15	43
Total	255	185	231	12	317	**1000**

Majority of the respondents are from Tamil Nadu and then come Andhra Pradesh, Kerala, Karanataka and Pondicherry. The number of doctorates in Biological Sciences are more in Andra Pradesh, Tamil Nadu, Karnataka. Doctorates are more in Agricultural Sciences in Kerala. Similarly Kerala and Tamil Nadu rank better in Technological Sciences.



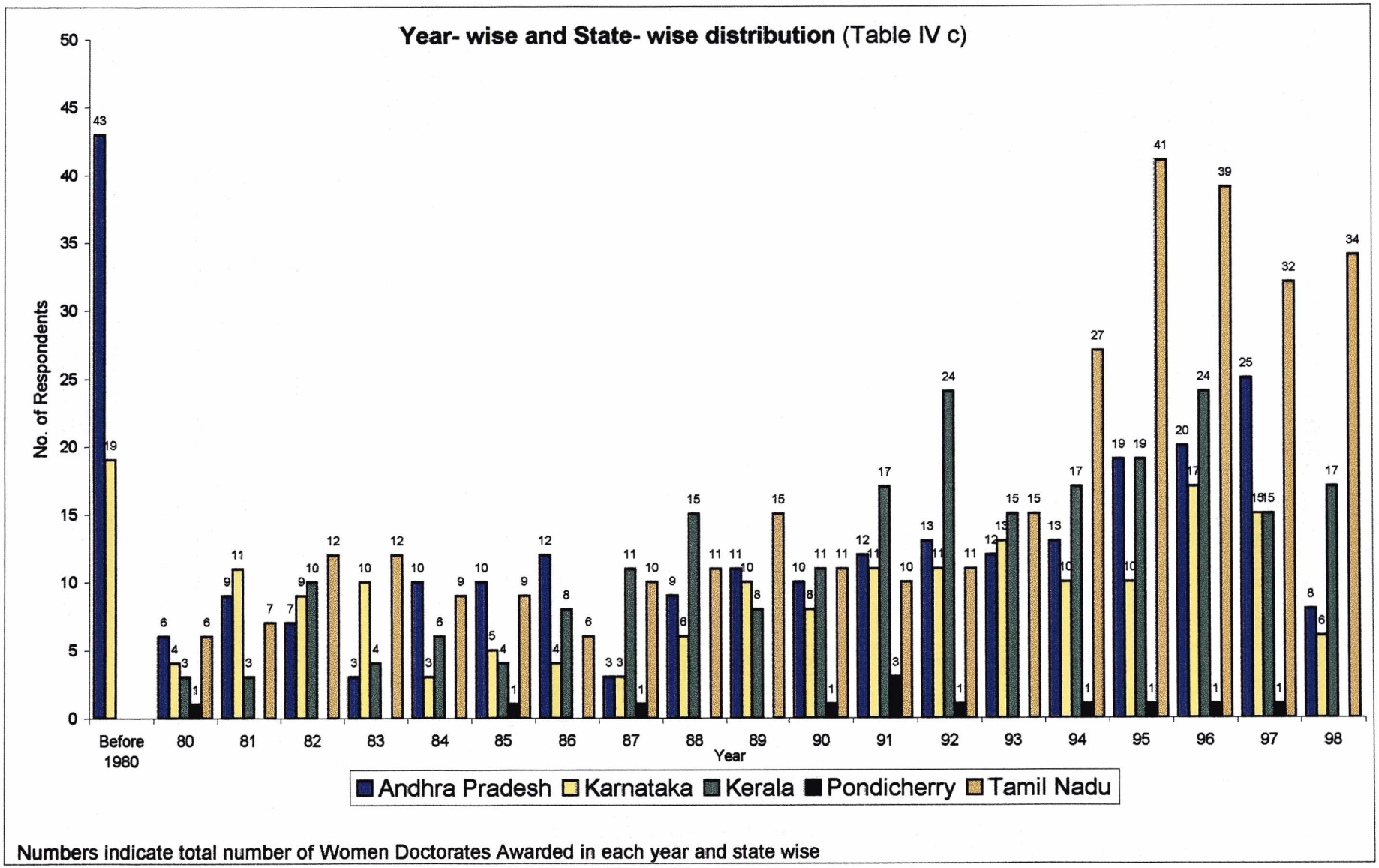
Numbers indicate total number of Women Doctorates Awarded in each discipline and state wise

Figure 15

Table (IV.c) (Q 1.5) Year- wise and State- wise distribution

Year	State					Total
	Andhra Pradesh	Karnataka	Kerala	Pondicherry	Tamil Nadu	
Before 1980	43	19				62
1980	6	4	3	1	6	20
1981	9	11	3		7	30
1982	7	9	10		12	38
1983	3	10	4		12	29
1984	10	3	6		9	28
1985	10	5	4	1	9	29
1986	12	4	8		6	30
1987	3	3	11	1	10	28
1988	9	6	15		11	41
1989	11	10	8		15	44
1990	10	8	11	1	11	41
1991	12	11	17	3	10	53
1992	13	11	24	1	11	60
1993	12	13	15		15	55
1994	13	10	17	1	27	68
1995	19	10	19	1	41	90
1996	20	17	24	1	39	101
1997	25	15	15	1	32	88
1998	8	6	17		34	65
Total	255	185	231	12	317	**1000**

More theses have been submitted in the year 1996. Then in the year 1995 and 1997. Less doctorates had come in the years between 1980-87. The number has increased from 1987 onwards.



Numbers indicate total number of Women Doctorates Awarded in each year and state wise

Figure 16

CHAPTER IV

PERSONAL BACKGROUND AND SOCIO-ECONOMIC STATUS

In the present study 1000 completed questionnaires were obtained. Of these 884 [includes 684 doctorates awarded from 1980-95 and 200 doctorates awarded in the period Before 1980 and After 1995], took their degrees from Southern States of Andhra Pradesh, Kerala, Karnataka, Pondicherry and Tamil Nadu, 88 from others(Northern) states of India (Currently employed in Southern states)and 28 who had their doctorates from Universities of foreign Countries including USA, UK, Japan, Germany and other countries also currently working in Southern States of India. Data regarding the personal and family background of the respondents are presented in this chapter.

The age distribution of the respondents is presented in the Table 1.1(Q 1.3) below

Table 1.1 (Q1.3) Age distribution

Age	No. of Respondents	Percentage
25-29	56	5.6
30-34	143	14.3
35-39	191	19.1
40-44	242	24.2
45-49	168	16.8
50 and Above	179	17.9
No Response	21	2.1
Total	**1000**	**100.0**

24.2% of the respondents belong to the age group of 40-44, 19.1% of women Ph.Ds are aged between 35-39, 19.9% belong to age group below 35. The percentage of respondents in the age groups 45-49 and above 50 are 16.8% and 17.9% respectively.

Table 1.2 (Q1.4) Marital Status

Single	Married	Others	No Response	Total
141(14.1)	840(84.0)	18(1.8)	1(0.1)	1000(100.0)

Others indicate 'Divorced', 'Separated'

It is seen from the above table1.2 (Q 1.4) that 84% of respondents are married while 14.1% are single and 1.8% are divorced and separated.

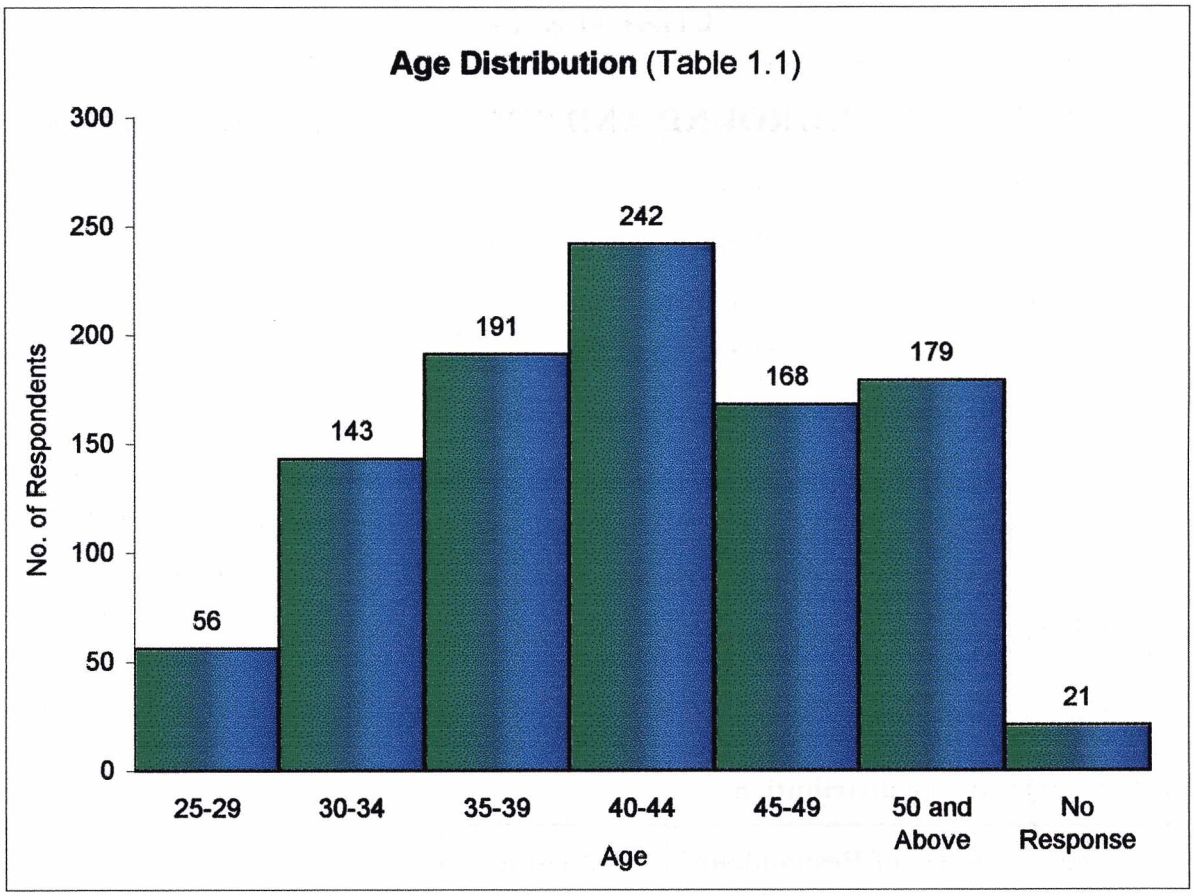


Figure 17

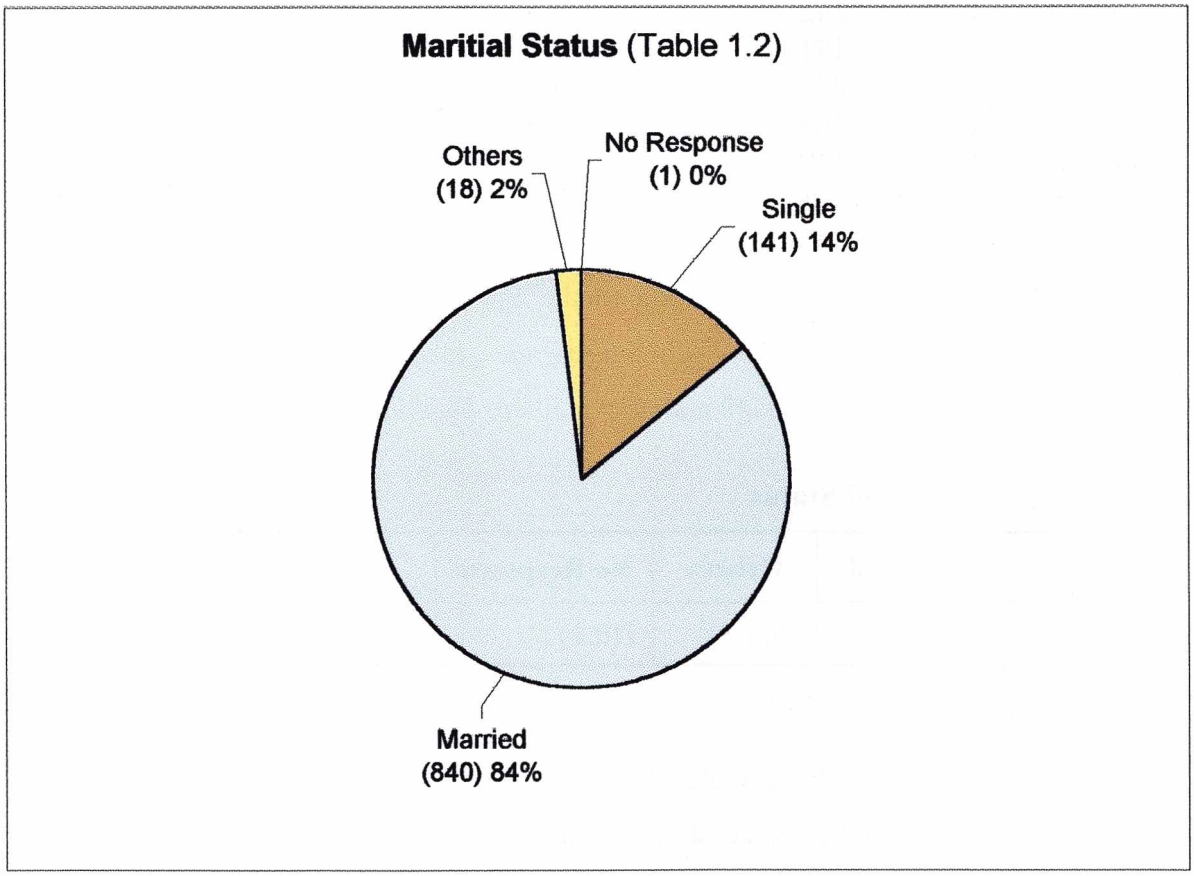


Figure 18

Table 1.3 (Q1.4) Distribution of Age at Marriage

Age(in years)	No. of Respondents	Percentage
20 & Below	30	3.5
21 – 25	349	40.7
26 – 30	389	45.3
31 – 35	69	8.0
36 – 39	16	1.9
40 and Above	1	0.1
No response	4	0.5
Total	**858**	**100.0**

It can be seen from the above table 1.3 (Q 1.5) that 40.7% of the sample member got married between age 21-25 while 45.3% had their marriage in the age group 26-30. About 8% got married during the age 31-35 and about 1.9% during their age above 36 - 39.

Table 1.4 (Q1.4) Number of Children

Children	No. of Respondents	Percentage
0	93	10.8
1	292	34.0
2	412	48.0
3	55	6.4
4	6	0.7
Total	**858**	**100.0**

About 10.8% of the respondents have no children and about 82% have 1 to 2 children. Only 7% have 3 to 4 children.

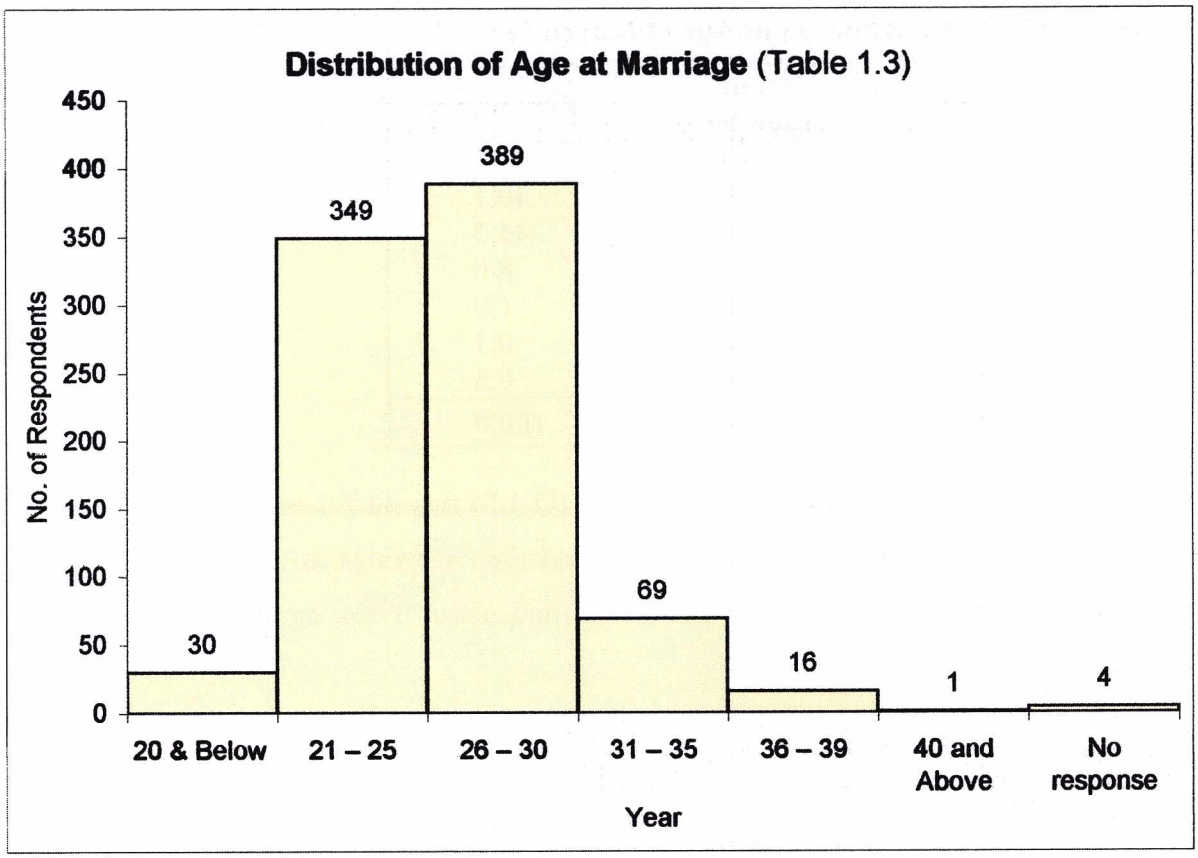

Distribution of Age at Marriage (Table 1.3)
No. of Respondents
450
400
350
300
250
200
150
100
50
0
30
349
389
69
16
1
4
20 & Below
21 – 25
26 – 30
31 – 35
36 – 39
40 and Above
No response
Year

Figure 19

Table 1.5 (Q1.7, 1.8 &1.9) Year-Wise Distribution of REGISTRATION, SUBMISSION & AWARD of Ph.D.

Year	Registration	Submission	Awarded
Before 1980	234(23.4)	77(7.7)	62(6.2)
1980	41(4.1)	31(3.1)	20(2.0)
1981	27(2.7)	34(3.4)	30(3.0)
1982	24(2.4)	34(3.4)	38(3.8)
1983	34(3.4)	33(3.3)	29(2.9)
1984	46(4.6)	26(2.6)	28(2.8)
1985	51(5.1)	33(3.3)	29(2.9)
1986	44(4.4)	36(3.6)	30(3.0)
1987	55(5.5)	30(3.0)	28(2.8)
1988	71(7.1)	37(3.7)	41(4.1)
1989	80(8.0)	45(4.5)	44(4.4)
1990	77(7.7)	54(5.4)	41(4.1)
1991	74(7.4)	46(4.6)	53(5.3)
1992	67(6.7)	65(6.5)	60(6.0)
1993	47(4.7)	76(7.6)	55(5.5)
1994	13(1.3)	78(7.8)	68(6.8)
1995	12(1.2)	80(8.0)	90(9.0)
1996	1(0.1)	97(9.7)	101(10.1)
1997		68(6.8)	88(8.8)
1998		18(1.8)	65(6.5)
No Response	2(0.2)	2(0.2)	
Total	**1000(100)**	**1000(100)**	**1000(100)**

It is seen from the above table that there is reasonably a good representation of women Ph.D's belonging to the years from 1980-1995.

Table 1.6 (Q1.7 & Q1.10) Time taken from REGISTRATION to SUBMISSION of Theses and Nature of residency during Ph.D.

Period	Full-Time	Part-Time	Both	Total
Below 3 Years	22(2.2)	5(0.5)	2(0.2)	29 (2.9)
3 to 5 Years	444(44.4)	159(15.9)	66(6.6)	669 (66.9)
Above 5 Years	107(10.7)	134(13.4)	59(5.9)	300 (30.0)
Total(%)	573(57.3)	298(29.8)	127(12.7)	998 (99.8)
No response				2 (0.2)
Grand Total				1000 (100.0)

66.9% of the respondents have completed their doctoral research between 3 and 5 years which is a normal duration. Among these, 44.4% were full-time scholars while 15.9% belonged to the category of part-time scholar. 6.6% of the researchers belonged to

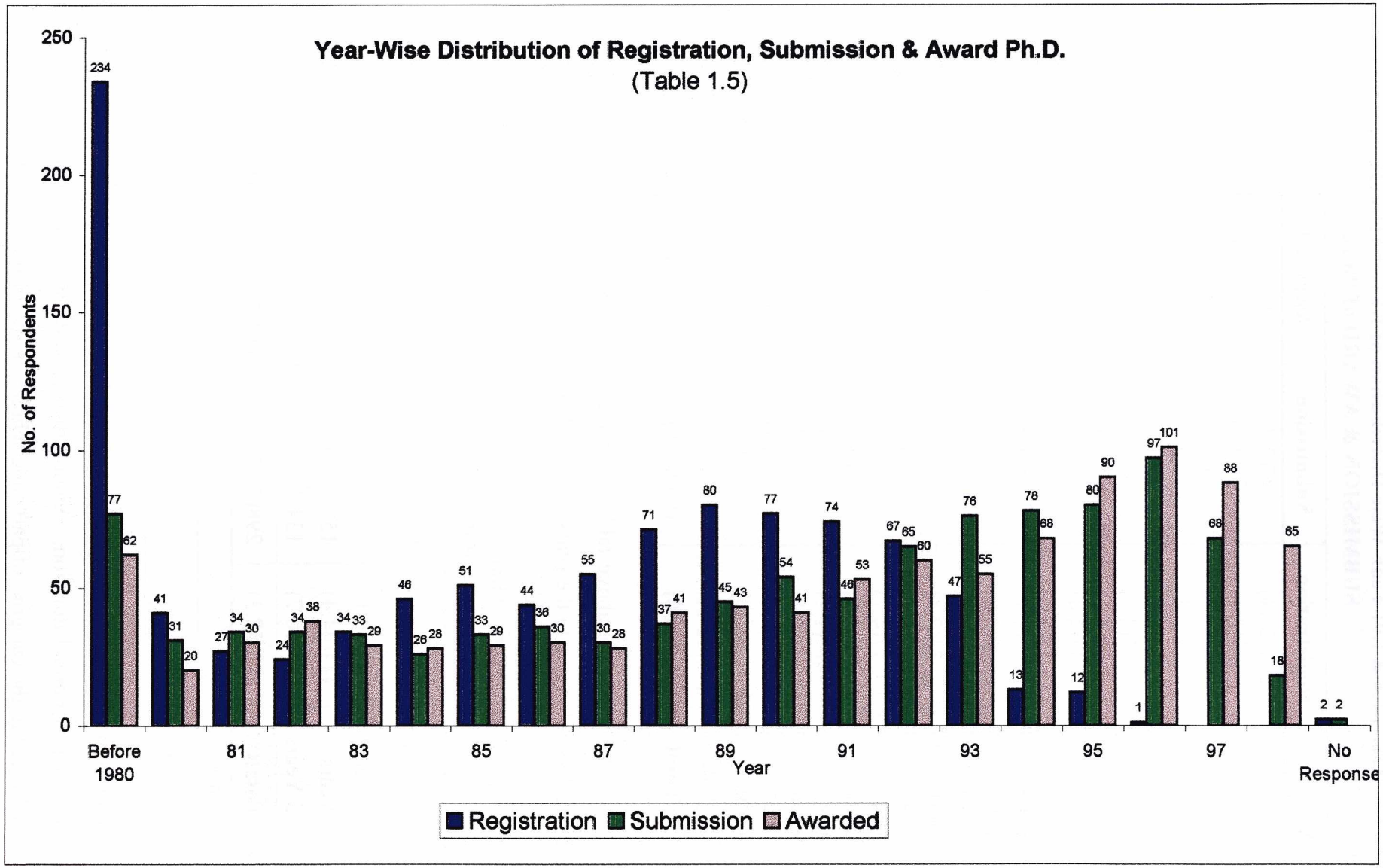

Year-Wise Distribution of Registration, Submission & Award Ph.D.
(Table 1.5)
No. of Respondents
250
200
150
100
50
0
Before 1980
81
83
85
87
89
91
93
95
97
No Response
Year
Registration
Submission
Awarded

Figure20

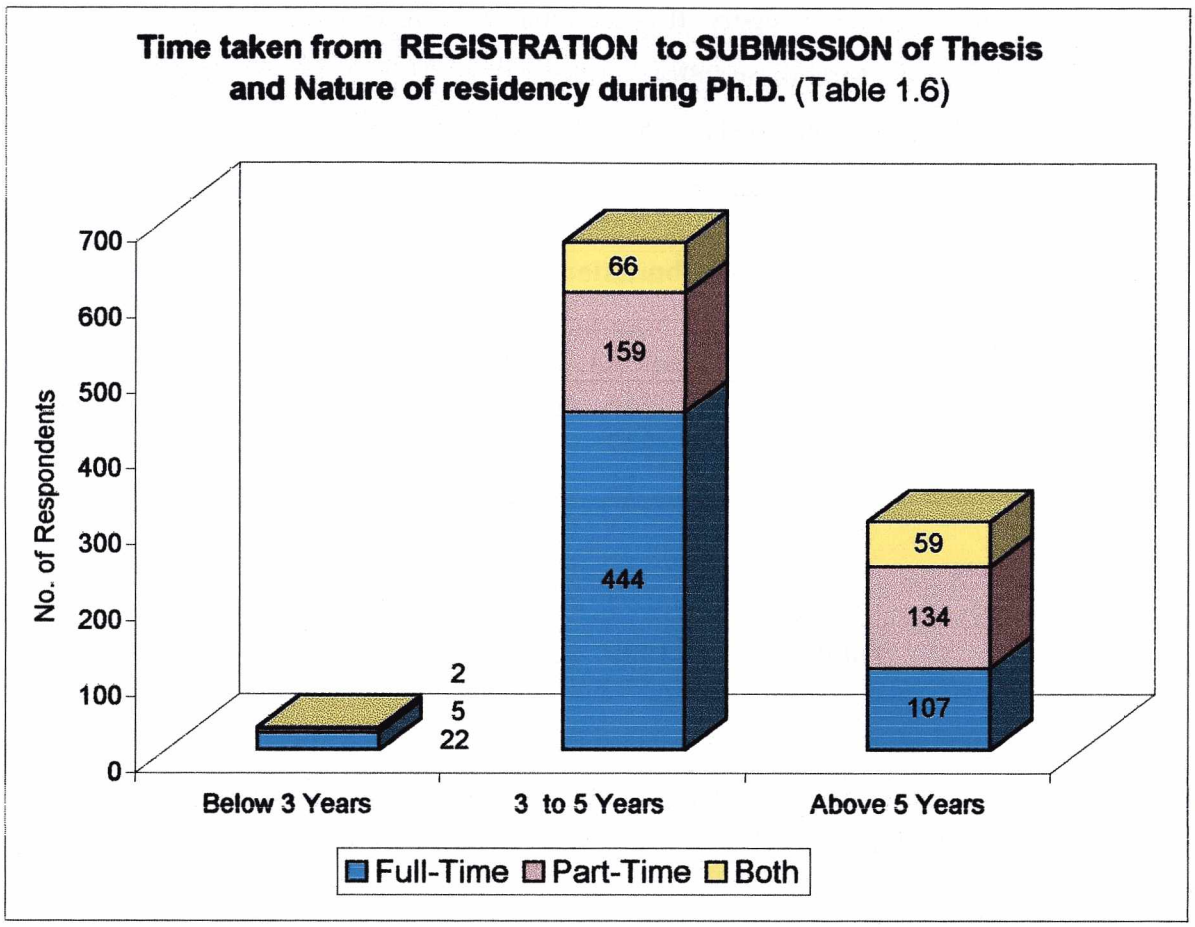


Figure 21

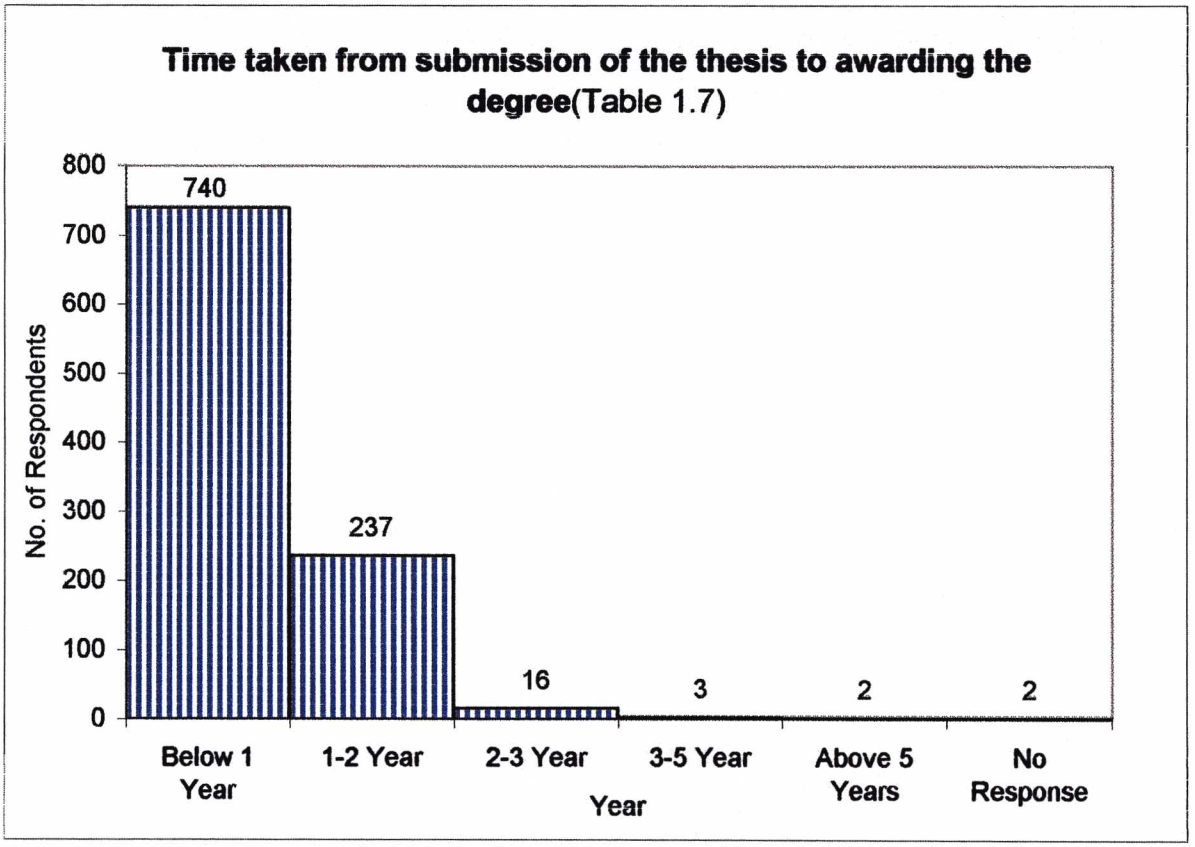


Figure 22

both full-time and part-time category. It is seen that 30% of respondents took more than 5 years to submit their doctoral dissertation. Among those 10.7% and 13.4% were full-time and part-time scholars respectively. 5.9% worked as both (full-time & part-time) category. About 3% have taken only 3 years and they are almost full time scholars.

Table 1.7 (Q1.9) Time taken from submission of the thesis to awarding the degree.

Duration	Number of Respondents(%)
Below 1 Year	740 (74.0)
1-2 Year	237 (23.7)
2-3 Year	16 (1.6)
3-5 Year	3 (0.3)
Above 5 Years	2 (0.2)
No Response	2 (0.2)
Total	**1000 (100.0)**

It is heartening to note from this table that the time taken was less than one year in the case of 74% of respondents with regard to the award of doctoral degree from the date of submission of the dissertation. 23.7% of the respondents waited for two years to get their degrees awarded.

Time taken between submission and awarding of degrees in between 1 to 2 years and below 1 year for the majority (97.7%) of the candidates.

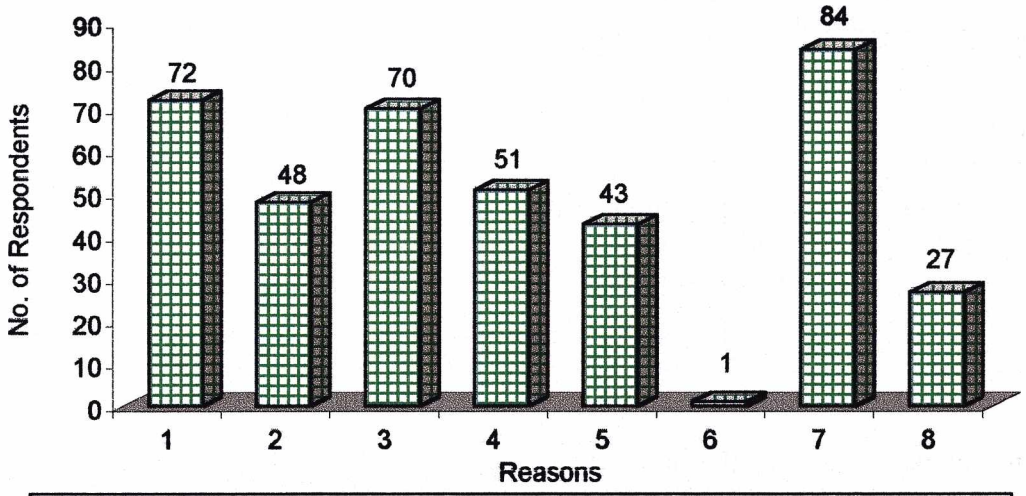
Table 1.8 (Q1.12) Reasons for taking more than 5years to complete their Ph.D. degree

Reasons	No. of Respondents	Percentage
Topic Was Complex	72	24.0
Guidance Was lacking	48	16.0
Marriage/Child Birth	70	23.3
Interruption Due to Family Responsibilities	51	17.0
Frequent Interruption Due to Personal and Official Tasks assigned by Department/Guide	43	14.3
Sexual Harassment	1	0.3
Others	84	28.0
No response	27	9.0

Others

1. Part-Time
2. After 2 years of study, I got into ARS and since then working as Scientist

Reasons for taking more than 5 years to complete their Ph.D. degree (Table 1.8)



1. Topic Was Complex
2. Guidance Was lacking
3. Marriage/Child Birth
4. Interruption Due to Family Responsibilities
5. Frequent Interruption Due to Personal and Official Tasks assigned by Department/Guide
6. Sexual Harassment
7. Others
8. No response

Figure 23

Distribution of Respondents Classified as Stipendary / Non Stipendary (Table 1.9)

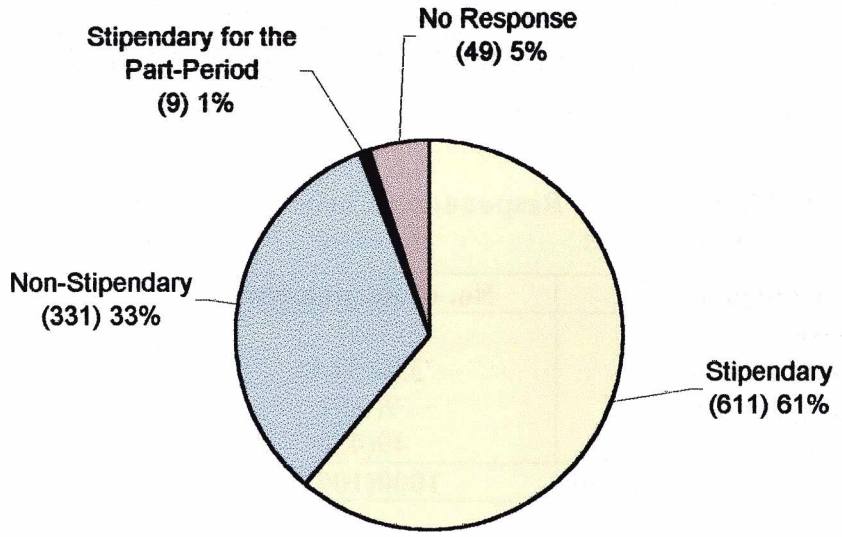


Figure 24

3. Experimental Facility was setup for 1st time / Delay in Computation of Results (TDC-Punchcard System)
4. Delay in their approval & fixing viva voce date
5. Change of Topic after one year.
6. Employment problem
7. Lack of Data
8. Discontinued due to promotion and posting
9. Transfer
10. ill-health
11. Change of Department within the institute
12. Delay on the part of guide
13. Lack of necessary equipments

Note: 233 respondents have indicated one reason while the number of respondents who have given two, three, four, five and six reasons are respectively 49, 12, 2, 3 and 1.

It can be seen from the above table 1.8 (Q1.12) 24.0% of the respondents took more than 5 years since the topic of their doctoral research was complex by nature. Marriage and/or childbirth were responsible for 23.3% of the sample members for longer period of submission of their dissertation. It is rather unfortunate that 'guidance was lacking' for 16% of the respondents and as a consequence these researchers took more than 5 years 14.3% of the sample members stated that this might have taken more than 5 years consequent on the frequent interruption due to personal and official tasks assigned by the department and/or guide. This reflects somewhat a sad state of affairs in a research set up. Interruption due to family responsibilities was the reason for extending the period of research in the case of 17.0% of the respondents. Part-time scholars took more than five years for completing the work, due to ill-health, promotion to higher posts, transfer of jobs, termination of job were some of the other reasons necessitating more than 5 years to complete the research works and 28% of respondents come under this broad category.

Table 1.9 (Q1.11) Distribution of Respondents Classified as Stipendary/Non-Stipendary:

Category	No. of Respondents
Stipendiary	611(61.1)
Non-Stipendiary	331(33.1)
Stipendary for part-period	9(0.9)
No Response	49(4.9)
Total	**1000(100.0)**

It can be seen from the above table 1.9 (Q1.11) a majority (61.1%) of the women doctorates were receiving stipends for their doctoral research while (33.1%) did not

receive any stipend. The distribution of category of stipend received by the respondents is given in the following Table 1.10.

Table 1.10 (Q1.11) (Contd.) Distribution of Category of Fellowship of the Respondent:

Sources of Fellowship	No. of Respondents	Percentage
National Level Educational Test(U.G.C.(JRF/SRF)	211	34.5
Council of Scientific and Industrial Research	175	28.6
Quality Improvement Programme	30	4.9
State Government	43	7.0
Private Educational Trust	14	2.3
Indian Council of Agricultural Research(ICAR)	37	6.1
Faculty Improvement Programme(FIP)	39	6.4
Indian Council of Medical Research(ICMR)	15	2.5
International Development Research Centre(IDRC)	1	0.2
UNDP Fellowship	3	0.5
Department of Electronics, Govt. of India	4	0.7
NCERT Fellowship	3	0.5
ROCKFELLER Foundation	2	0.3
Central Govt.(Dept. of Atomic Energy, GOI)	12	2.0
Ministry of Environment Forestry	2	0.3
CIIL Fellowship	1	0.2
University Fellowship	50	8.2
CERA Fellowship by IIT's	3	0.5
GATE Fellowship	7	1.1
NBHM	1	0.2
All India Council of Technical Education Project.	1	0.2
National Science Foundation (USA)	1	0.2
Common Wealth Scholarship (U.K.)	2	0.3
John Lee Prott Fellowship of VPI & SU, USA	1	0.2
British Council	1	0.2
Teaching / Research Assistantship (USA)	7	1.1
I.A.R.I. Fellowship	5	0.8
PGIMER fellowship	1	0.2
French Govt. Fellowship	2	0.3
Korea Govt. Fellowship	1	0.2
Institutional Fellowship	5	0.8
No response	2	0.3

Note: 542 respondents received fellowship from one source while the number of respondents received fellowship from two and three sources are respectively 67 & 2.

In the above table 1.9(Q1.11) reveals that 34.5% of the women doctorates have received U.G.C. fellowship (S.R.F/J.R.F.) which seems to be a very encouraging fact.

CSIR fellowship constituted 28.6%. 8.2% of the respondents were availing of the fellowships from the various universities. State Governments have provided fellowships to 7.0% of the Sample members. 6.4% received fellowships under FIP programme while ICAR has provided fellowships to 6.1% of women doctorates. Educational Trust have contributed research fellowships to 2.5% of the women doctorates.Indian Council of Medical Research fellowship, NCERT fellowship, CIIL fellowship, CERA fellowship by (IIT), GATE fellowship, NBHM, Dept. of Atomic Energy fellowship are some of the other fellowships received by the Women Doctorates.

Table 1.11(Q1.13) Distribution according to Current Employment Status:

Status	Number of Respondents(%)
Employed	956(95.6)
Unemployed	42(4.2)
No Response	2(0.2)
Total	**1000(100.0)**

The above table 1.11 (Q1.13) clearly shows that 95.6% of the sample members were currently employed and 4.2% of the respondents were not employed at the time of investigation.

Table 1.12 (Q1.13) Distribution of Respondents by their Designation:

Sl.No.	Designation	No. of Respondents	
1.	Director/Asst. Director/Joint Director/ Deputy Director	10	1.0
2.	Deputy Registrar	2	0.2
3.	Dean	1	0.1
4.	Principal/ Vice-Principal	17	1.8
5.	Professor/Asso. Prof./Asst. Professor	260	27.2
6.	Reader	161	16.8
7.	Lecturer	219	22.9
8.	Assistant Manager	1	0.1
9.	Scientist	166	17.4
10.	Research Associate	54	5.6
11.	Post Doctoral Fellow(PDF'S)	6	0.6
12.	Senior Research Fellow	1	0.1
13.	Research Officer/Asst. Res. Officer	28	2.9
14.	Technical Assistant/Tech. Officer	21	2.2
15.	Fellow Faculty	2	0.2
16.	Senior Cytogenetist	1	0.1
17.	Curator	1	0.1
18.	Foreman	1	0.1
19.	Teacher	1	0.1
20.	Chemist	1	0.1
21.	Office Assistant	1	0.1
22.	No response	1	0.1
	Total	**956**	**100.0**

It is seen from the above table 1.12 (Q1.13) that 27.2% of the respondents are holding Professor Cadre, 22.9% of the sample members are in the lecturer level, 17.4% of the sample members belong to Scientist cadre and 16.8% of the respondents are working as Reader. 5.6% of them are holding research associates while 2.6% of them are working as a Research Officer. About 2.2% of the sample members are belonging to the Technical Assistant/ Officer Cadre. Only 1.8% of the members are holding Principal/Vice-Principal level. 0.6% of the sample members are in Post Doctoral Fellowship's Cadre and remaining 1.3% of the respondents are holding fellow faculty, Senior Cytogenitists, Curator, Foreman, S.R.F., Deputy registrar, Chemists and Office Assistant.

Distribution according to Current Employment Status
(Table 1.11)

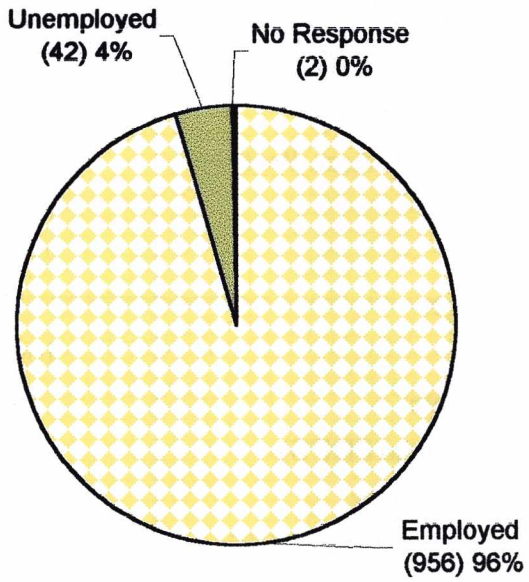


Figure 25

Distribution by number of years of experience (Table 1.13)

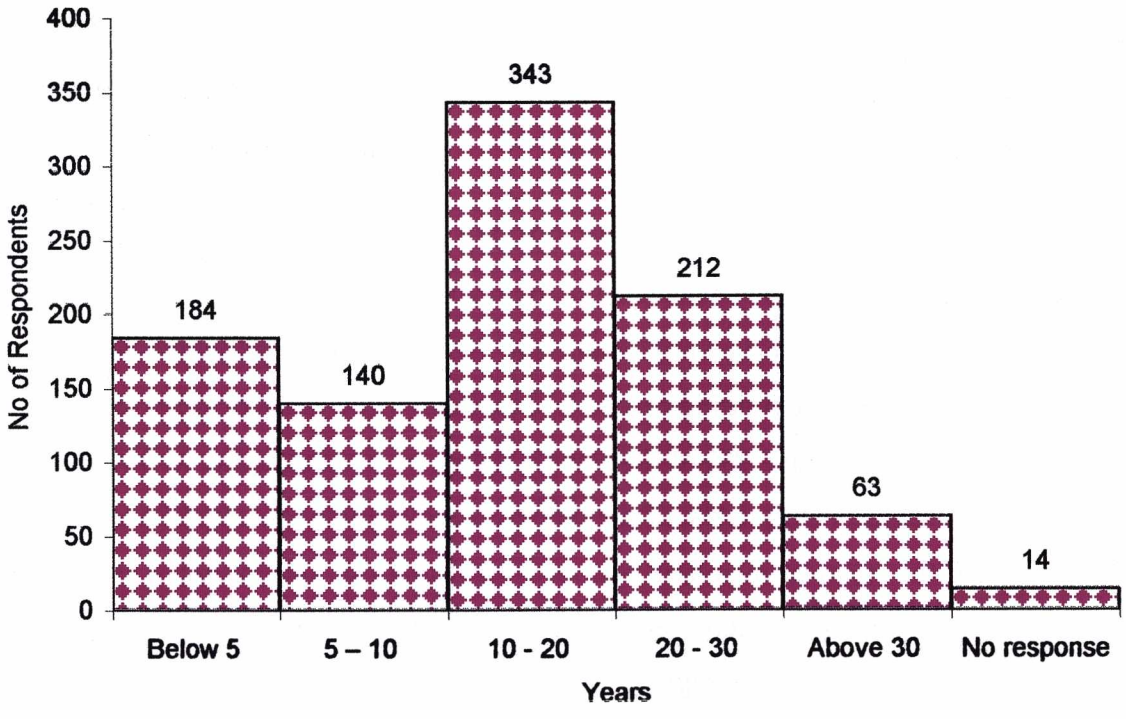


Figure 26

Table 1.13 (Q1.13) Distribution by number of years of experience

Years of experience	No. of Respondents
Below 5 Years	184 (19.3)
5 – 10 Years	140 (14.7)
10 – 20 Years	343 (35.9)
20 – 30 Years	212 (22.2)
Above 30 Years	63 (6.6)
No response	14 (1.4)
Total	**956 (100.0)**

Data obtained from the respondents regarding their period of total service are presented in the above table 1.13 (Q1.13(2)), it is seen that about 36% of the respondents have 10-20 years of service while 28.8% have the period of service above 20 years. Only 19.3% are having experience below 5 years.

Table 1.14 (Q1.13(3)) Distribution by Gross Monthly Income:

Gross Monthly Income	No. of Respondents
Below Rs.10,000	320 (33.5)
Rs.10,000 - Rs.20,000	583 (61.0)
Rs.20,000 - Rs.30,000	23 (2.4)
Above Rs.30,000	10 (1.0)
No response	20 (2.0)
Total	**956 (100.0)**

The above table 1.14 (Q1.13(3)) presents the distribution of Gross monthly income of the Women Doctorates included in our sample study. Majority (61%) of respondents belong to Income bracket Rs.10,000-20,000/- whereas 2.4% of the respondents get salary between 20,000 to 30,000/- only 1% of the women doctorates are drawing the salaries above Rs.30,000/-.

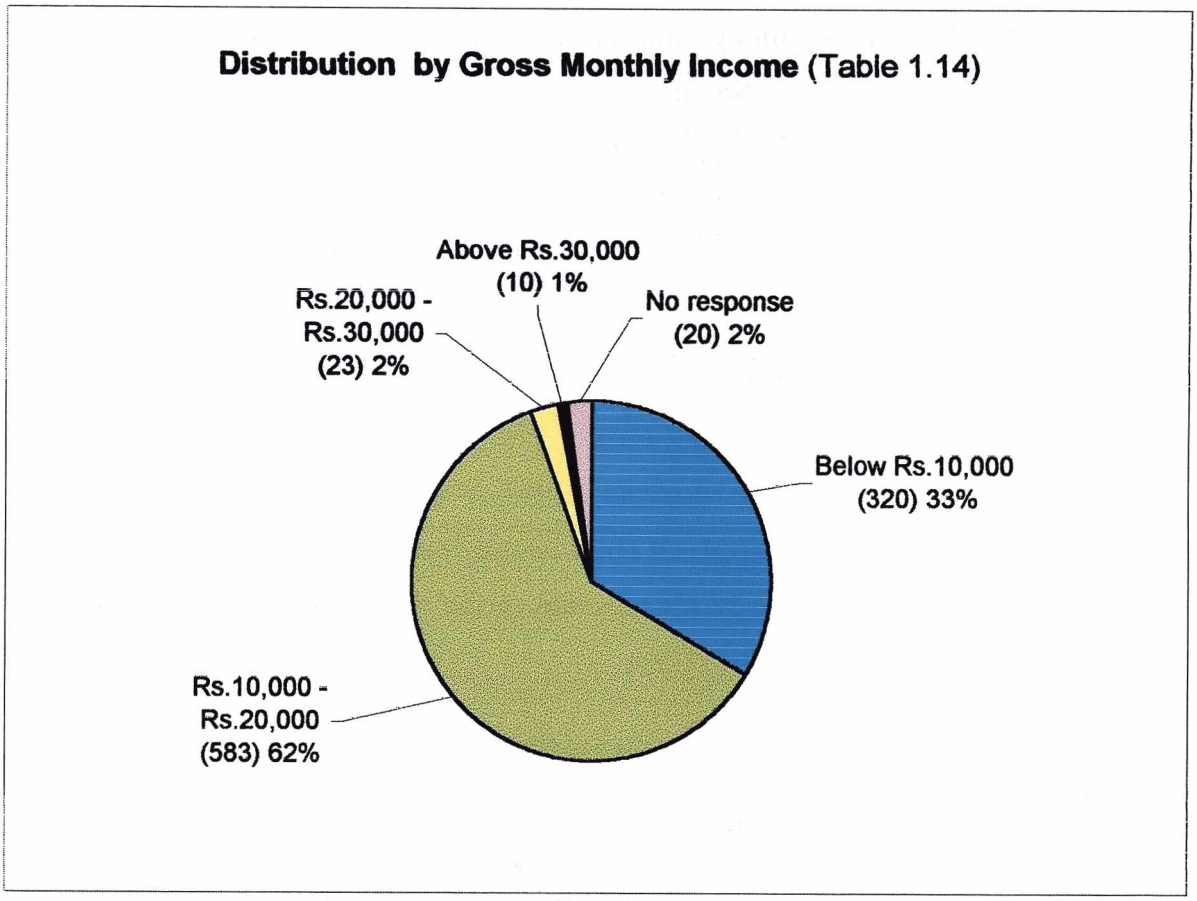


Figure 27

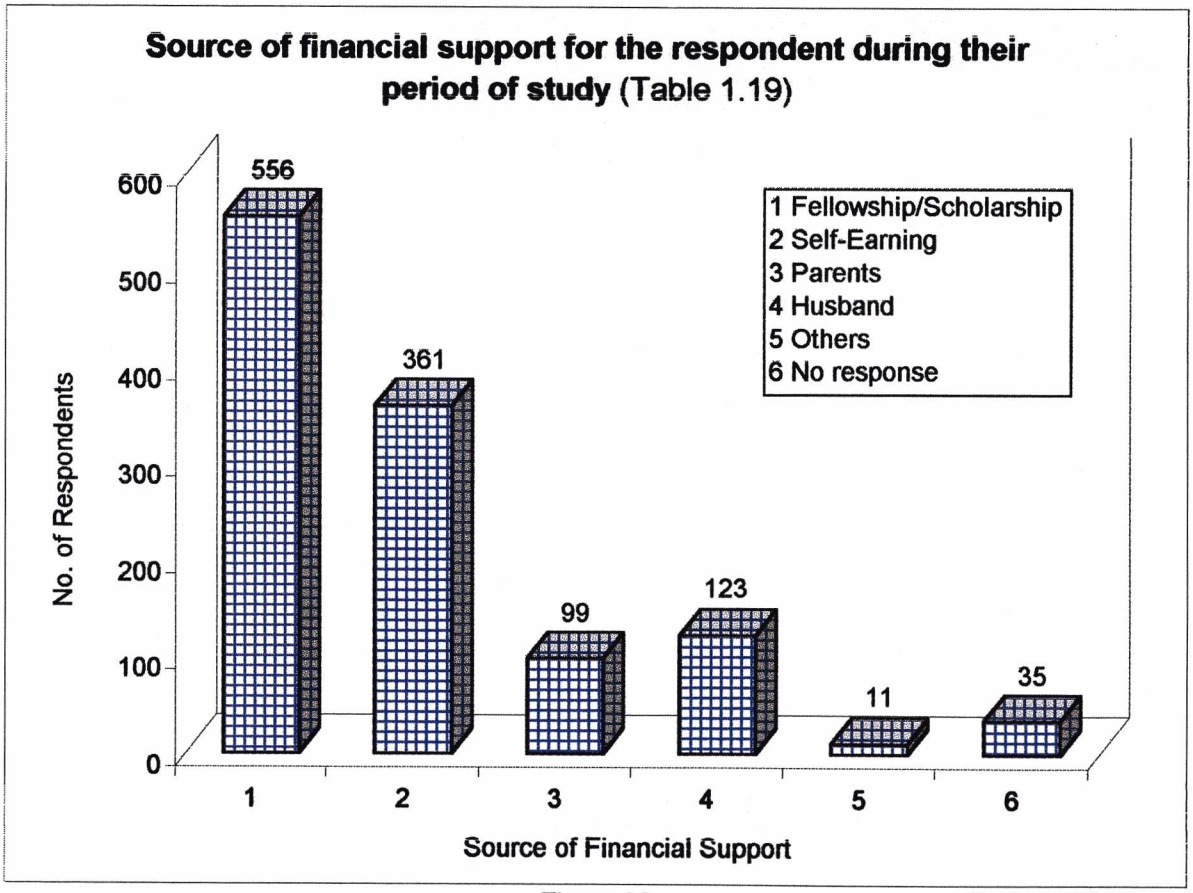


Figure 28

Table 1.15 (Q1.14) Educational level of Father, Mother, Sisters and Brothers of the respondents

Educational Level	Father	Mother	Sisters		Brothers	
			1	2	1	2
Ph.D.	37(3.7)	8(0.8)	85(8.5)	25(2.5)	82(8.2)	38(3.8)
Post Graduate	167(16.7)	50(5.0)	334(33.4)	202(20.2)	331(33.1)	159(15.9)
Graduate	357(35.7)	140(14.0)	252(25.2)	162(16.2)	303(30.3)	173(17.3)
School	384(38.4)	645(64.5)	111(11.1)	75(7.5)	73(7.3)	47(4.7)
No formal education	28(2.8)	121(12.1)	3(0.3)	3(0.3)	6(0.6)	1(0.1)
Technical Education	1(0.1)				3(0.3)	3(0.3)
No response/ *Not applicable	26(2.6)	36(3.6)	215(21.5)	533(53.3)	202(20.2)	579(57.9)
Total	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)

* - Not applicable –No brother, no sister

It can be seen from the above table 1.15 (Q1.14) data relating to educational level of the family whereas table 1.16 (Q1.15) gives corresponding information about the educational level of husbands and his parents. The following facts are revealed by these two tables. It is significant to note that fathers of 37 respondents are doctorates and the numbers of mothers who hold doctorate degrees is 0.8%. There is a considerable percentage of Sisters and Brothers of the respondents holding doctorates. 35.7% of the Fathers and 14.0% of Mothers are graduates or PG's 38.4% of the respondents has fathers with high school or lower education while mothers with high school or lower education constitutes 64.5%.

The data presented in the above table indicates very clearly that Parents and Brothers and Sisters holding doctorate degrees encourage girls to take up doctoral research.

The brothers and sisters of the respondents are having good education at P.G. and Graduate level. On the whole it seems to be appropriate to conclude that good educational background of the family provides valuable support to girls to pursue doctoral research and to take up career as Scientists & Technologists.

Husbands of 31.8% of respondents have doctoral qualification. Father in law of 13 respondents and mother in law of 5 respondents are doctoral degree holders.

It can be clearly seen from the above table that well educated husband and in-laws of the respondents have also contributed their support to girls to qualify for Ph.D. and to assume covertable positions.

Table 1.16 (Q1.15) Educational level of Husband and In-laws of the respondents

Educational Level	Husband (%)	Father in-law (%)	Mother in-law (%)
Ph.D.	270 (31.5)	13 (1.5)	5 (0.6)
Post Graduate	369 (43.0)	90 (10.5)	21 (2.4)
Graduate	197 (23.0)	262 (30.5)	59 (6.9)
School	4 (0.5)	367 (42.8)	492 (57.3)
No formal education	2 (0.2)	86 (10.0)	242 (28.2)
Technical Education		1 (0.1)	
No response	16 (1.9)	39 (4.5)	39 (4.5)
Total	**858 (100)**	**858 (100)**	**858 (100)**

Table 1.17 (Q1.16) Professional background of Husband, Father, Mother, Sisters and Brothers of the respondents.

Profession	Husband	Father	Mother	Sister - 1	Sister - 2	Brother-1	Brother-2
Agriculture	55(6.4)	135(13.5)	35(3.5)	23(2.3)	--	43(4.3)	--
Medical	54(6.3)	47(4.7)	23(2.3)	108(10.8)	7(0.7)	78(7.8)	4(0.4)
Engineering	174(20.4)	91(9.1)	--	34(3.4)	6(0.6)	198(19.8)	25(2.5)
Law Practice	43(5.0)	42(4.2)	5(0.5)	19(1.9)	2(0.2)	16(1.6)	7(0.7)
Teaching	165(19.2)	135(13.5)	151(15.1)	215(21.5)	28(2.8)	63(6.3)	5(0.5)
Social Sciences	26(3.0)	35(3.5)	27(2.7)	24(2.5)	9(0.9)	18(1.8)	5(0.5)
Science	108(12.6)	40(4.0)	19(1.9)	53(5.3)	20(2.0)	33(3.3)	24(2.4)
Management	80(9.3)	74(7.4)	27(2.7)	38(3.8)	10(1.0)	100(10.0)	21(2.1)
Others	29(3.4)	39(3.9)	15(1.5)	12(1.2)	2(0.2)	18(1.8)	9(0.9)
Not applicable	124(14.3)	362(36.2)	698(69.8)	474(47.3)	916(91.6)	433(43.3)	900(90.0)
Total	858(100)	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)

The above table 1.17 (Q1.16) reveals that the percentage of Husbands, Parents, Sisters and Brothers of the respondents belonging to professions Engineering, Teaching, Science are respectively 20.4%, 19.2% and 12.6% . About 30% of the husbands profession relates to Agriculture, Medical, Law Practice, Social Sciences, Management.

In the case of Father's of the respondents the percentage of members in Agriculture, teaching are 13.5% each. A significant proportion namely 15.1% of mothers of the respondents are in teaching profession which perhaps would have been a source of encouragement for girls choosing doctoral research and career as Scientist and Technologist.

The professional background of Sisters and Brothers is fairly good in providing support to girls becoming doctorates.

Others

Profession

1. Audit and Accounts
2. Marketing
3. Journalism
4. Income Tax Officer
5. Press
6. Airforce
7. Computers & Company Secretary
8. Prohibition
9. Advertising
10. Industrial
11. Revenue Department
12. Police
13. Defence
14. Central Excise Inspector
15. Test Pilot in IAF
16. Clerk /Steno
17. Indian Railway
18. Postal and Telecommunication
19. Administrative Service
20. Gospel
21. Actuary
22. Bank
23. Artist (Drawing)
24. Arts (English, Tamil)
25. Mass Media

Occupation

1. Research and Development
2. Journalist
3. Retired
4. Honarary Dentist
5. Computer and Company Secretary
6. Airforce
7. Agriculturist
8. Defence Scientist
9. Architect
10. Nursing
11. Preacher / Pastor
12. Advocate
13. Printer
14. Writter
15. Social Work
16. Co-operative mill
17. Politician
18. Self employment
19. Medical Officer
20. Doctor
21. Painter

Table 1.18 (Q1.16) Occupational Status of Father, Mother, Sisters and Brothers of the respondents.

Profession	Husband	Father	Mother	Sister - 1	Sister - 2	Brother-1	Brother-2
Administrative/Public/Government service	217(25.3)	334(33.4)	69(6.9)	147(14.7)	2(0.2)	204(20.4)	8(0.8)
Private service/N.G.O.	94(11.0)	77(7.7)	26(2.6)	71(7.1)	16(1.6)	121(12.1)	30(3.1)
Business	76(8.9)	98(9.8)	5(0.5)	13(1.3)	2(0.2)	104(10.4)	15(1.5)
Consultancy service	20(2.3)	13(1.3)	2(0.2)	10(1.0)	--	24(2.4)	4(0.4)
Housewife	3(0.3)	8(0.8)	564(56.5)	207(20.7)	18(1.8)	2(0.2)	1(0.1)
Research and Education (Govt./Autonomous)	195(22.7)	46(4.6)	26(2.6)	79(7.9)	22(2.2)	48(4.8)	10(1.0)
Banks/Insurance/Finance (Govt./Autonomous)	52(6.1)	17(1.7)	1(0.1)	32(3.2)	18(1.8)	32(3.2)	13(1.3)
International organisaiton	14(1.6)	8(0.8)	1(0.1)	10(1.0)	6(0.6)	33(3.3)	14(1.4)
Others	7(0.8)	54(5.4)	8(0.8)	9(0.9)	1(0.1)	9(0.9)	1(0.1)
Not applicable	180(21.0)	345(34.5)	298(29.8)	422(42.2)	915(91.5)	423(42.3)	904(90.4)
Total	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)	1000(100)

The above table 1.18 (Q1.16) presents Occupational Status of Husbands, Parents, Sisters and Brothers of the respondents. It can be seen from the above table that the percentage of members employed in Administrative/Public/Govt. Service is 25.3% while 22.7% are employed in Research and Education (Govt./Autonomous). 11.0% of the husbands are engaged in Private Service/NGO's. The percentages relating to Business is 8.9% while 6.1% is engaged in Banks/Insurance/Finance. 1/3rd of Fathers of the respondents are engaged in Administration/Public/Govt. Services while about 22.8% are employed in occupation such as private service/NGO's, Business, R & D (Govt./Autonomous) and Banks/Insurance/etc. 6.9% of mothers, 14.7% of Sisters and 20.4% of Brothers of the respondents are engaged in Administration/Public/Govt. Service.

Table 1.19 (Q1.17) Source of financial support for the respondents during their period of study.

Source of Financial Support	No. of Respondents	Percentage
Fellowship/Scholarship	556	55.6
Self-Earning	361	36.1
Parents	99	9.9
Husband	123	12.3
Others	11	1.1
No response	35	3.5

Others

1. Faculty Improvement Programme & Teacher's Fellowship
2. Private funding agency
3. From the Religious Community

Note: 837 respondents received financial support from one source while 141, 20 and 1 respondents received financial support from two, three and four sources

Table 1.20 (Q1.18) Monthly income of Husband/ Parents of Respondents:

Category	A	B	C	Total	%
Below Rs.10,000	315(31.4)	284(28.4)	17(1.7)	616	(61.6)
Rs.10,000- 20,000	100(10.0)	190(19.1)	3(0.3)	293	(29.3)
Above Rs.30,000	29(2.9)	25(2.5)	2(0.2)	56	(5.6)
Total	444(44.3)	499(50.0)	22(2.2)	965	(96.5)
No response				35	(3.5)
Grand Total				1000	(100.0)

A- If living with parent, total income of the respondent, father, mother, brothers & sisters
B- If living with husband & children, total income of the respondent, husband & children
C- If living with Parents and Husband

Data relating to total monthly income of respondents living with husband and children as well as those living with parents at the time of joining Ph.D. were obtained through Q 1.18 and presented in the above table. It can be seen in the above table that the total monthly income of 31.4% of respondents living with parents is below Rs.10,000, while 10% of the respondents obtained income between Rs.10,000-20,000/-. In the case of 2.9% of the respondents the monthly income was above Rs.30,000/-. Among those respondents living with husband and children 28.4% belong to income bracket below 10,000/-. The %s of sample members belonging to the category of living with husband were 19.1% in the in come bracket Rs.10-10,000/-.

22 members/respondents were living with parents and husbands and 1.7% of these members belong to income category of below 10% while 0.5% belong to the income bracket of above Rs.10,000/-.

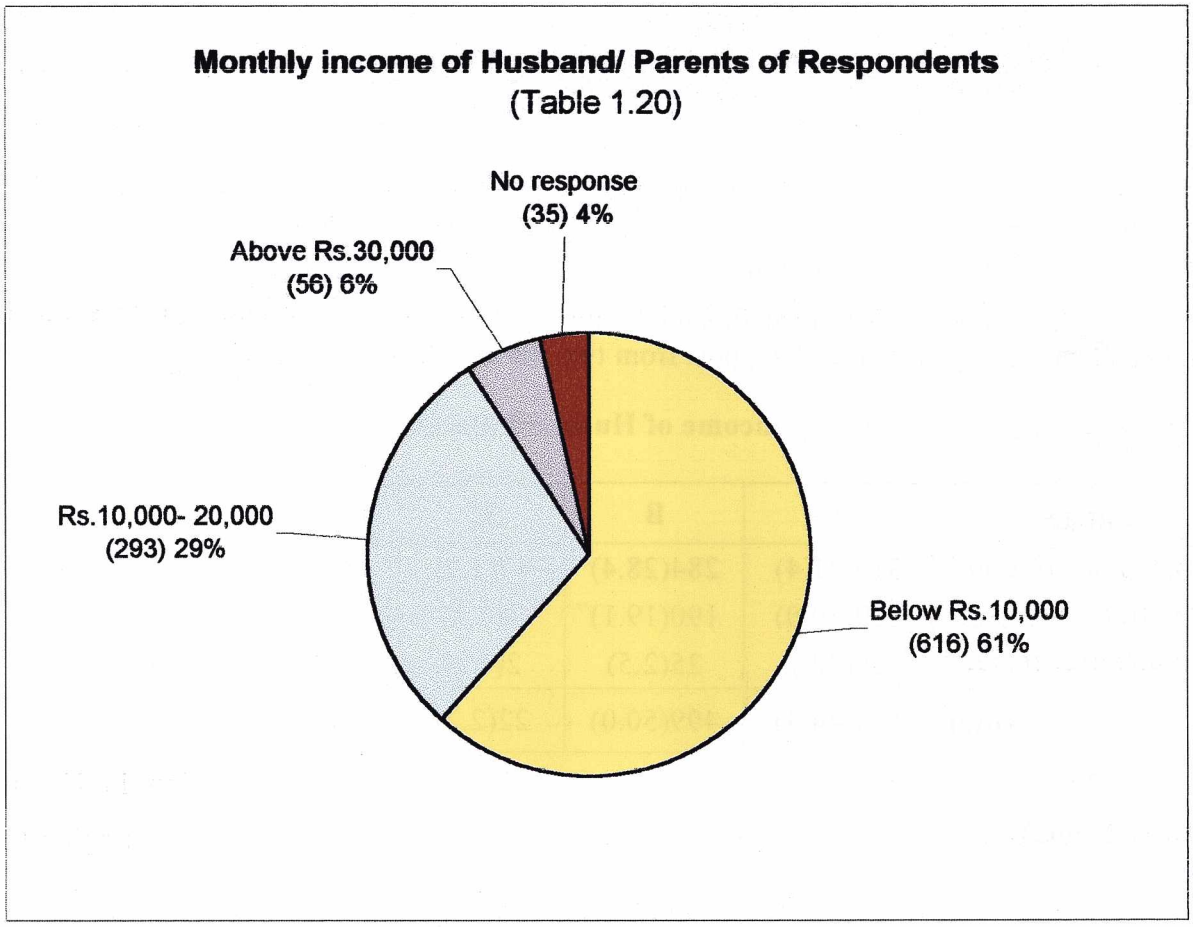


Figure 29

CHAPTER-V
ACADEMIC CAREER

Educational facilities, attitudes of parents, husbands and other family members, impact of teachers and peer group, are some of the key factors which will largely influence the decisions of the girls in taking up doctoral research and career as Scientists and technologists. Data pertaining to these aspects were obtained through replies to questions in section 2 and also data relating to personal achievements were collected through questions in section 3. These details of information are analyzed and presented in this chapter.

Details regarding the place of schooling, medium of instruction, type of schools attended are provided in the following tables 2.1(Q2.1) 2.2 (Q2.2) 2.3 (Q2.3).

Table 2.1 (Q2.1) Place of Schooling:

Place of Schooling	No. of Respondent	Percentage
Rural	326	32.6
Urban	649	64.9
No Response	25	2.5
Total	**1000**	**100.0**

The above table reveals that Majority (64.9%) had their education in Urban Schools while the % of those who studied in rural school is 32.6%. It is encouraging to note that women from rural schools have taken up research in Science & Technology.

Table 2.2 (Q 2.2) Medium of Instruction:

Medium of Instruction	Number of Respondents	Percentage
Tamil	208	20.8
English	431	43.1
Telugu	115	11.5
Malayalam	163	16.3
Kanada	43	4.3
Hindi	12	1.2
Others	14	1.4
No Response	14	1.4
Total	**1000**	**100.0**

Others include 'Urdu', 'Marathi', 'Oriya', 'Bengali'

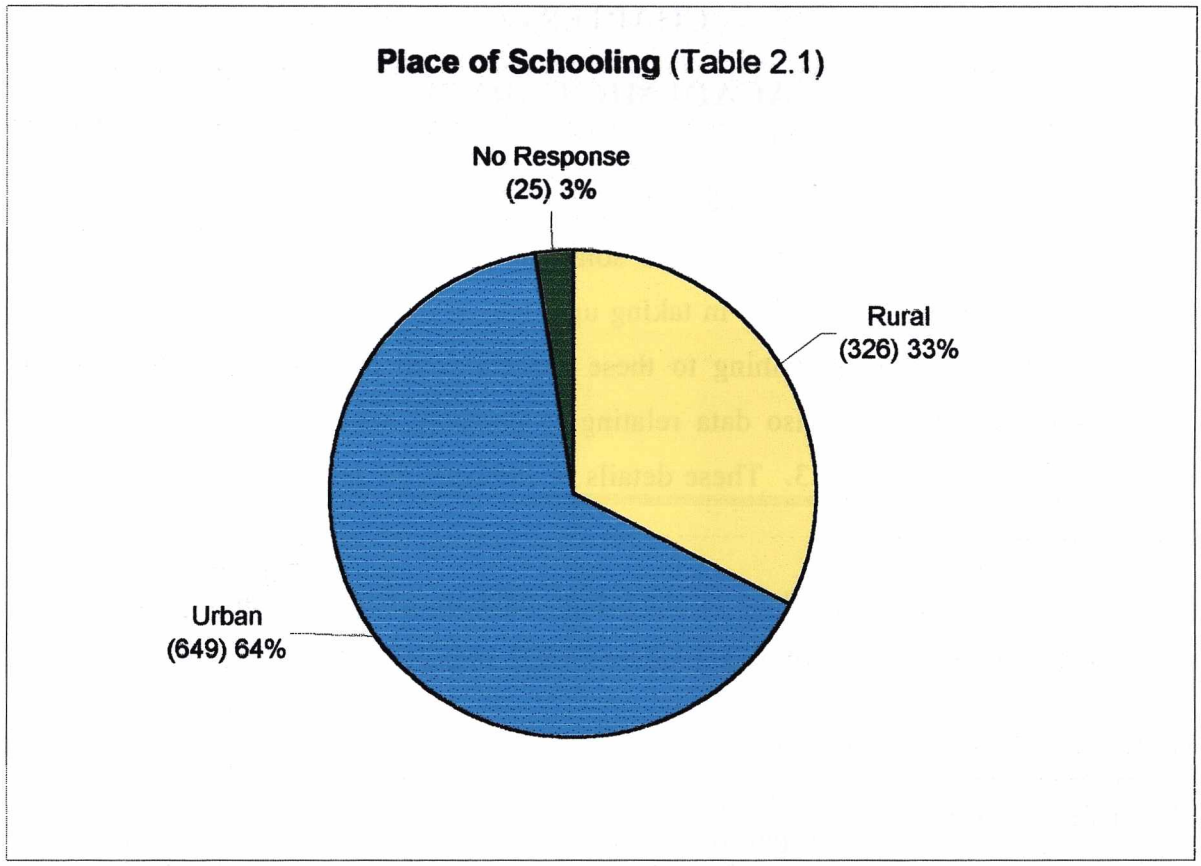


Figure 30

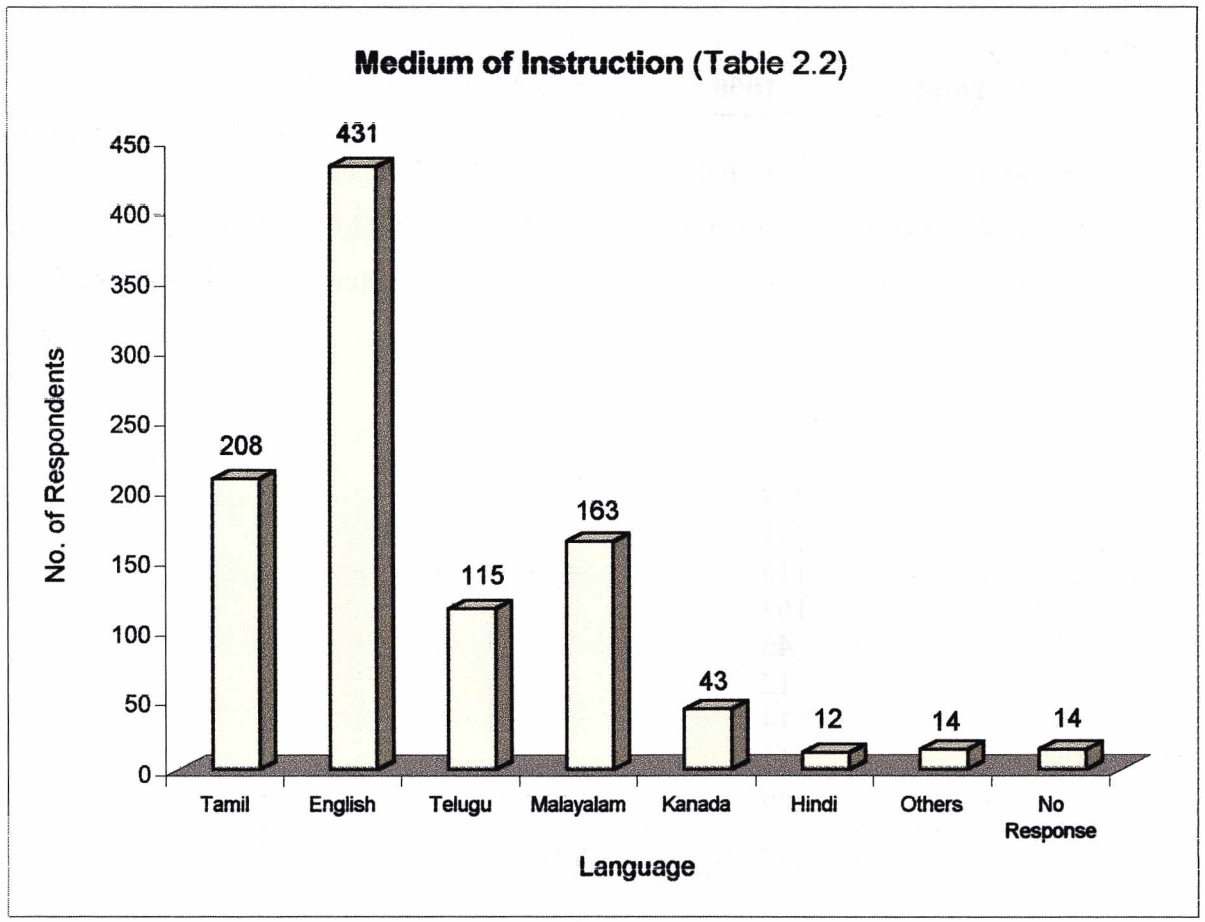


Figure 31

The above table clearly indicates that 43% of the respondents had English as a medium of Instruction. English being essential for carrying out research activities, it is natural that a considerable proportion of women doctorates of our sample have taken English as a medium of instruction. The proportions of respondents having regional languages namely Tamil, Telugu, Kannada, Malayalam as a medium of instruction are 20.8%, 11.5%, 16.3% & 4.3% respectively.

Informations about type of schools attended by the respondents is presented in the following table.

Table 2.3 (Q2.3) Type of Schooling:

Type of School	No. of Respondents	Percentage
Municipal/Corporation/Public School	202	20.2
Missionary	221	22.1
Government aided	306	30.6
Central School	39	3.9
Private school	264	26.4
Others	1	0.1
No response	13	1.3

Others

1. Zilla Parishad School

Note: 958 respondents have given one schooling while the numbers of respondents who have given two and three schooling are respectively 38 and 4.

30.6% of the respondents have studied in Government aided schools, while those who attended private schools are 26.4%. 22.1% of the women doctorates had their school education in institutions run by Christian Missionaries. The percentage of those who attended Municipal/Corporation/Public School is 20.2%.

Table 2.4 (Q2.9) Performance in P.G. course

Range of Marks	No of Respondents	Percentage
50-59	116	11.6
60-69	506	50.6
70-79	138	13.8
80-89	80	8.0
90 and above	49	4.9
No Response	111	11.0
Total	**1000**	**100.0**

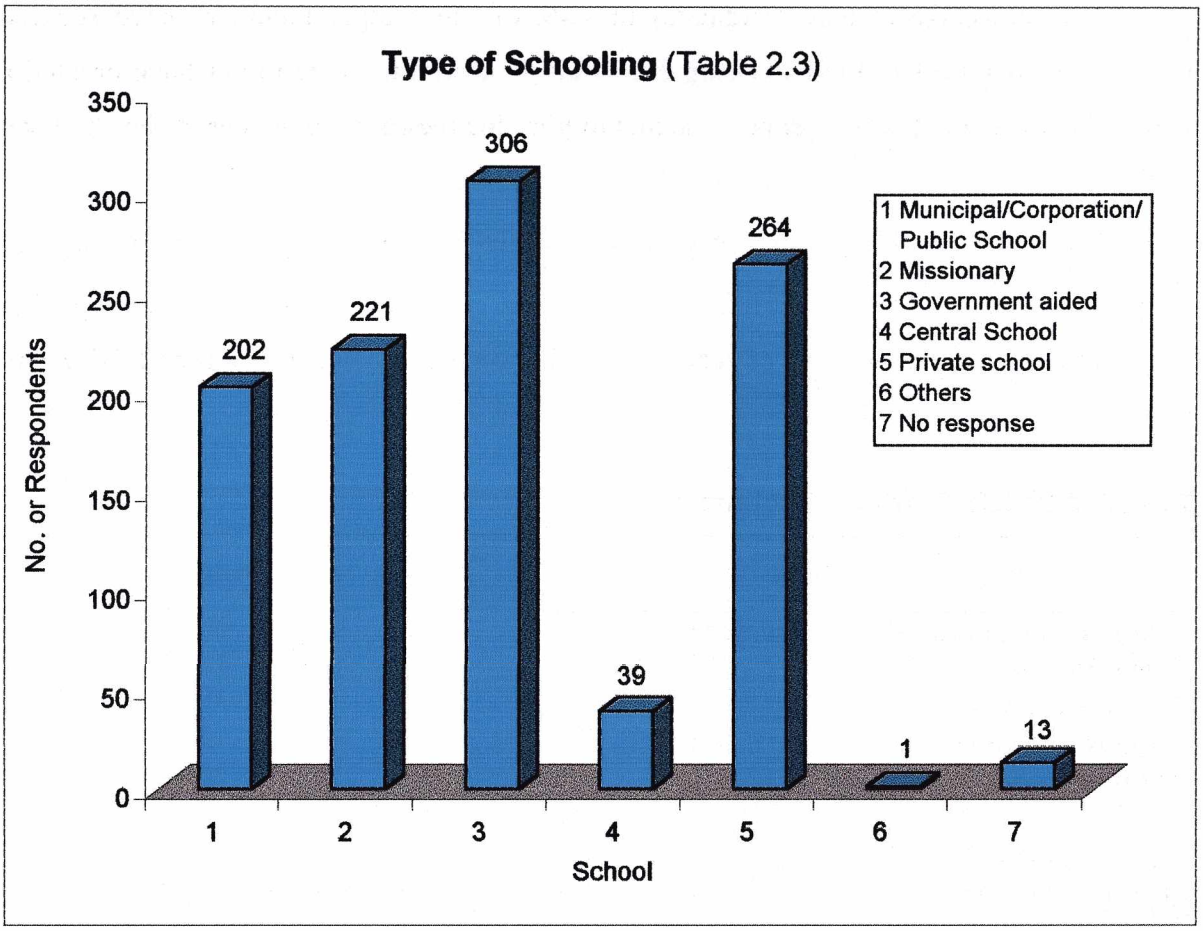


Figure 32

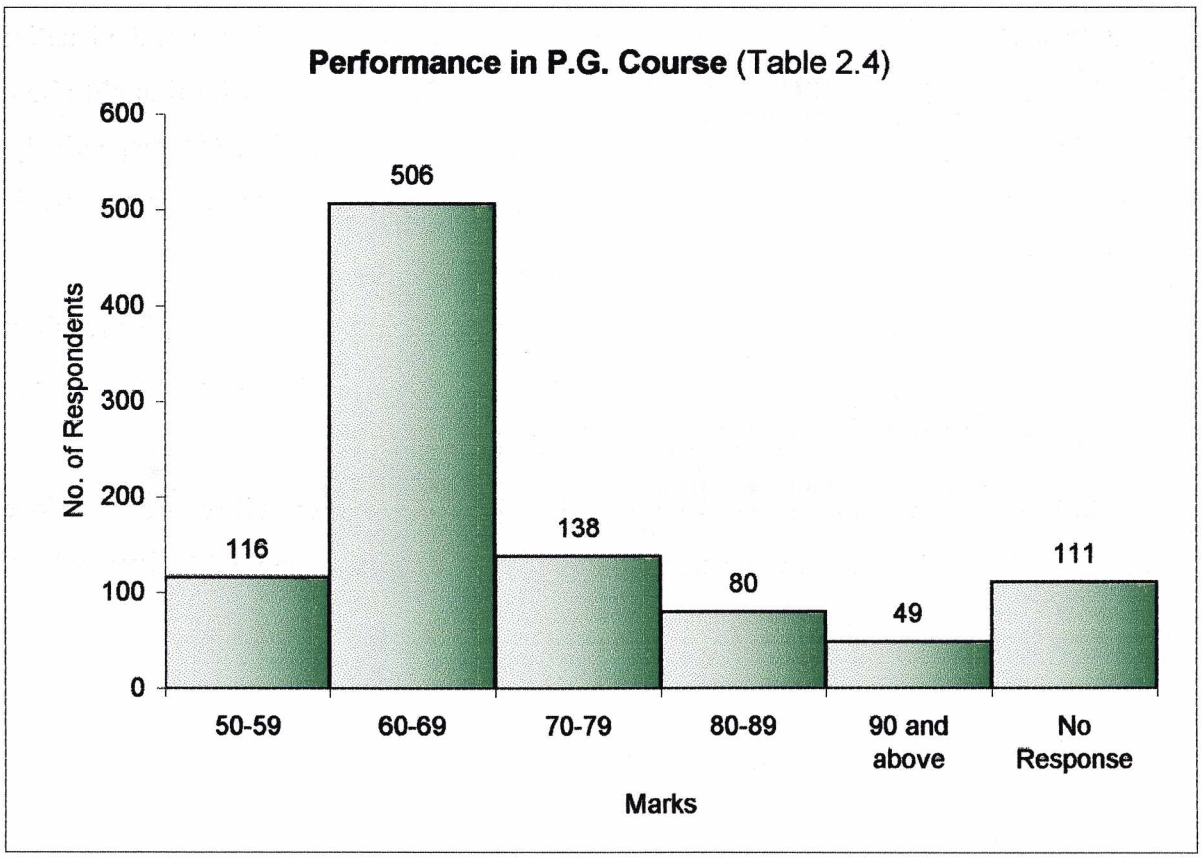


Figure 33

The above table reveals that about 78% of the sample members have secured above 60% of marks in their PG courses. This good performance might have created a strong desire on the part of the respondents to plan for the research career at the PG level itself.

With a view to examine the period of planning for doing the Ph.D. and to determine the persons encouraging and supporting and the individuals preventing girls from taking up research were collected through questions Q2.4, 2.5, 2.6 and Q2.7 and presented in table given below.

Table 2.5 (Q2.4) At what level the respondents decided to do their Ph.D.

Level	Number of Respondents(%)	
Under Graduate Level	130	(13.0)
Post-Graduate Level	486	(48.6)
Post P.G. Level	126	(12.6)
Others(During Job,etc.)	238	(23.8)
No Response	20	(2.0)
Total	**1000**	**(100.0)**

Others 'School level', 'While employed', 'After taking up the research career'.

48.6% of the respondents have stated that the intention to pursue doctoral research was at Post-Graduate level. It is quite encouraging to note that girls could visualise research career even at the PG level. The percentage of respondents who thought about joining Ph.D. research at UG level and Post PG level are 13.0% and 12.6% respectively. A considerable proportion of sample members have planned for research career while they were employed.

There prevails a general opinion that higher education to girls is a barrier for their marriage. Generally, parents are reluctant to permit girls to go for Ph.D. courses. There is a strong opposition from parents for girls taking up Ph.D. research.

Information with reference to the decision for Ph.D. career before/after marriage was obtained through replies to question 2.5 and is presented in the table 2.6 given below

At what level the respondents decided to do their Ph.D
(Table 2.5)

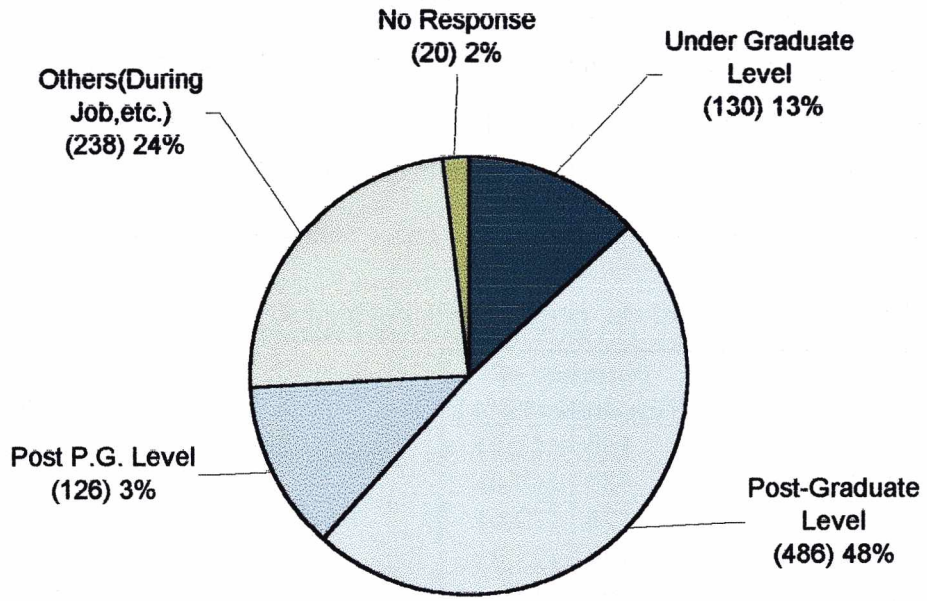


Figure 34

Decision taken for Ph.D. (Table 2.6)

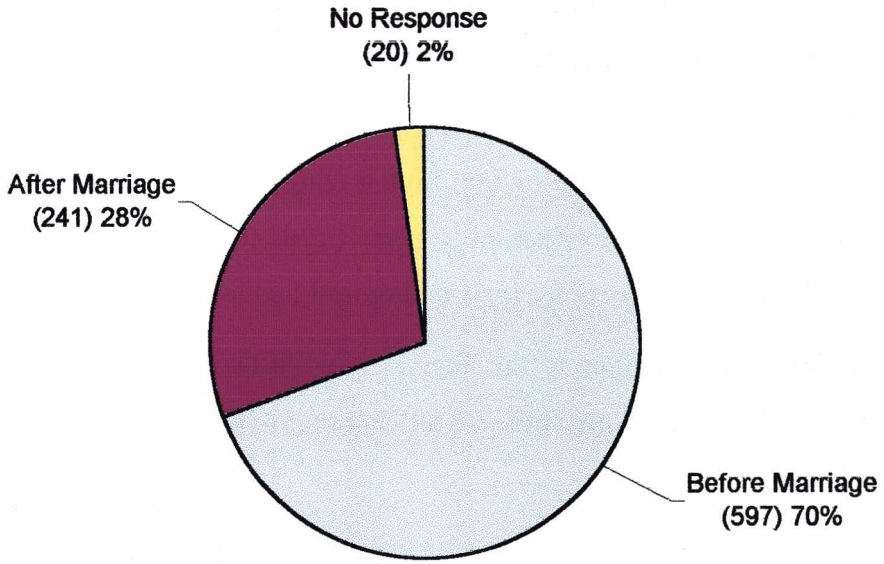


Figure 35

Table 2.6 (Q2.5) Decision taken for Ph.D.

Decision Taken	No. of Respondents	Percentage
Before Marriage	597	69.6
After Marriage	241	28.1
No Response	20	2.3
Total	**858**	**100.0**

It is highly revealing from the above table that about 69.6% of the respondents have decided to take up Ph.D. before marriage. This fact seems to be disproving the general opinion that Ph.D. education is a hinderance to marriage. There seems to a significant awareness among girls to equip themselves educationally so as to enjoy greater empowerment of women.

The parents of the girls seem to be more progressive minded during the past two decades with regard to providing encouragement and support to their daughters to qualify for highest education and seek employment as research Scientists and Technologists Data relating to persons who have encouraged and supported girls to take up Ph.D. research are obtained through the table (Q2.6) and presented below.

Table 2.7 (Q2.6) Source of encouragement for doing Ph.D. (Respondents have more than one source of encouragement)

S. No.	Category	No. of Respondents	Percentage
1	Parent	634	63.4
2	Teacher	302	30.2
3	Sibling	94	9.4
4	In-Law	57	5.7
5	Peer Group	69	6.9
6	Husband	420	42.0
7	Employer	120	12.0
8	Self	38	3.8
9	No response	29	2.9

Note: 536 respondents indicated one source, while the number of respondents who gave 2,3,4, and 5 sources are respectively 289, 117, 42 and 9.

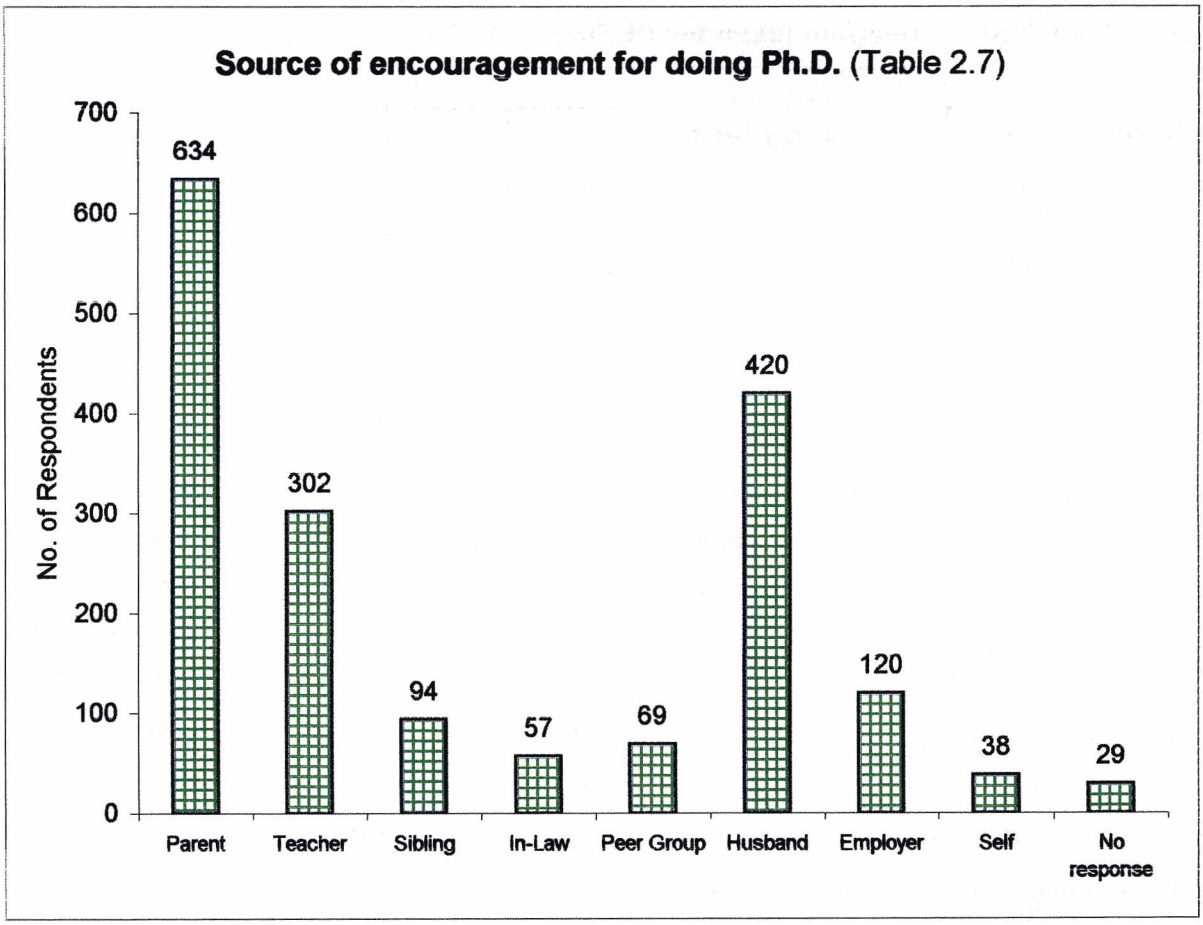


Figure 36

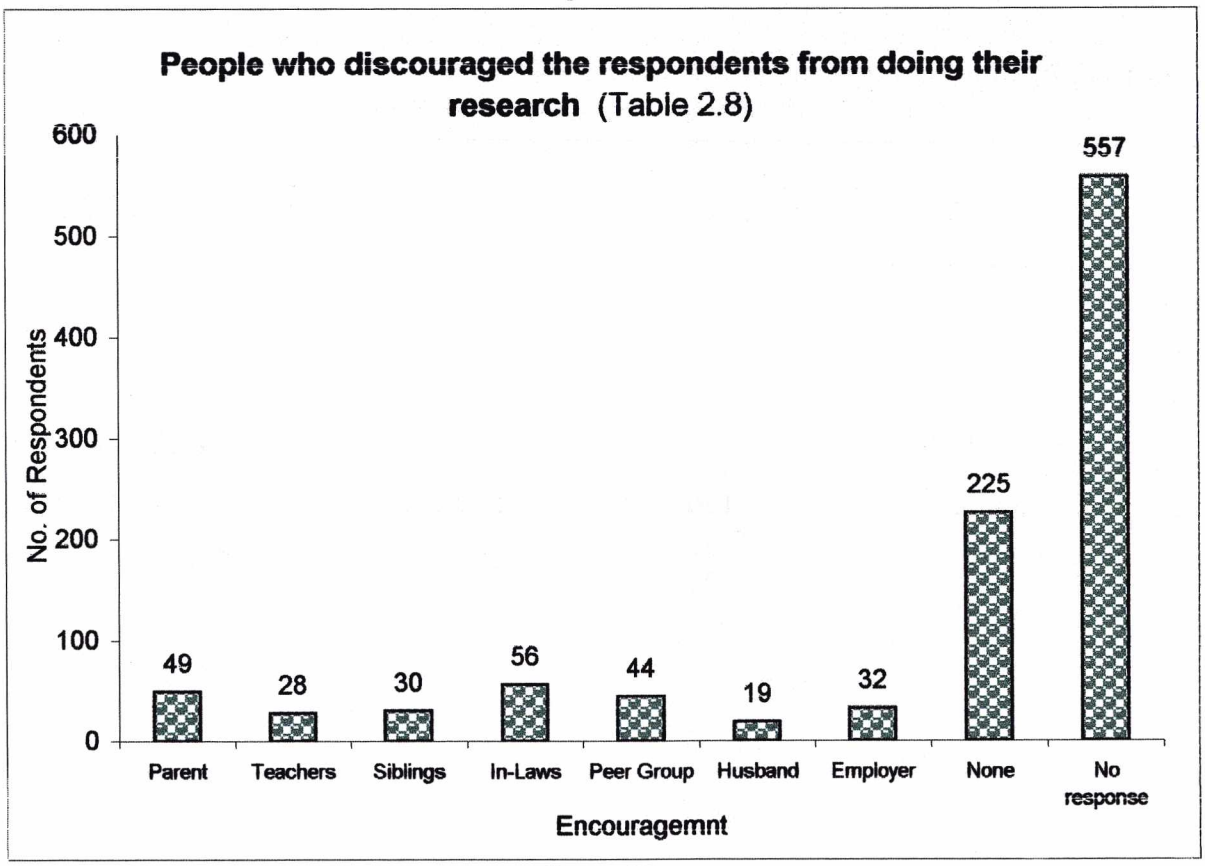


Figure 37

Table 2.8 (Q2.7) People who discouraged the respondents from doing their research.

S. No.	Category	No. of Respondents	Percentage
1.	Parent	49	4.9
2.	Teachers	28	2.8
3.	Siblings	30	3.0
4.	In-Laws	56	5.6
5.	Peer Group	44	4.4
6.	Husband	19	1.9
7.	Employer	32	3.2
8.	None	225	22.5
9.	No response	557	55.7

Note: 967 respondents indicated one source while the number of respondents who gave 2,3 and 4 sources are respectively 28,3 and 2.

The above table reveals that there was opposition from parents, husbands and in-laws to take up Ph.D. research is about 13.5%. About 78% of sample members did not have any discouragement from any body with regard to the desire to pursue the research work.

Table 2.9 (Q2.8) Kind of Residency:

Category	No. of Respondent	Percentage
Day Scholar	642	64.2
Resident Scholar	290	29.0
No Response	68	6.8
Total	**1000**	**100.0**

About 64% of the respondents were day-scholars and they were staying at home when they were doing their Ph.D. About 29% were hostellers.

It is known that Doctorates having chosen research as career will be enrolling themselves as members of professional societies in order to promote the research interest. Also they will be participating in international/national conferences, workshops, etc. Information about the women doctorate of our sample study in enrolling themselves in professional societies and attending conferences, workshops, etc. were obtained through Q2.10 & Q 2.11 & presented below.

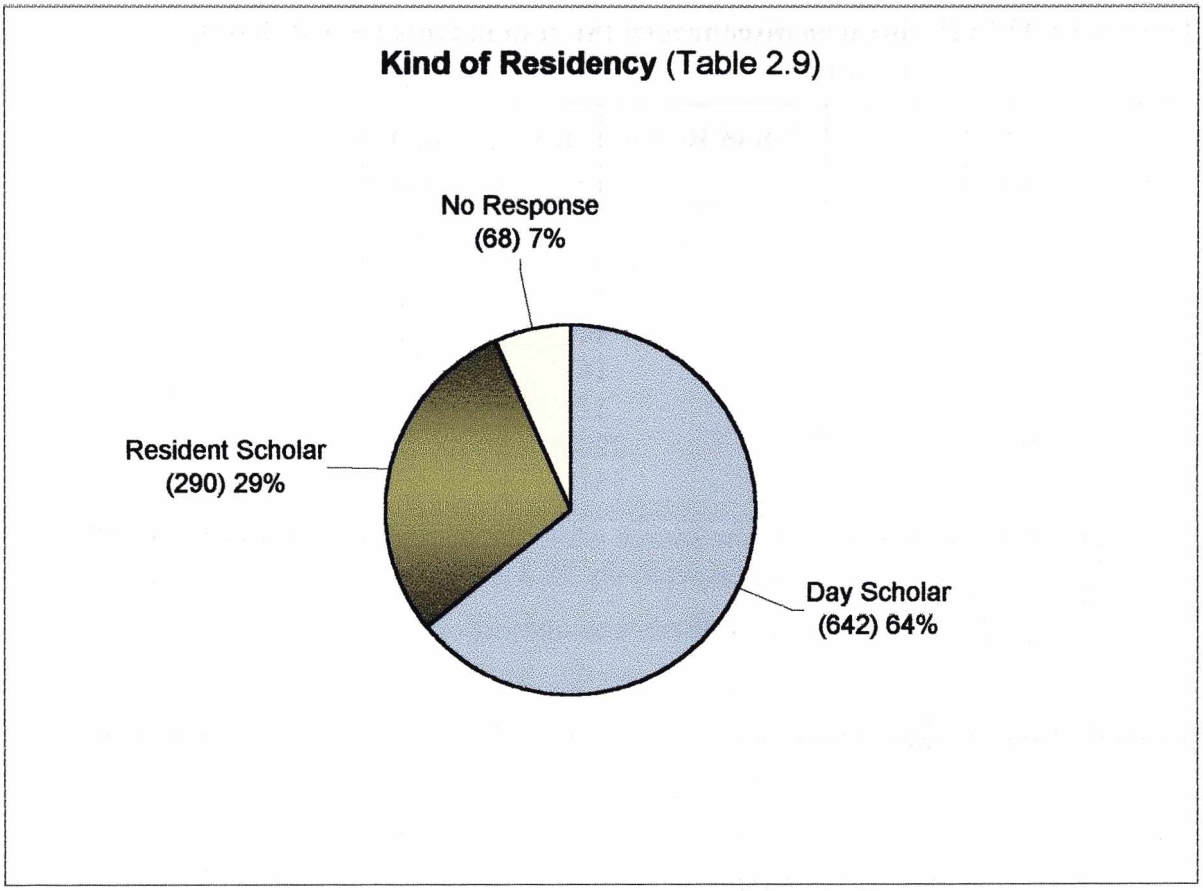


Figure 38

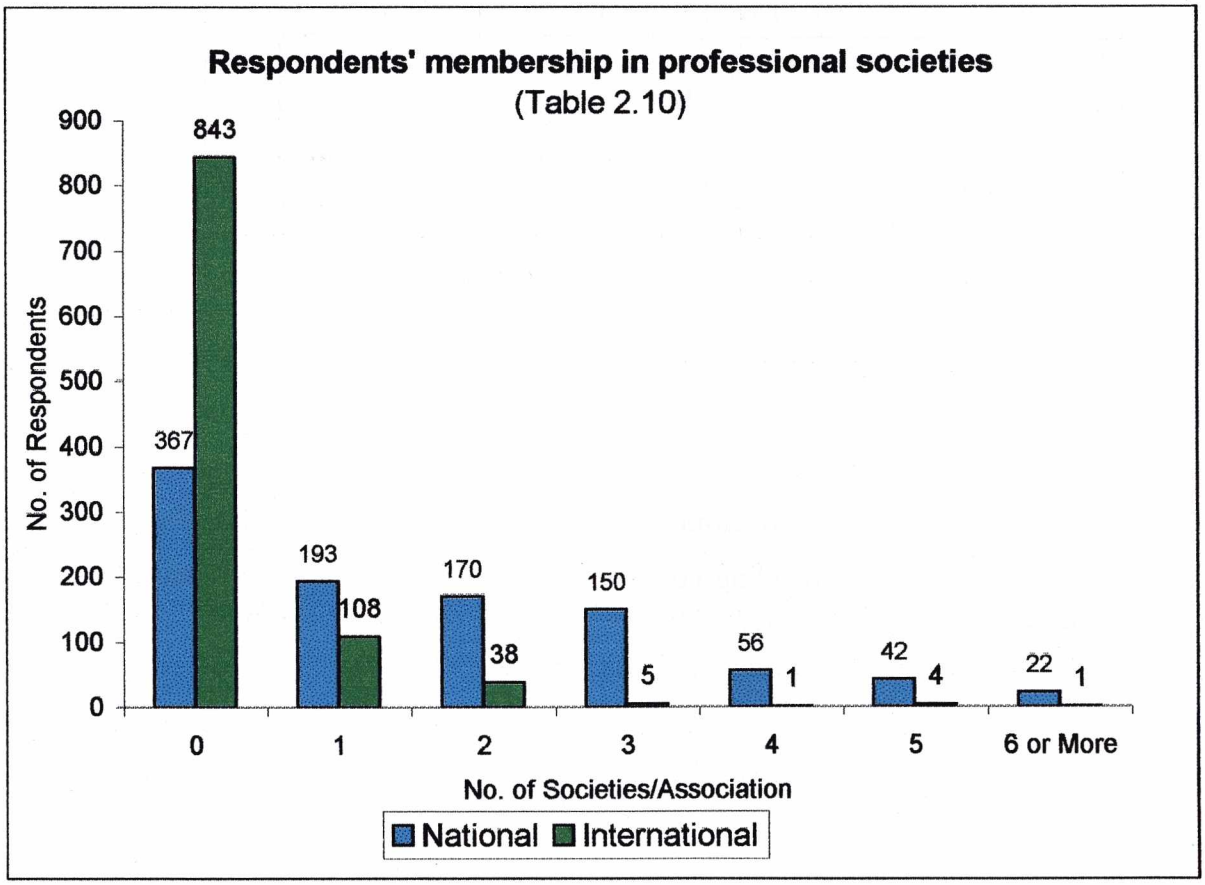


Figure 39

Table 2.10 (Q2.10) Respondents' membership in professional societies.

No. of Societies/Association	National	International
0	367(36.7)	843(84.3)
1	193(19.3)	108(10.9)
2	170(17.0)	38(3.8)
3	150(15.0)	5(0.5)
4	56(5.6)	1(0.1)
5	42(4.2)	4(0.4)
6 or More	22(2.2)	1(0.1)
Total	**1000(100.0)**	**1000(100.0)**

It is encouraging to note from the above table that about 63% of the respondents are members of national professional societies, while about 16% of have enrolled themselves as members in International professional societies

Table 2.11 (Q2.11) Number of Conferences/ Workshops/ Seminars/ Symposia attended by the Respondents.

No. of Conference etc.	National	International
0	242(24.2)	615(61.4)
1	107(10.7)	183(18.3)
2	152(15.2)	96(9.6)
3	144(14.4)	53(5.3)
4	71(7.1)	26(2.6)
5	83(8.3)	6(0.6)
6 or More	201(20.1)	21(2.1)
Total	**1000(100.0)**	**1000(100.0)**

About 75% of sample members have attended conferences/ workshops/ seminars/ symposia conducted at the National level while 39% have participated in International professional meetings.

Membership in professional societies and participating in professional meetings by significant proportion of women Scientists and Technologists of our country is indeed highly appreciative and it is very much necessary to encourage more women Scientists to participate in International conferences by providing all facilities.

The respondents were requested to rate the contribution of personal factors in the achievement of their academic goals. Data based on replies are presented in table (Q3.1).

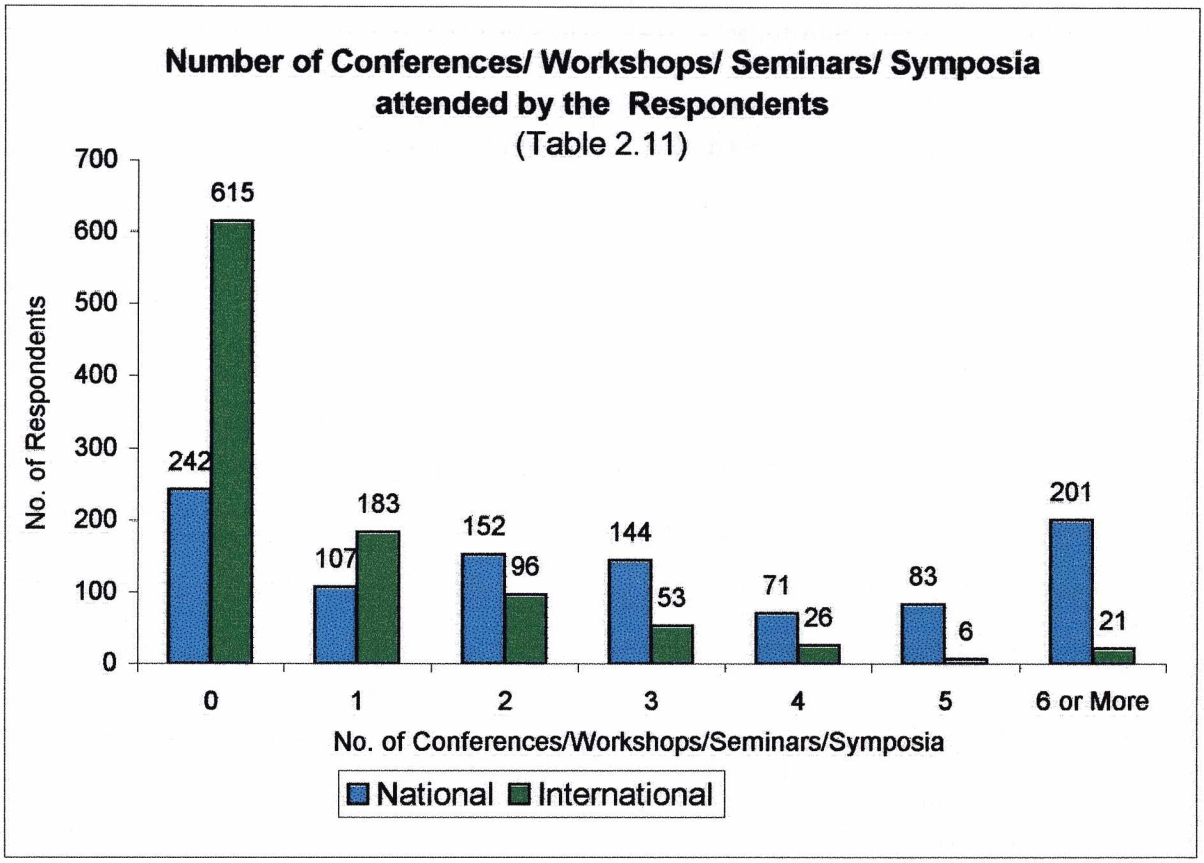


Figure 40

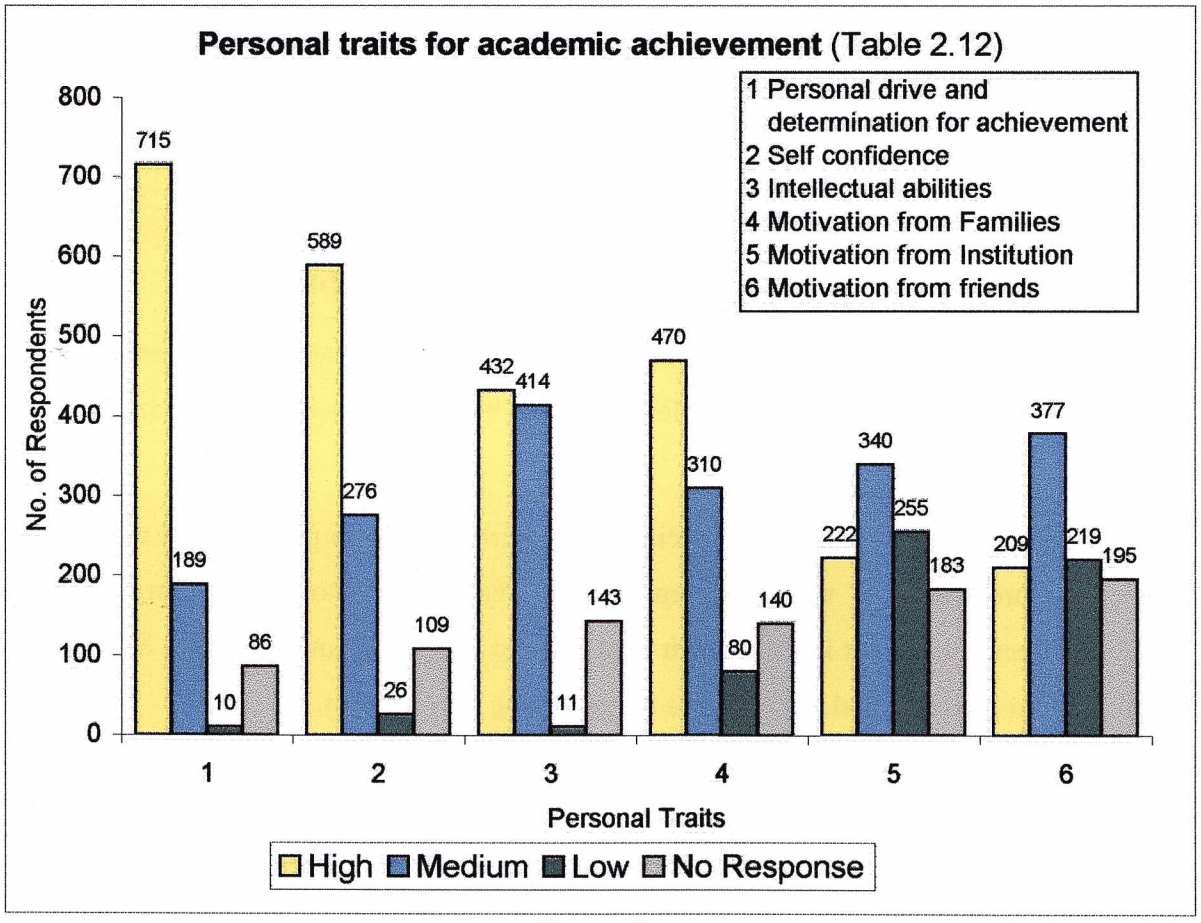


Figure 41

Table 2.12 (Q3.1) Personal traits for academic achievement

Personal Traits	High Nos(%)	Medium Nos(%)	Low Nos(%)	No Resp. Nos(%)	Total Nos(%)
Personal drive and determination for achievement	715(71.5)	189(18.9)	10(1.0)	86(8.6)	1000(100.0)
Self confidence	589(58.9)	276(27.6)	26(2.6)	109(10.9)	1000(100.0)
Intellectual abilities	432(43.2)	414(41.4)	11(1.1)	143(14.3)	1000(100.0)
Motivation from Families	470(47.0)	310(31.0)	80(8.0)	140(14.0)	1000(100.0)
Motivation from Institution	222(22.2)	340(34.0)	255(25.5)	183(18.3)	1000(100.0)
Motivation from friends	209(20.9)	377(37.7)	219(21.9)	195(19.5)	1000(100.0)

It can be seen from the above table that personal desire and determination is considered as the most important factor for academic achievement. Sample members have also rated self confidence and Intellectual abilities as the important elements that lead to significant achievements in the academic goals. Motivation from families has been given high rating by 47% of the respondents and medium rating by 31%. Motivation from friends has contributed to a reasonable extent whereas there was low motivation from Institution contributing to academic achievement.

CHAPTER-VI

PROFESSIONAL STATUS AND CURRENT WORK

Information relating to the current Professional Status Nature of work, preference of job, Number of Jobs held, Aspirations and their fulfillment, Problems encountered at work place, factors hampering the progress in their career are obtained through replies Q3.1 to 3.13 and (A).

The opinions and views of the women doctorates with regard to policies of the employers which are not supportive for women and those which will be helpful to utilize women power efficiency are obtained through questions Q3.14 to Q3.16. Question3.4 & Q3.17 are addressed to women doctorates to obtain the reasons for doing Ph.D. work as well as the advantages enjoyed by them.

Data collected in this regard are presented below and analysis is carried out in this chapter.

The following table gives data on current professional status of the respondents

Table 3.1 (Q3.2) CURRENT PROFESSIONAL STATUS

Professional Status	No. of Respondents	Percentage
1. Research scientist	371	37.1
2. Executive/Manager	20	2.0
3. Industrialist/Entrepreneur	3	0.3
4. Academic research	150	15.0
5. Consultant (Self-employed)	2	0.2
6. Consultant(Employee)	1	0.1
7. Teacher	414	41.4
8. Other *	6	0.6
9. No Response	33	3.3
Total	**1000**	**100.0**

* Others 1.Looking after the Technical work at administrative office,
2.Chemist,
3.OfficeAssistant,

It can be seen from the above table that major proportion (41.4) of the women doctorates are teachers in academic institutions. 37.1% of respondents are employed as research scientists while 15.0% are involved in Academic research. It is to be noted that a

large segment of the sample members are involved in research activities for which they got trained as doctoral students.

Table 3. 2 (Q3.3) Relevance of Research Experience to Current Job.

Current Job	No. of Respondents	Percentage
Yes	910	95.2
No	31	3.2
No Response	15	1.6
Total	**956**	**100.0**

Table 3.2 (Q.3.3) reveals that among those Currently employed a highly large proportion namely (95.2%) are currently holding jobs related to their area/course/discipline.

Table 3.3 (Q3.3) Type of current job

Current Job	No. of Respondents
Employers personal work	3
Routine clerical work/ Official work	13
Public relation work	5
Others	9
No Response	1
Total	**31**

Others

1. Research in sociological aspects while I am basically an economist
2. Software Engineering
3. Presently working in the field of forestry
4. Neither Officer nor teacher
5. Ph.D. work was in Biotechnology, but presently posted in seed technology
6. Teaching all other subjects
7. Administrative work
8. Analytical work

It is rather unfortunate to note from the above table that 31 women doctorates are currently involved in employer's Personal work, Routine Clerical work and public relation work which are totally unrelated to their research studies

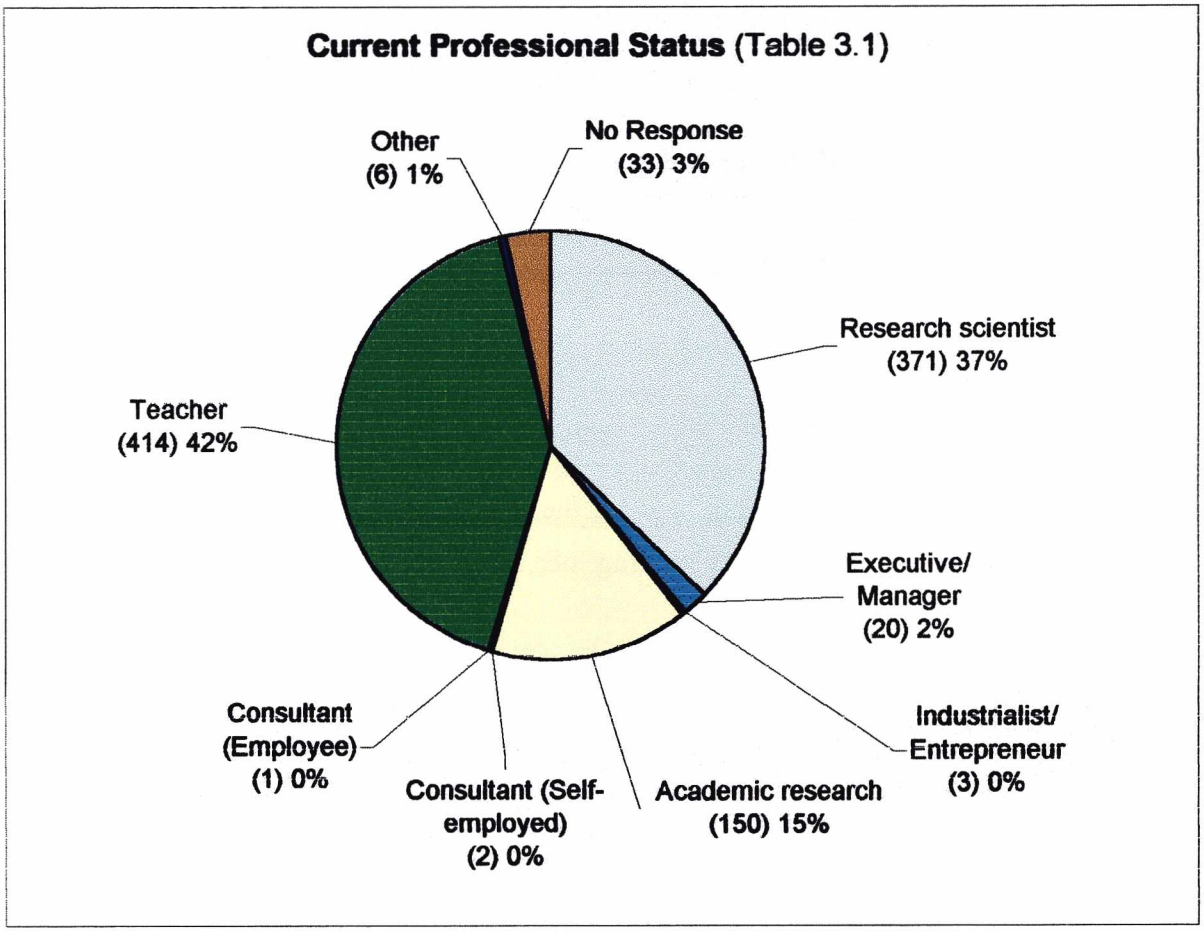


Figure 42

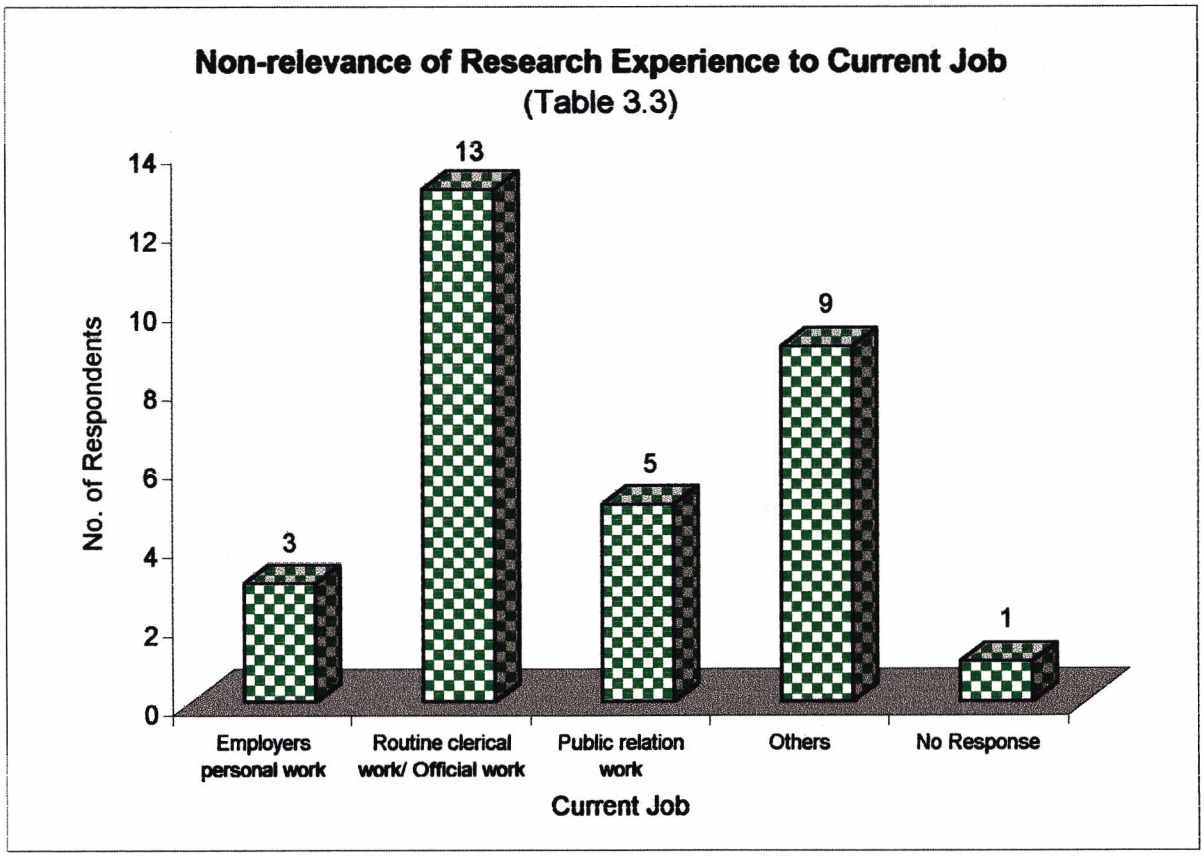


Figure 43

Table 3.4 (Q 3.4) REASONS FOR OPTING Ph.D.

Ranks	Reasons												No Response	**Total**
	A Nos	B Nos	C Nos	D Nos	E Nos	F Nos	G Nos	H Nos	I Nos	J Nos	K Nos			
Rank 1	575	31	44	23	117	54	35	4	5	12	72	972	28	1000
Rank 2	107	16	113	42	134	68	42	9	10	19	6	566	434	1000
Rank 3	29	7	49	55	60	51	39	12	6	14	3	325	675	1000
Rank 4	10	3	16	18	28	25	14	9	4	15	1	143	857	1000
Rank 5	1	3	10	3	7	9	8	5	1	4	--	51	949	1000
	722	60	232	141	346	207	138	39	26	64	82	2057	2943	5000

A. Desire for getting the highest degree
B. No specific reason but accidental
C. Parents' wish
D. Husband's/In-Laws wish
E. For better job opportunities
F. For getting promotion
G. Teachers' encouragement
H. Inspired by friend
I. Stopgap arrangement between getting job & marriage
J. Getting Fellowship

Others

1. Academic Research / Interest in Research
2. Love for the subject
3. Because of Pressure from Outside
4. Smooth conduct of work is not possible
5. Compete the males
6. Life Style
7. To be a good teacher

8. Innovation of new programmes for the disabled
9. To inspire others in teaching profession to do research work
10. To go abroad

The above table 3.4 indicates that "Desire for getting the highest degree" is the main reason for a majority of the sample members (722) opt for doing Ph.D. The Second reason which has motivated the women to take up Ph.D. is "For better job opportunities."

Information regarding preference of jobs and the reason for the same were obtained through replies to questions 3.5 & 3.6 and presented below

Table 3.5 (Q3.5) PREFERENCE OF JOB:

Ranks	Category							No response	Total
	A Nos	B Nos	C Nos	D Nos	E Nos	F Nos			
Rank 1	505	439	16	9	10	3	982	18	1000
Rank 2	209	281	17	14	26	--	547	453	1000
Rank 3	11	21	20	27	28	--	107	893	1000
Rank 4	2	6	21	11	11	2	53	947	1000
Rank 5	2	4	3	10	17	--	36	964	1000
	729	751	77	71	92	5	1725	3275	5000

A. Research
B. Teaching
C. Work in Corporate sector in private
D. Work in Corporate sector in Govt. / Public
E. Entrepreneurship
F. Others

Others

1. Administration & Execution, Voluntary Sector, Public Relation, Writing, Extension work.

It can be seen from the above table that the predominant preference of jobs is for Research and Teaching. This fact is also indicated by the current professional status of doctorates which is given in Table 3.5 (Q3.5)

The respondents were requested to furnish the reasons for preferring the two jobs namely teaching and research.

Table 3.6 Q 3.6) Criteria Influencing Job Preference

Reasons	Teaching		Research	
	Nos	%	Nos	%
Suitability for women	267	60.8	120	23.7
Light work	4	0.9	2	0.4
More autonomous	26	5.9	114	22.7
Increased emoluments	1	0.2	11	2.2
Special privileges	3	0.7	20	4.0
Higher status in the society	36	8.2	40	7.9
More leisure to look after home & children	27	6.2	7	1.4
Personal interest	14	3.2	29	5.7
Opportunity to carryout research	2	0.5	5	1.0
Creative thinking	1	0.2	3	0.6
Self satisfaction	3	0.7	13	2.6
Self improvement	--	0	2	0.4
Academic Interest	14	3.2	9	1.8
Job Satisfaction	19	4.3	25	4.9
Interest in Research	5	1.1	57	11.3
Learning Experience	--	0	1	0.2
Challenging job	1	0.2	3	0.6
Make use of my potential	2	0.5	4	0.8
Suitable Environment	--	0	1	0.2
Complete utilisation of expertise and independent expression	1	0.2	1	0.2
Suitable for my qualification	1	0.2	6	1.2
Interaction with students	3	0.7	--	0
To get a Job	1	0.2	1	0.2
Greater sense of achievement	--	0	1	0.2
Wish to impart something to society.	--	0	2	0.4
To implement integrated Education of Mentally Retarded	1	0.2	--	0
Not applicable	7	1.6	28	5.5
Total	**439**	**100.0**	**505**	**100.0**

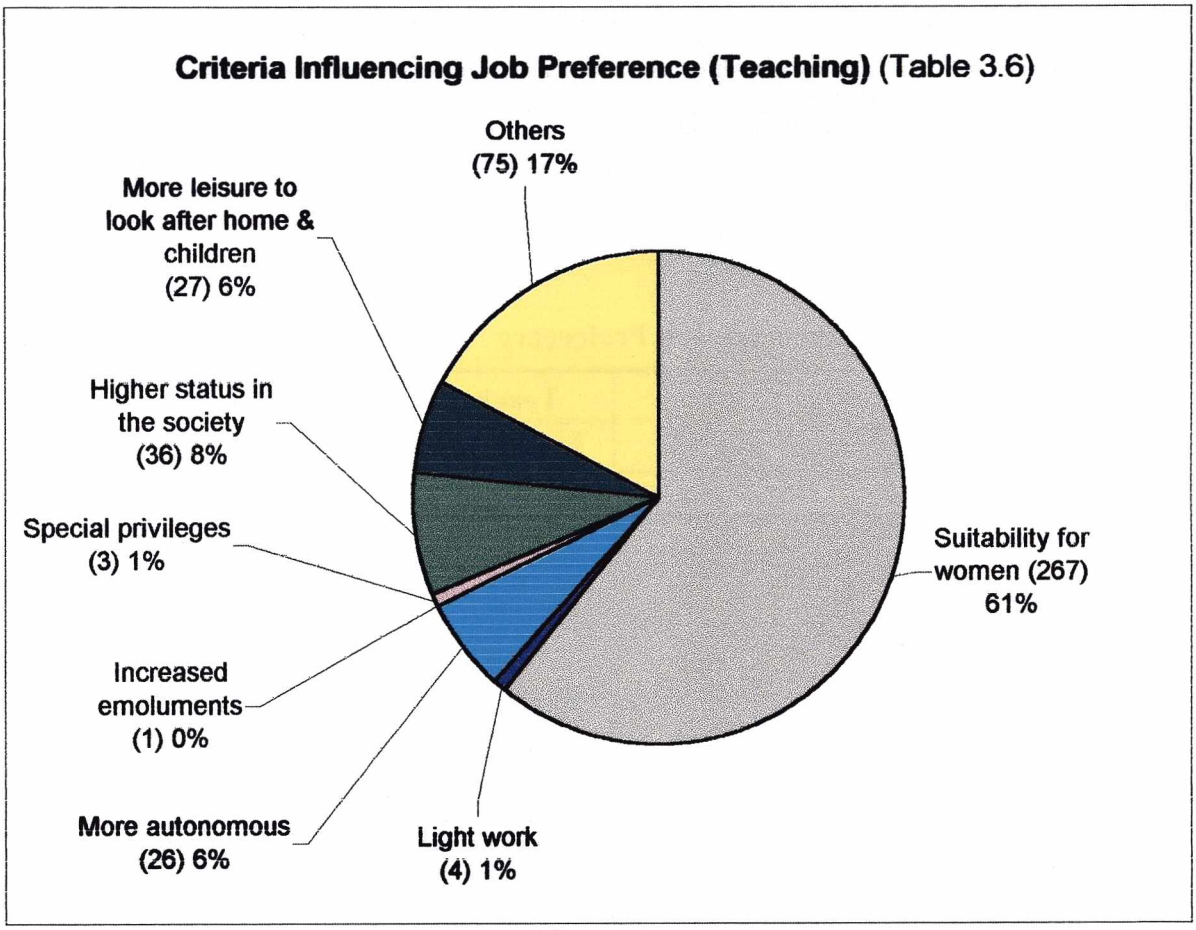


Figure 44

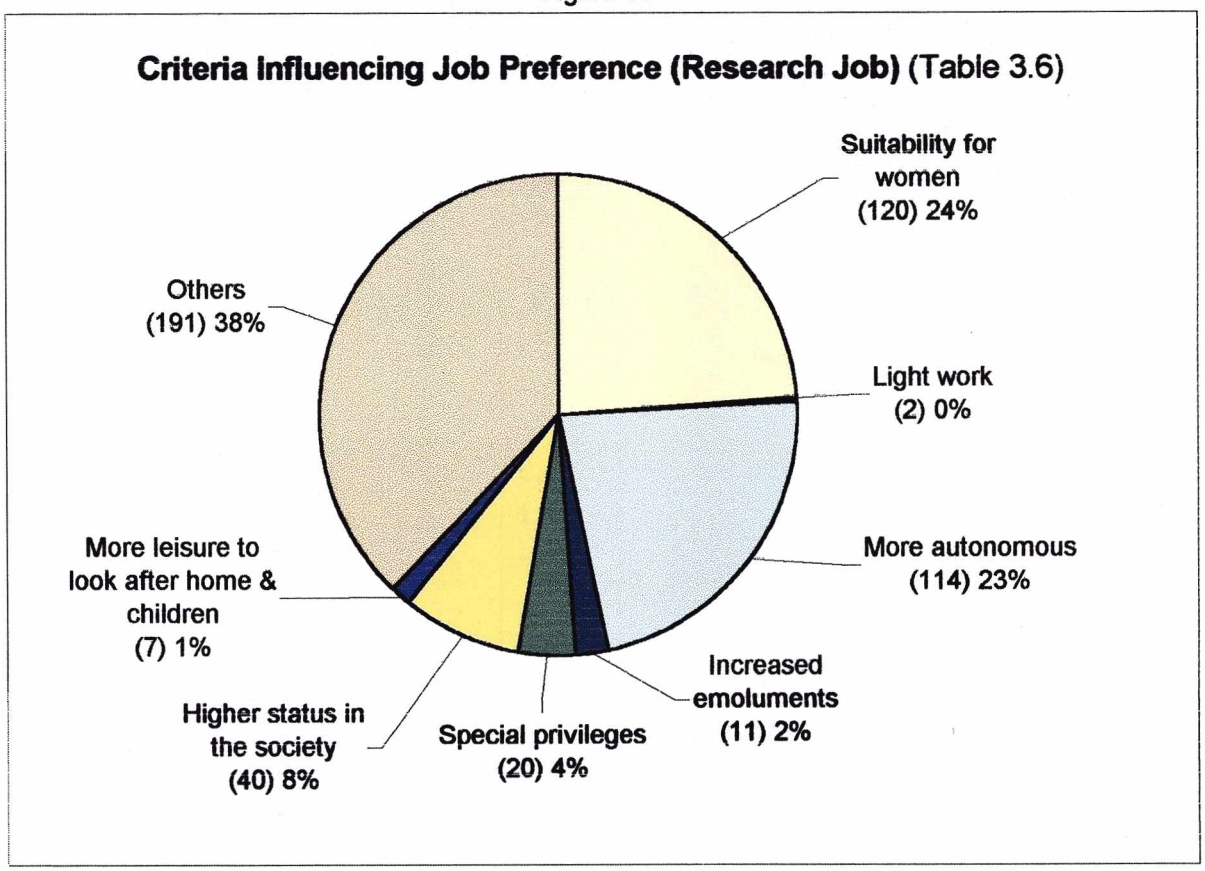


Figure 45

It can be seen from the above Table 3.6 (Q3.6) that about 61% of the sample members indicated that teaching is suitable for women. Higher Status in the society, more leisure to look after home & children and more autonomy have been indicated by the respondents for preferring teaching job.

In the case of preference for research about 24% stated that it is suitable for women while 23% declared that they are more independent. Interest in the Research has been indicated by 11.3% of sample members for the preference to job in research.

Replies to Q 3.7 are presented in the following table

Table 3.7 (Q 3.7) Devotion of time to take care of the family

Category	No. of Respondents	Percentage
Yes	583	58.3
No	279	27.9
No Opinion	88	8.8
No Response	50	5.0
Total	**1000**	**100.0**

About 58% of the Women doctorates are satisfied that enough time is devoted to their family though 28% declared that they are not satisfied in this regard.

Information regarding the aspirations of the respondents and whether these aspirations have been fulfilled or not are presented below.

Table 3.8 (Q3.9) ASPIRATIONS:

Aspirations	No Aspiration	Fulfilled	Not fulfilled	No Response	Total
	Nos(%)	Nos(%)	Nos(%)	Nos(%)	Nos(%)
1. Going Abroad	610 (61.0)	160 (16.0)	4 (0.4)	226 (22.6)	1000 (100)
2. Career development	530 (53.0)	356 (35.6)	3 (0.3)	111 (11.1)	1000 (100)
3. Research Scientist	511 (51.1)	317 (31.7)	3 (0.3)	169 (16.9)	1000 (100)
4. Executive/Manager	974 (97.4)	10 (1.0)	-- --	16 (1.6)	1000 (100)
5. Industrialist/ Entrepreneur	977 (97.7)	5 (0.5)	-- --	18 (1.8)	1000 (100)
6. Academic Research	663 (66.3)	244 (24.4)	1 (0.1)	92 (9.2)	1000 (100)
7. Consultant (Self-employed)	973 (97.3)	13 (1.3)	1 (0.1)	13 (1.3)	1000 (100)
8. Consultant (employee)	977 (97.7)	7 (0.7)	-- --	16 (1.6)	1000 (100)
9. Teacher	617 (61.7)	345 (34.5)	-- --	38 (3.8)	1000 (100)
10. Others	993 (99.3)	4 (0.4)	1 (0.1)	2 (0.2)	1000 (100)

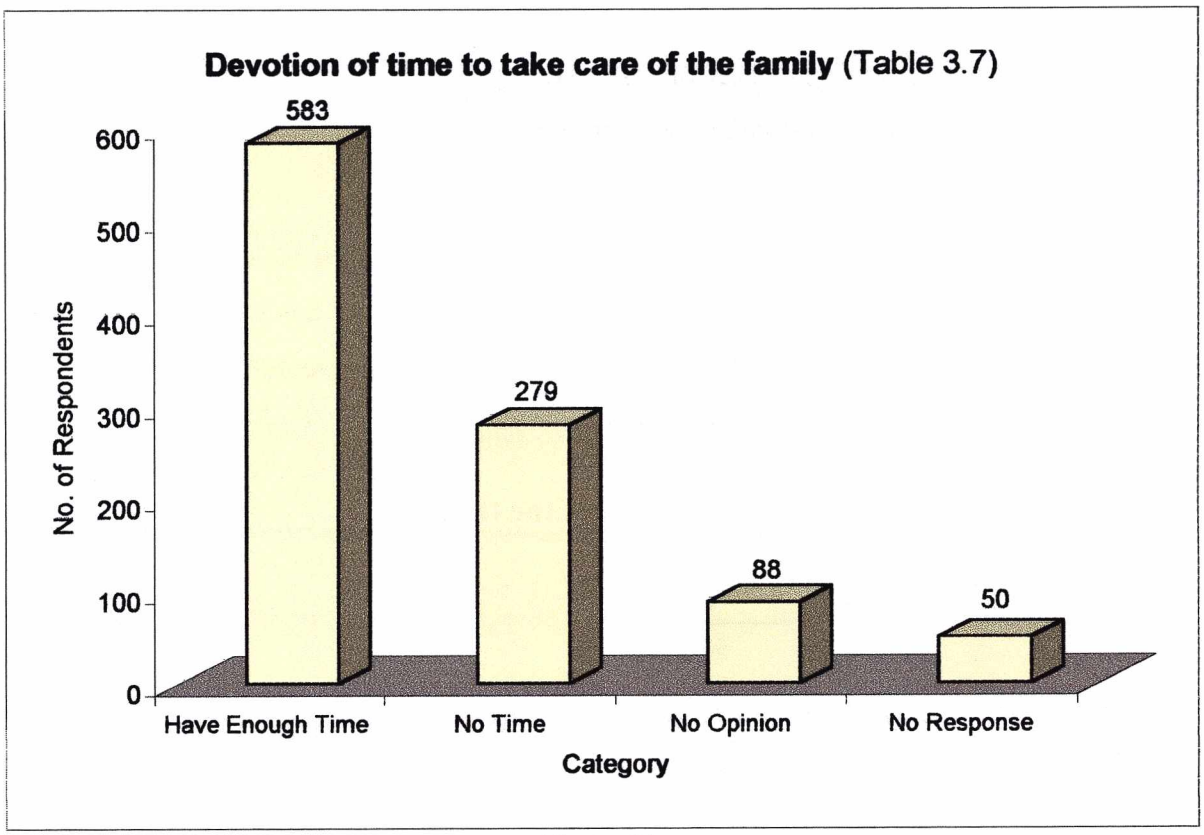


Figure 46

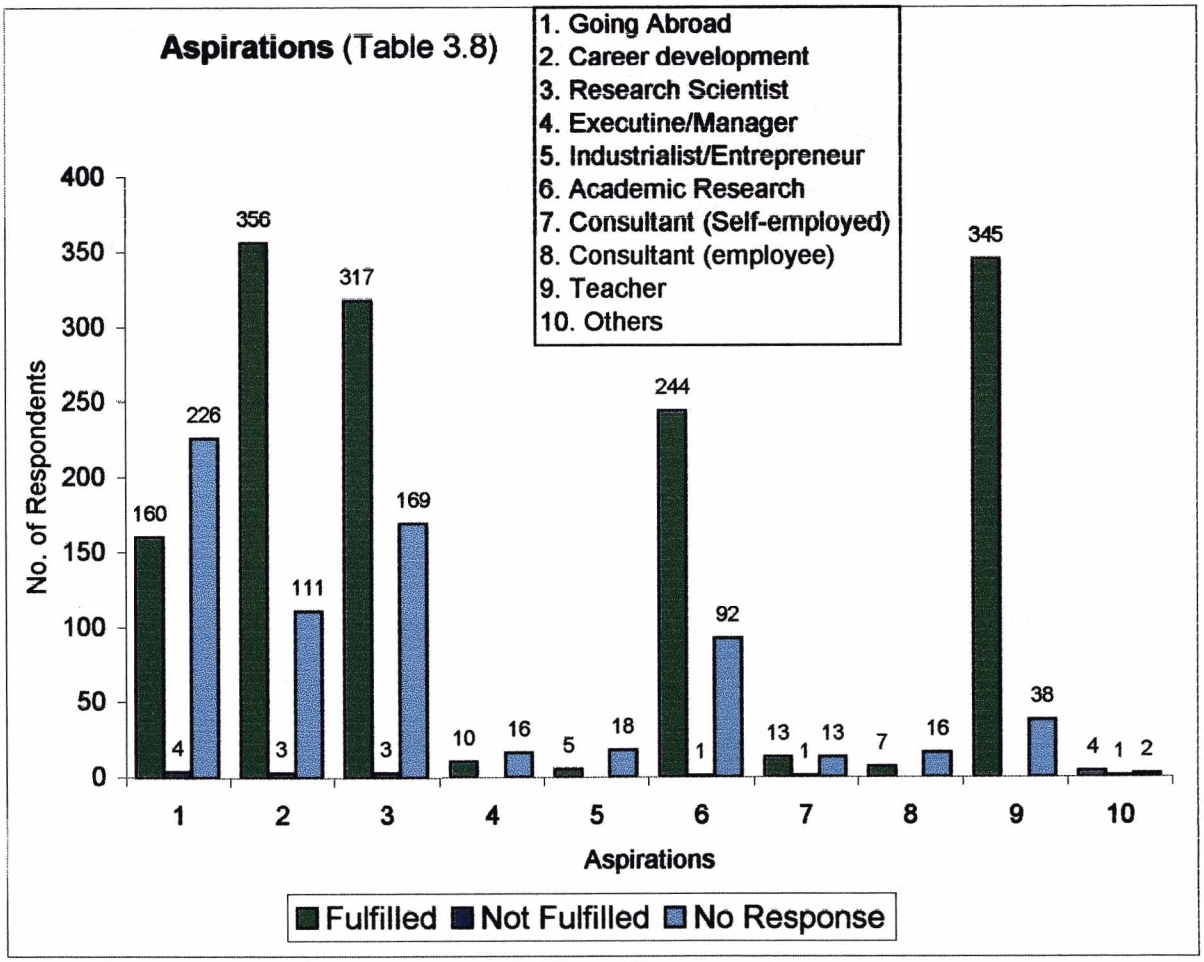


Figure 47

Others

1. Have a balanced professional / family life
2. Want to work in a voluntary Organisation
3. Wanted to be a good house wife
4. Profession would be challenging
5. To go for Post- Doctoral.

Wanted to become a Research Scientist was indicated as the aspiration by the majority (469) of the sample members and 317 of them have stated that their aspirations have been fulfilled. In regard to career development 356 respondents had their aspirations fulfilled while 111 didn't have their aspirations fulfilled. Among the 383 respondents who aspired to be teachers, a majority (345) of them had their aspirations fulfilled. 337 Sample members have aspired to take up Academic Research and 244 of them did succeed to become Academic researchers.

Table 3.9 (Q3.10) Job Satisfaction

Category	No. of Respondents	Percentage
Yes	695	72.7
No	144	15.1
No Opinion	95	9.9
No Response	22	2.3
Total	**956**	**100.0**

In response to Q 3.10 it is noted that a high proportion (73%) of the respondents are satisfied with the current job while about 15% are not satisfied with the job.

With reference problems encountered at Work place about 40% have faced problems listed in the below table3.11 (Q3.11)

Table 3.10 (Q3.11) Problems at Workplace:

Are there problems at Workspoace	No. of Respondents
Yes	379(39.6)
No	553(57.8)
No Opinion	24(2.5)
Total	**956(100.0)**

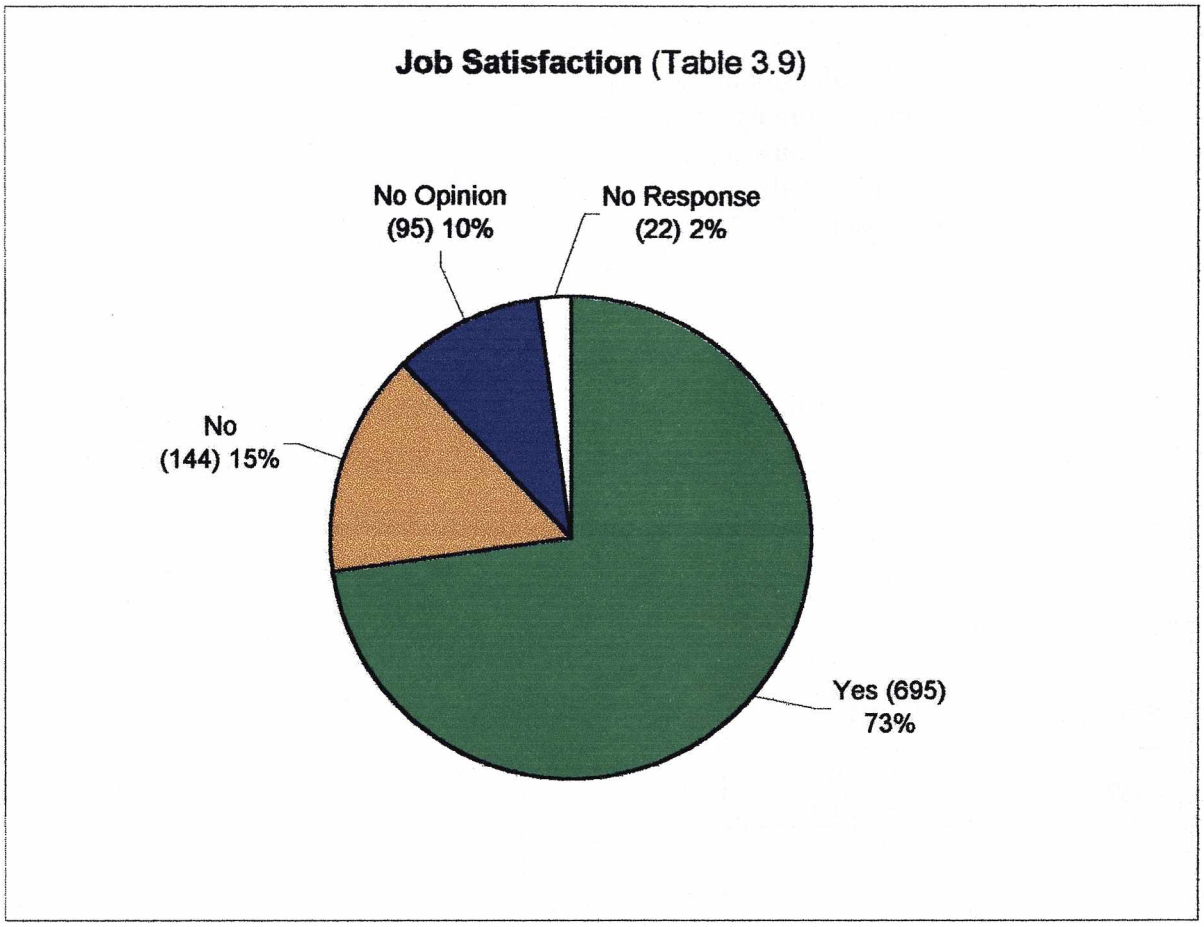


Figure 48

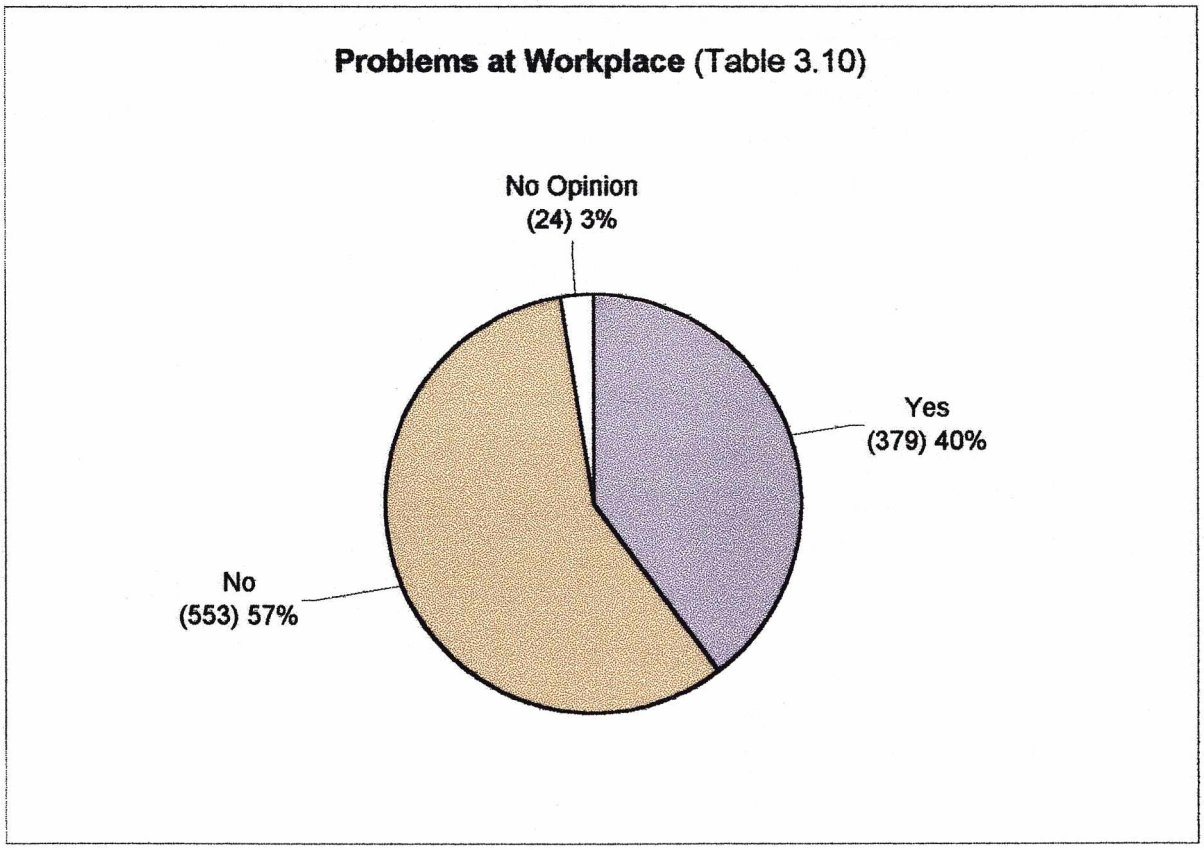


Figure 49

Table 3.11 (Q3.11) Problems at work place

List of Problems	No. of Respondents	Percentage
Management / Authorities / Head of Department	157	41.4
Colleagues	100	26.4
Subordinates	26	6.9
Rules and Regulations	84	22.2
Work Content related	61	16.1
Expertise is not fully utilised	159	42.0
Others	10	2.6
No Response	16	4.2

Others

1. Lack of Staff at current working place
2. Transfer from place to place
3. Jealousy and non-co-operation
4. Lack of infrastructural facilities
5. No research facilities

Note: The respondents have indicated more than one problem at work place. The number of respondents who have stated one, two, three, four and five problems at work place are respectively 223, 102, 35, 14 and 5.

From the above table 3.12, we note that 41.4% of the respondents mentioned that the problem is related Management/Authorities/ HOD's. While 26.4% of the respondents had problems due to colleagues in the institutions. About 22% felt bad about existing rules and regulations and 16.1% indicated that they had work content related problems. About 42% of the respondents mentioned that their expertise is not fully utilized.

It is generally considered that flexi-time Schedule of work will be more suitable for women professionals. Replies to Q3.12 tabulated below, indicate clearly that about 88% of the women respondents are favouring flexi-time schedule of work.

Table 3.12 (Q3.12) Is Flexi-time Schedule of work suitable for a Professionals/ Scientists

Yes / No	No. of Respondent	Percentage
Yes	837	87.6
No	76	7.9
No Opinion	2	0.2
No Response	41	4.3
Total	**956**	**100.0**

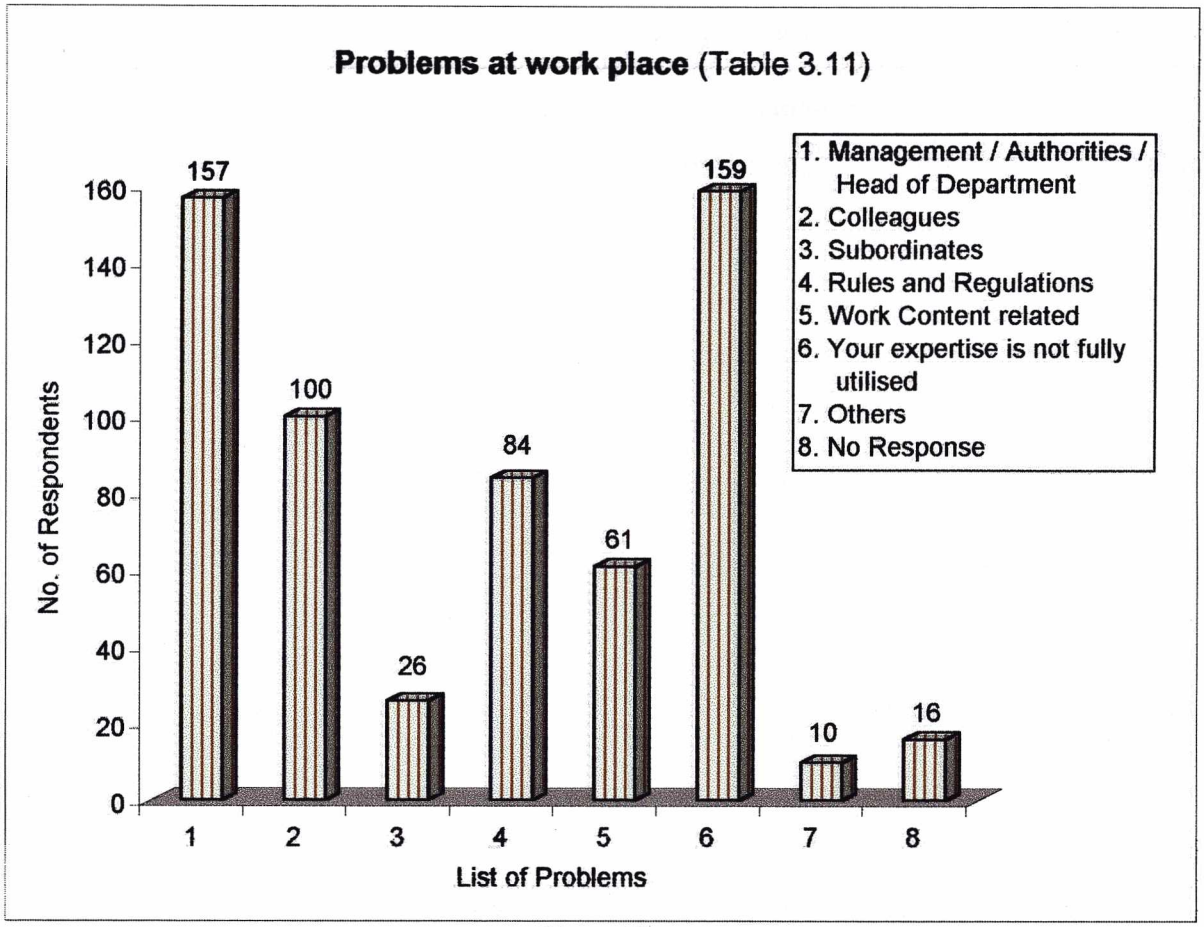


Figure 50

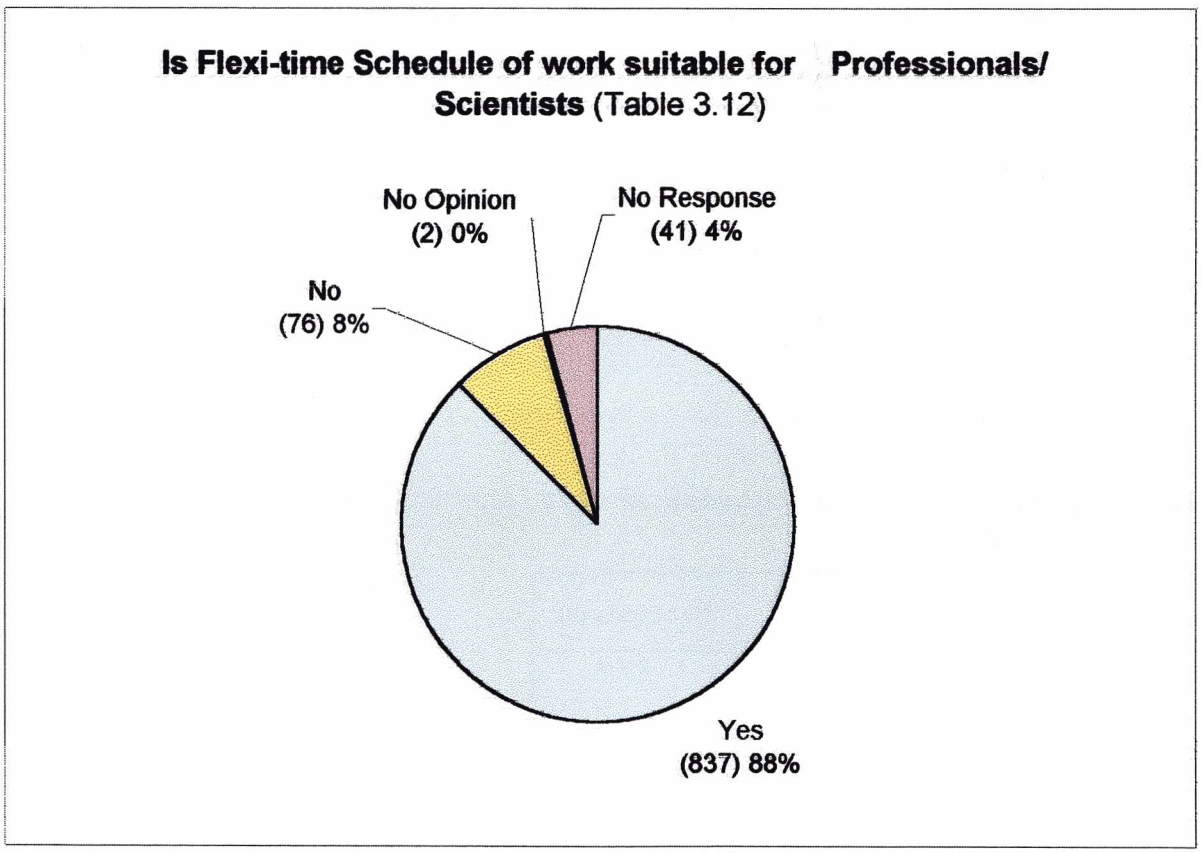


Figure 51

Others

1. Time Schedule should be from 10 am to 5.30 p.m.
2. A teacher in an academic institution should be fully committed to her work
3. This is a serious position and hence a work schedule should be flexible
4. Lunchtime is more, which can be reduced so that one can go home early in the evening.
5. Timing should be rescheduled to look after the families also.

Opinion regarding the factors which hampered the progress of their career were obtained from the respondents and presented below.

Table 3.13 (Q 3.13) Factors Hampered / Conditioned Progress

Factors	Yes(%)	No(%)	No Response(%)	Total(%)
1. Freedom to Move to Places	326 (32.6)	421(42.1)	253(25.3)	1000(100)
2. Lack of Opportunities	369 (36.9)	420(42.0)	211(21.1)	1000(100)
3. Employers Non Preference for Women	159 (15.9)	495(49.5)	346(34.6)	1000(100)

The above table reveals that the three factors namely 'Freedom to move to places', 'Lack of opportunities', 'Employer's non preference for women' have not hampered the progress of the career of women doctorates significantly.

Respondents were asked to state the opinion(s) in regard to the policies of the employer, which are not supportive to women scientists. The data obtained from replies to Q3.14 are presented below

Table 3.14 (Q3.14) Employment Policies:

Employment Policies	No. of Respondents	Percentage
1. Rigid Time Schedule	391	40.9
2. Non availability of Child Care / Creche	206	21.5
3. Non availability of medical facilities	46	4.8
4. Non availability of Accommodation	98	10.3
5. Non availability of Wash room/Toilets	86	9.0
6. Non availability of Women Association	118	12.3
7. Others	33	3.5
8. Not applicable	341	35.7

Others

1. Boss Interference in personal life
2. No encouragement for women scientists
3. Non preference, non co-operative

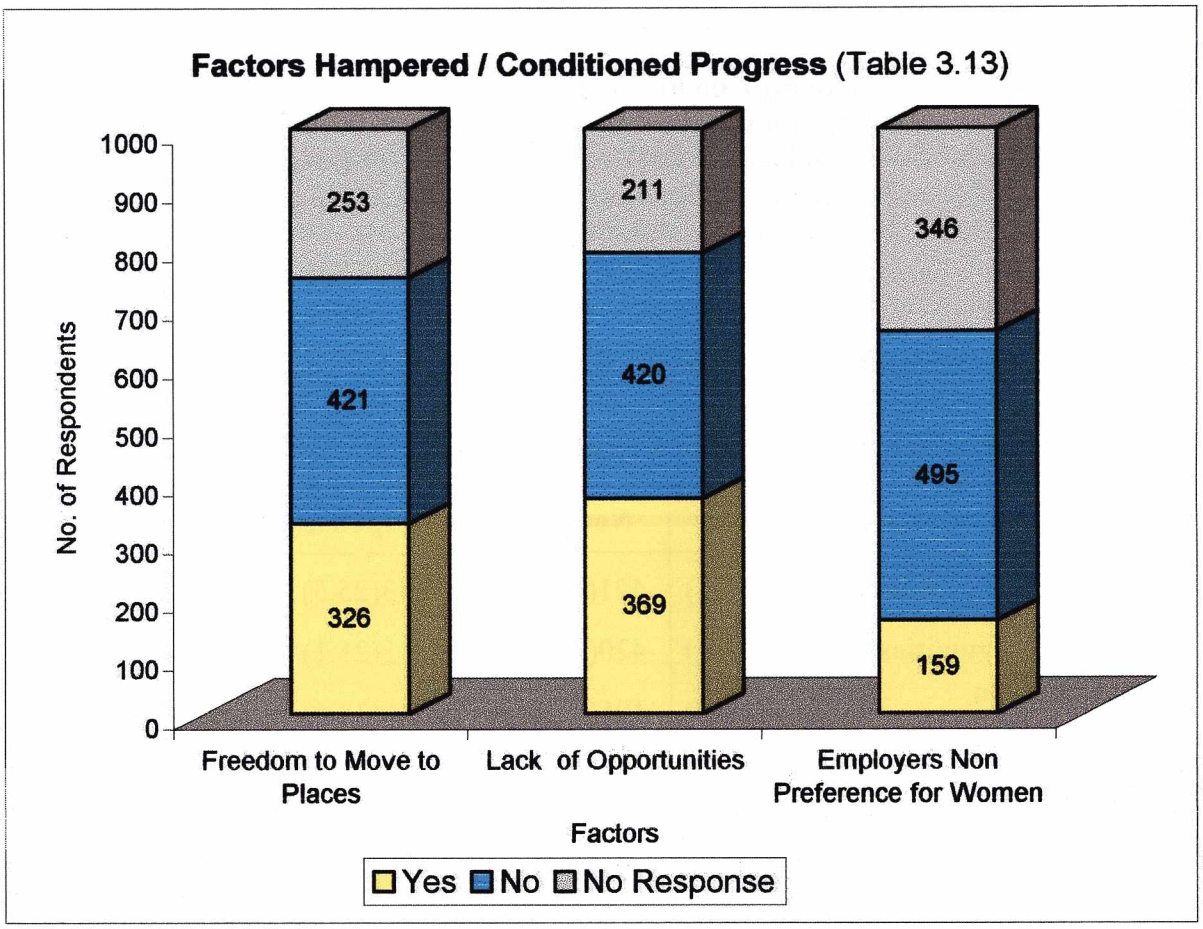


Figure 52

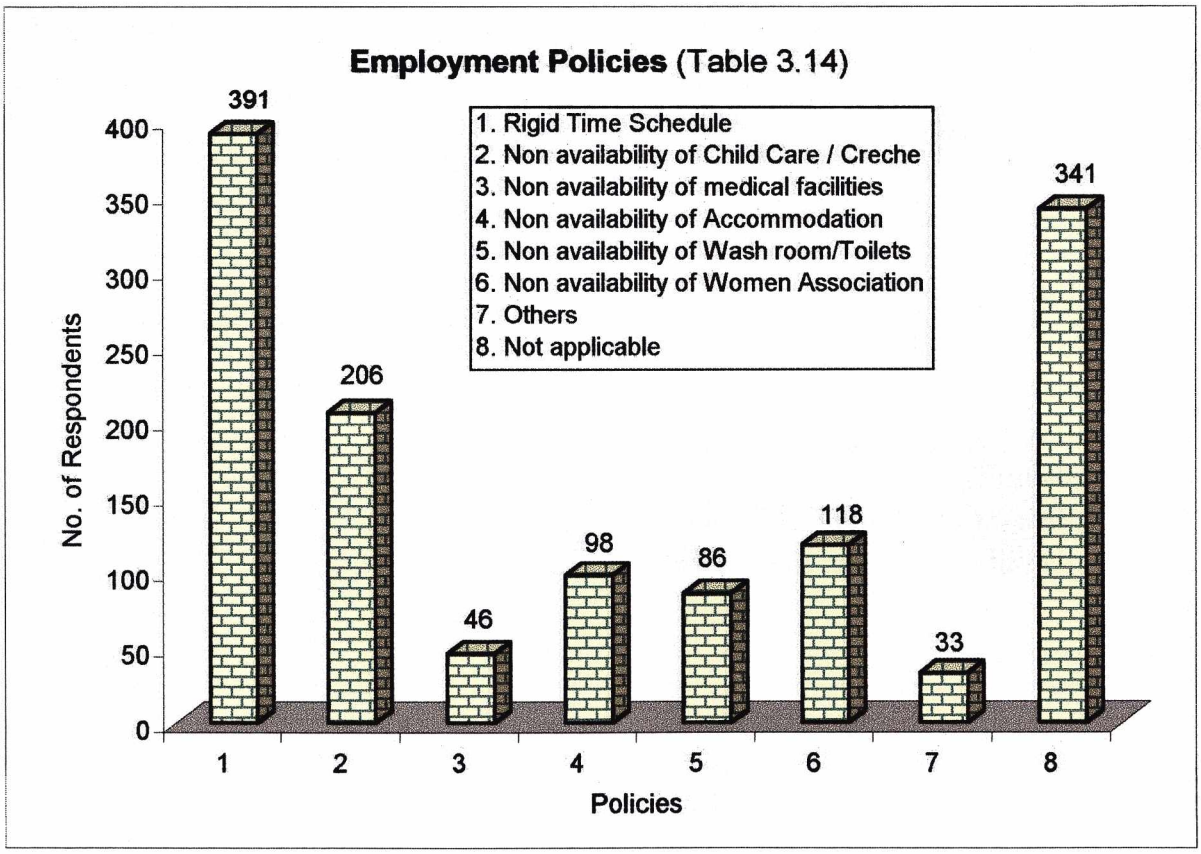


Figure 53

4. Communal feeling
5. Teaching restricted to syllabus only
6. Non availability of adequate holidays
7. Interference in every aspect.
8. Transport Problem
9. Women are physically weak
10. Sceptisism in the delivery of results
11. Lack of funds, Space, Opportunities etc.
12. Policy related to safety and security
13. No sufficient scientific Journals and latest books
14. Lack of infrastructure and equipments
15. No privacy
16. Prejudicial attitude towards efficient women
17. In a government organisation 95% of the output is done by 5% of the employees-which is very bad
18. Inefficient faculty heads
19. Interest in career development & personal development
20. Lack of research facilities
21. No women cell for redressal of grievances against women

Note: Respondents have indicated more than one policy of the employer which are not supportive to women scientists/professionals. The number of respondents who have stated one, two, three, four, five and six policies are respectively 756, 146, 56, 15, 7 and 8.

About 41% of the sample members have mentioned "rigid time schedule" adopted by employers is one of the policies, which is not supportive to women professionals. In the case of 21.5% of the respondents the "Non-availability of child care/creche" is another policy of the employer which doesn't support them. The proportion of women doctorates who have stated "Non-availability of housing facilities as too important policy which should be taken care by the employers, in order to provide support to women professionals.

Women doctorates employed in various organisations are to be provided with facilities to improve their Intellectual abilities. So that women power can be utilised more efficiently. In this connection, sample members were asked to mention the employment policies for optimising their productivity in the professions. Answers to Q3.16(a), Q3.16(b) and Q3.16(c) are tabulated in tables 3.16(a), (b) and (c).

Table 3.15 (a) (Q3.16) In the opinion of the respondents factors that influence better performance

S.No.	(A) INTELLECTUAL FACILITIES	No. of Respondents	Percentage
1	Library Books, Journals, etc.	580	60.7
2	Computer Facilities	882	92.3
3	Telephone & other Communication Facilities	407	42.6
4	Freedom to Publish Articles, Monographs,etc	174	18.2
5	Others	6	0.6
6	No response	100	10.5

Note: Respondents have been asked to advocate intellectual employment policies for utilizing women power efficiently and they have indicated more than one employment policy. The number of respondents advocating one, two, three, four and five are respectively 377, 211, 128, 234 and 6.

It is gratifying to note from the above table that about 92% of the respondents advocated computer facilities. Library Books and Journals etc. have been advocated by about 61% of the respondents while 42.6% of the sample members indicated their desire to have telephone and other communication facilities.

Table 3.15 (b) (Q 3.16)

S.No.	(B) PHYSICAL FACILITIES	No. of Respondents	Percentage
1	Flexible work hours	562	58.8
2	Transport to workplace	473	49.5
3	Transport while working beyond office hours	413	43.2
4	Creche	352	36.8
5	Rest room facilities	285	29.8
6	Health facilities	230	24.1
7	Accommodation	257	26.9
8	Children's School	243	25.4
9	Favourable Infra structure facilities	477	49.9
10	Indoor Games	133	13.9
11	Others	7	0.7
12	No response	66	6.9

Note: Respondents have been asked to advocate useful physical employment policies for utilizing women power efficiently and they have indicated more than one physical employment facilities. The number of respondents advocating one, two, three, four, five, six, seven, eight and nine are respectively 273, 353, 130, 100, 93, 56, 33, 27, 23.

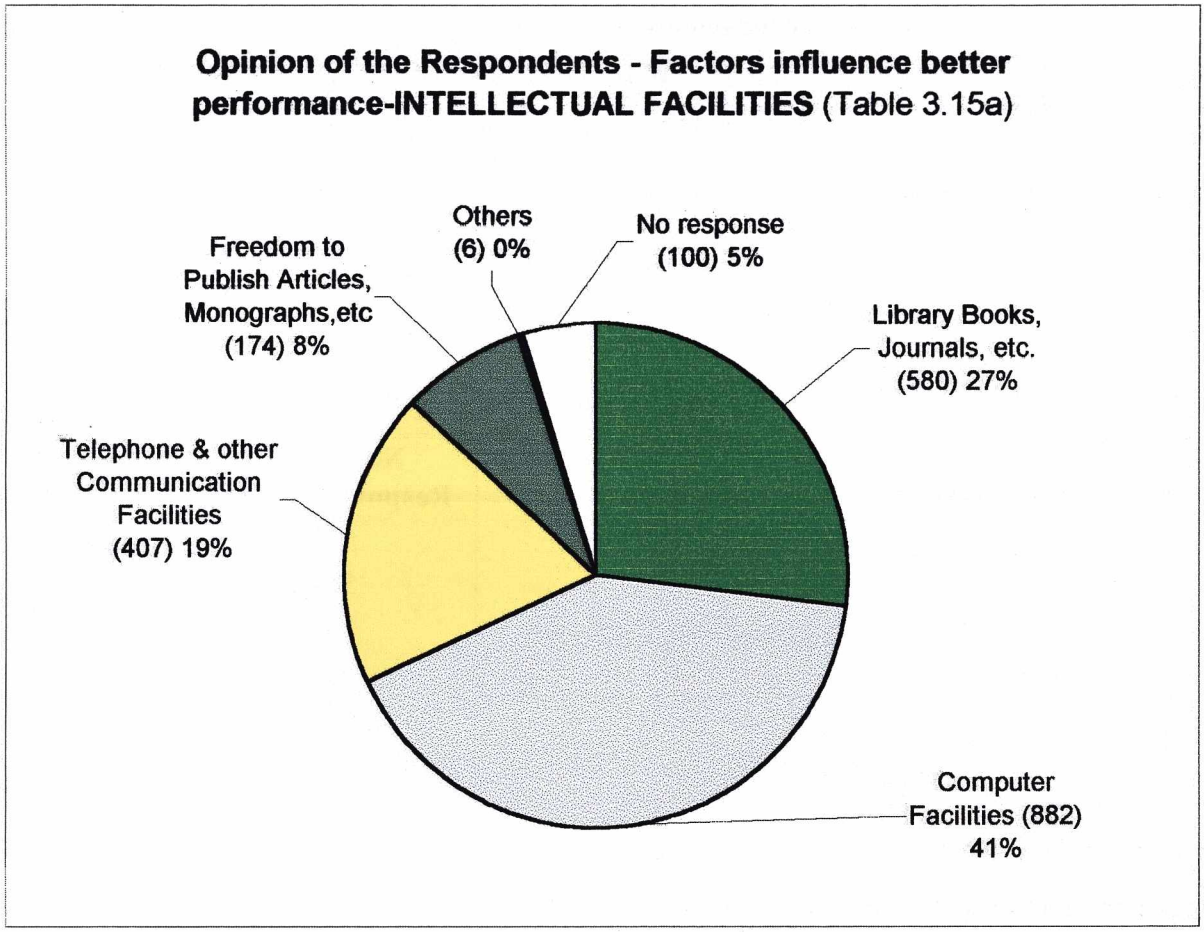


Figure 54

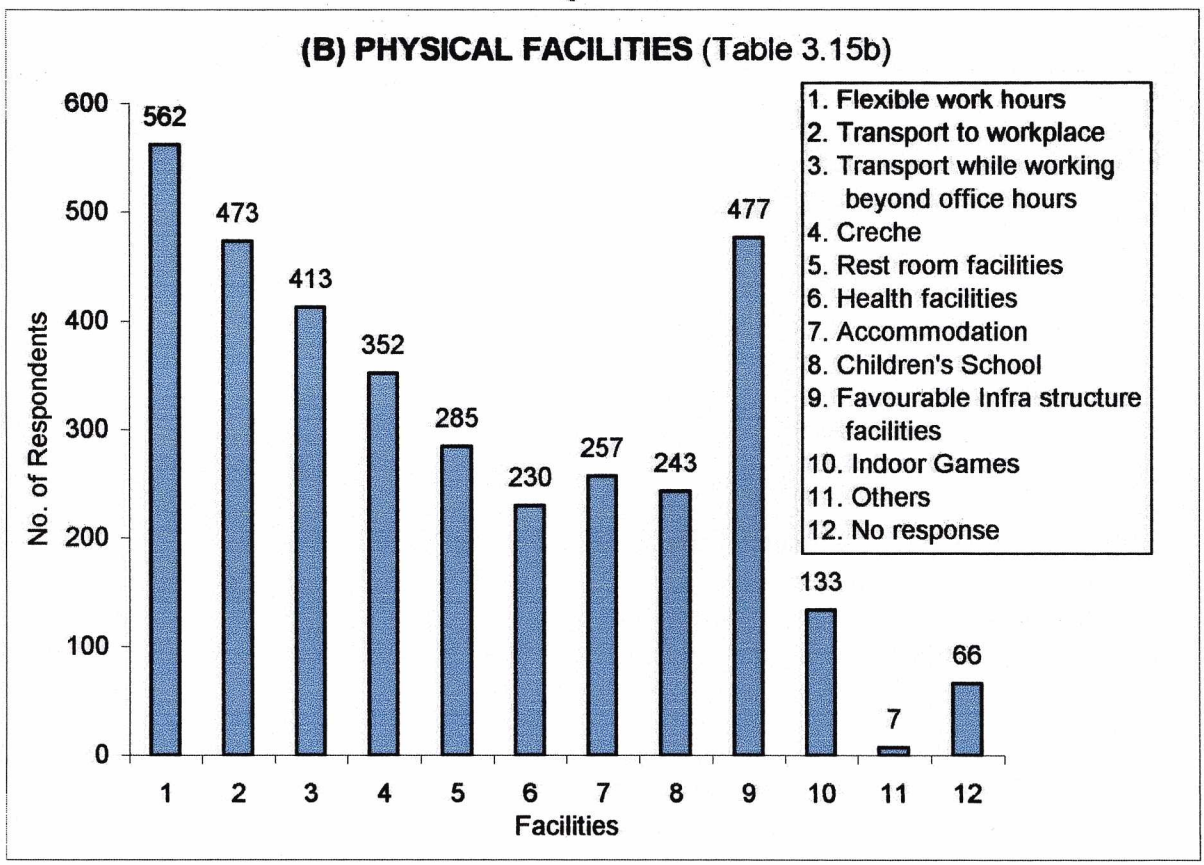


Figure 55

It can be seen from the above table that flexible-working hours are advocated by about 59% of the women doctorates. With reference to transport to work place and favourable infrastructural facilities, half of the sample members have advocated these facilities to the employers to adopt with a view to utilize women power efficiently.

In order to utilize women power efficiently the sample members asked to implement better staff job-enrichments policies of the employees. Replies to

Table 3.15 (c) (Q3.16) were received from the sample members and presented below.

S.No.	(C) JOB ENRICHMENTS	No. of Respondents	Percentage
1	Involvement in Decision making	520	54.4
2	Timely Promotions	521	54.5
3	Permission for attending Seminars, Conf., etc	534	55.9
4	Incentives	285	29.8
5	Inservice Training	400	41.8
6	Recognition of Merit	671	70.2
7	Others	1	0.1
8	No response	75	7.8

Note: The number of respondents advocating one, two, three, four, five, six and seven points for job enrichments are respectively 270, 149, 155, 125, 73, 179 and 5.

Others

1. Intellectual Facilities

1. To Supervise the Students For Ph.D (288)
2. Equal Opportunities
3. Can introduce part-time positions
4. Identify and encourage potential worker irrespective of gender
5. Participation in International, Conference etc.
6. Advance training of the women in the field
7. Provision for half day work with half pay in Govt. Organisation
8. Ability to work from home would greatly help women with young off spring – through – telephone or computer
9. Provision for more leave especially during illness of children, self etc.
10. Internet – access to journals
11. Separate chamber with facilities for privacy
12. Rigid rules to be abolished laboratory facilities to be provided
13. Any field that does not involve undue physical exertion
14. Teaching

2. Physical Facilities

1. Credit Card facilities
2. Essential shopping facility
3. Flexible banking hours
4. Facilities to engage children on their holidays in extra curricular activities
5. Co-operative work force
6. Bureaucratic hurdles with too many rigid rules and regulations should be abolished

3. Job Enrichments

1. Access to latest information globally
2. For part-time workers equal work & equal pay should be given
3. Sufficient freedom / Autonomy and non-interference
4. Job reservation
5. Option to select one's own team of workers
6. Providing financial assistance for attending Conference / Seminars

Recognition of merit has been advocated by 70.2% of the respondents. About 55% of the sample members have indicated employers policies (i) Involvement in decision making (ii) Timely promotions and (iii) Permission for attending the seminars conferences as job enrichment facilities to optimise their power efficiency.

It is well known that women empowerment has been advocated by all sections of the society. In this connection, the sample members were asked whether they think it right to claim special privileges as a women Ph.D. It can be seen from the table below that about 48% of respondents do not think it right to claim special privileges while 38% of the women think that it is proper for them to claim special privileges.

Table 3.16 (Q3.15) Right to Claim Special privileges as Women?

Category	No. of Respondents (%)
Yes	385(38.1)
No	483(48.5)
No Opinion or Don't Know	100(10.0)
No Response	32(3.2)
Total	**1000(100.0)**

Women doctorates were asked to express their happiness or otherwise for having done their Ph.D. Their replies to Q6.1 are tabulated below.

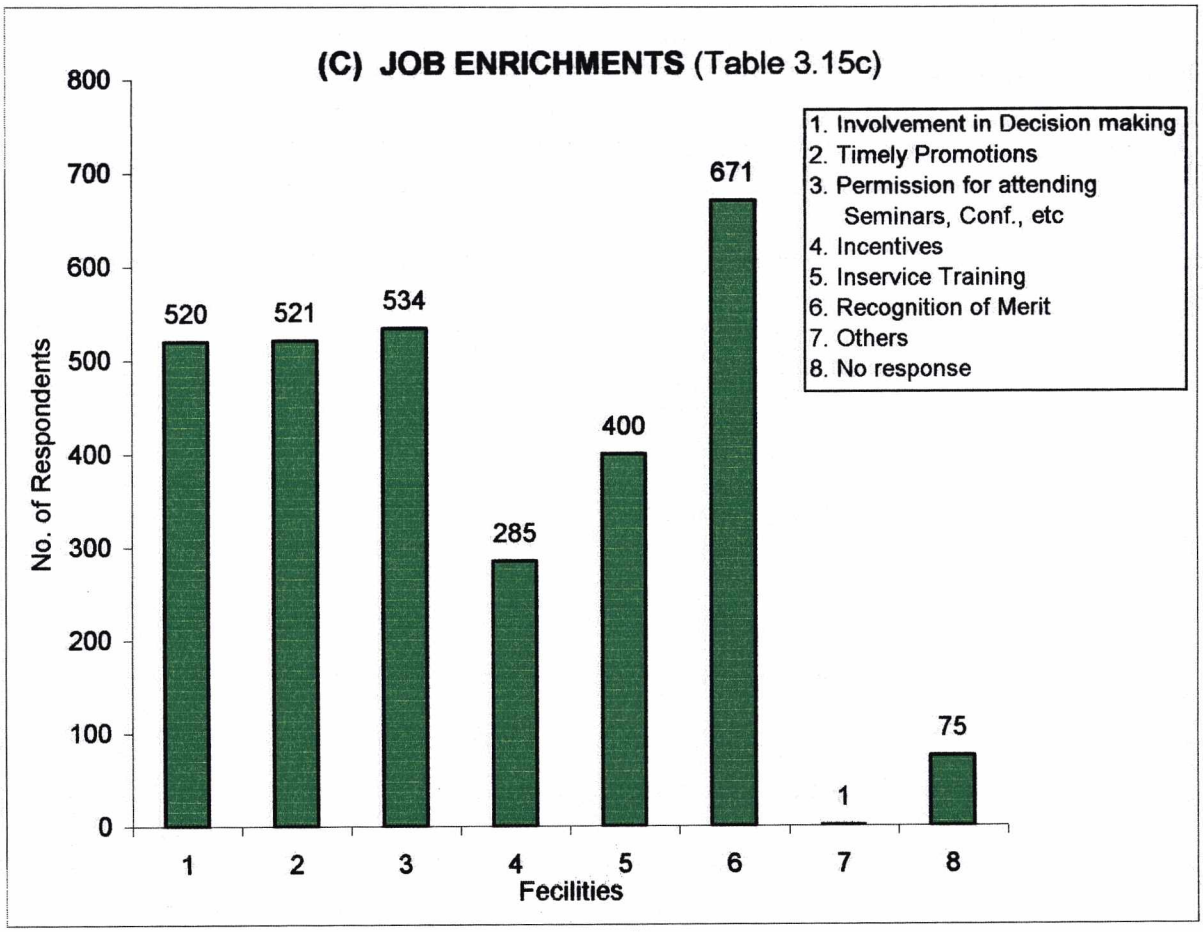


Figure 56

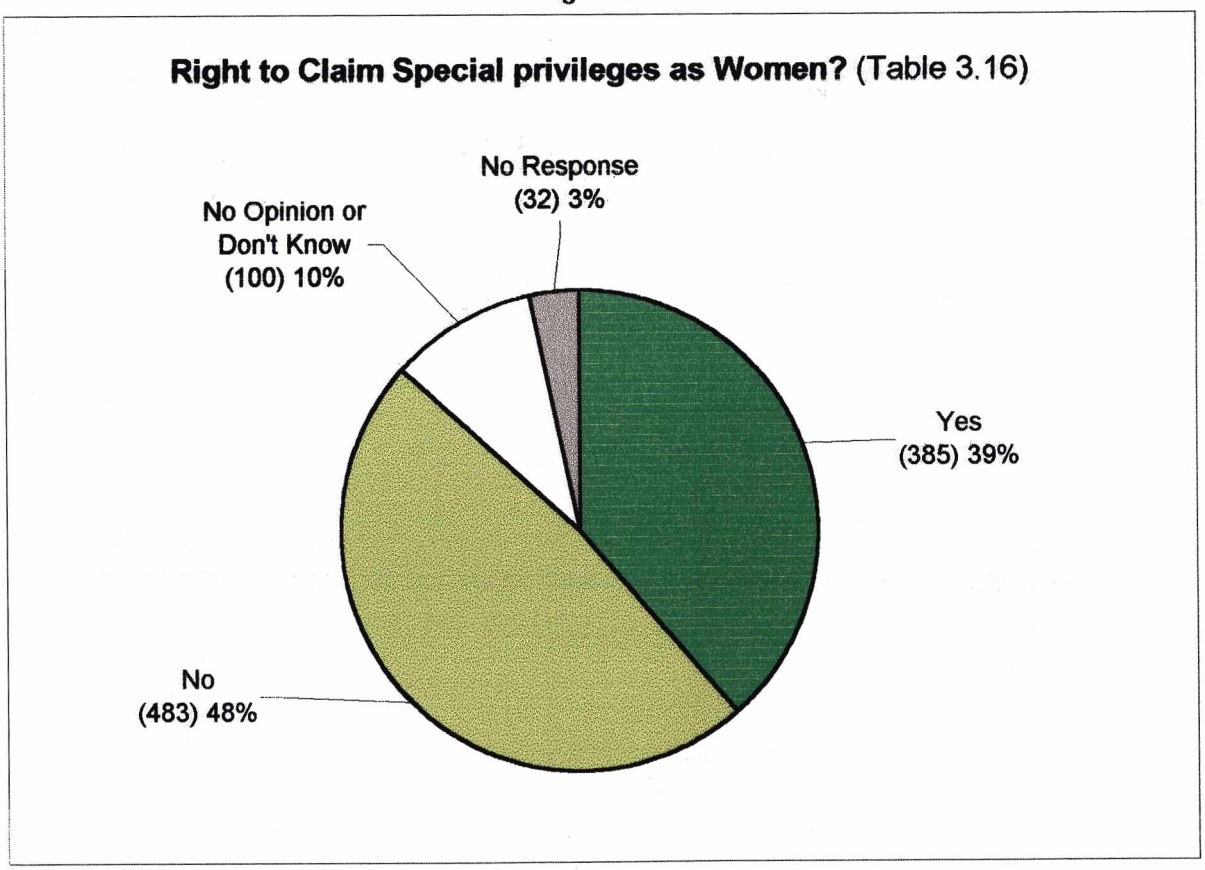


Figure 57

Table 3.17 (Q6.1) Do you feel happy / unhappy for having done Ph.D.:-

	Number of Respondent	Percentage
1. Happy	932	93.2
2. Un Happy	34	3.4
3. No response	34	3.4
Total	**1000**	**100.0**

From the above table it can be seen that a high proportion (93.3%) felt happy for completing their Ph.D. while only 3.4% of the respondents felt unhappy in this regard.

Information relating to the Advice to young women to take up doctoral research are obtained through replies to Q6.2 and presented in the following tables.

Table 3.18 (Q6.2) (A) Do you encourage other women to continue their Ph.D at a stretch?

Category	Yes	%	No	%	No response	%	Total (100.0)
Single	104	73.8	9	6.4	28	19.9	141(100.0)
Married	631	75.1	61	7.3	148	17.6	840(100.0)
Others	16	84.2	1	5.3	2	10.5	19(100.0)

The above table presents data relating to whether or not the sample members encourage young women to take up Ph.D. at a stretch. It can be seen from the table that 75.1% of married women and 73.8% of single member have encouraged young women to continue doctoral research at one stretch.

The proportions of married women and single members of the sample who did not encourage doctoral research at one stretch are respectively 7.3% and 6.4/%.

With regard to advice to do Ph.D. after securing the job, following data were obtained.

Table 3.19 (Q6.2) (B) Do you encourage them to do Ph.D. after securing a job.

Category	Yes	%	No	%	No response	%	Total (%)
Single	64	45.4	31	22.0	46	32.6	141(100.0)
Married	387	46.1	196	23.3	257	30.6	840(100.0)
Others	11	57.9	1	5.3	7	36.8	19(100.0)

Do you feel happy / unhappy for having Ph.D (Table 3.17)

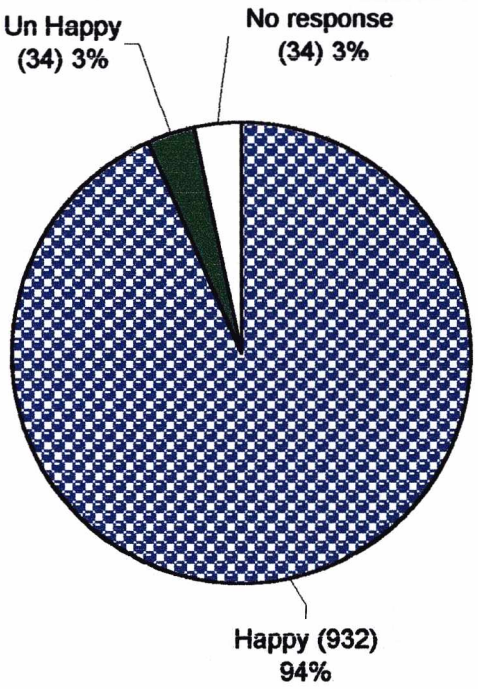


Figure 58

(A) Do you encourage others to continue their Ph.D at a stretch? (Table 3.18)

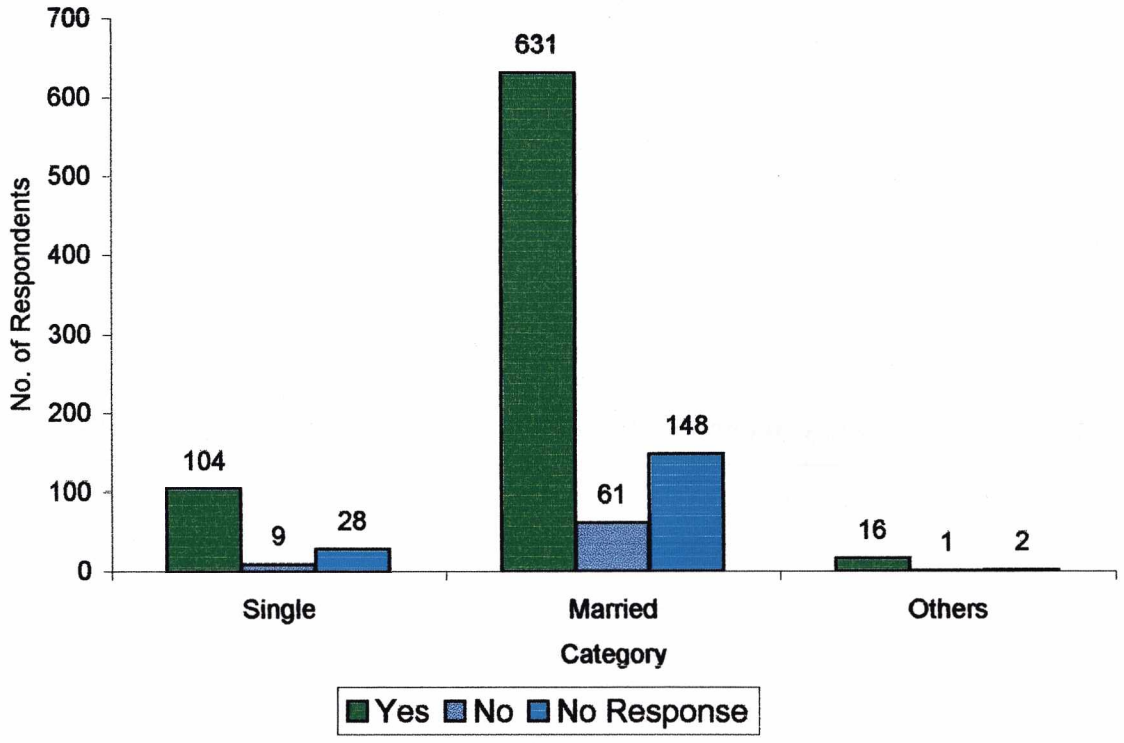


Figure 59

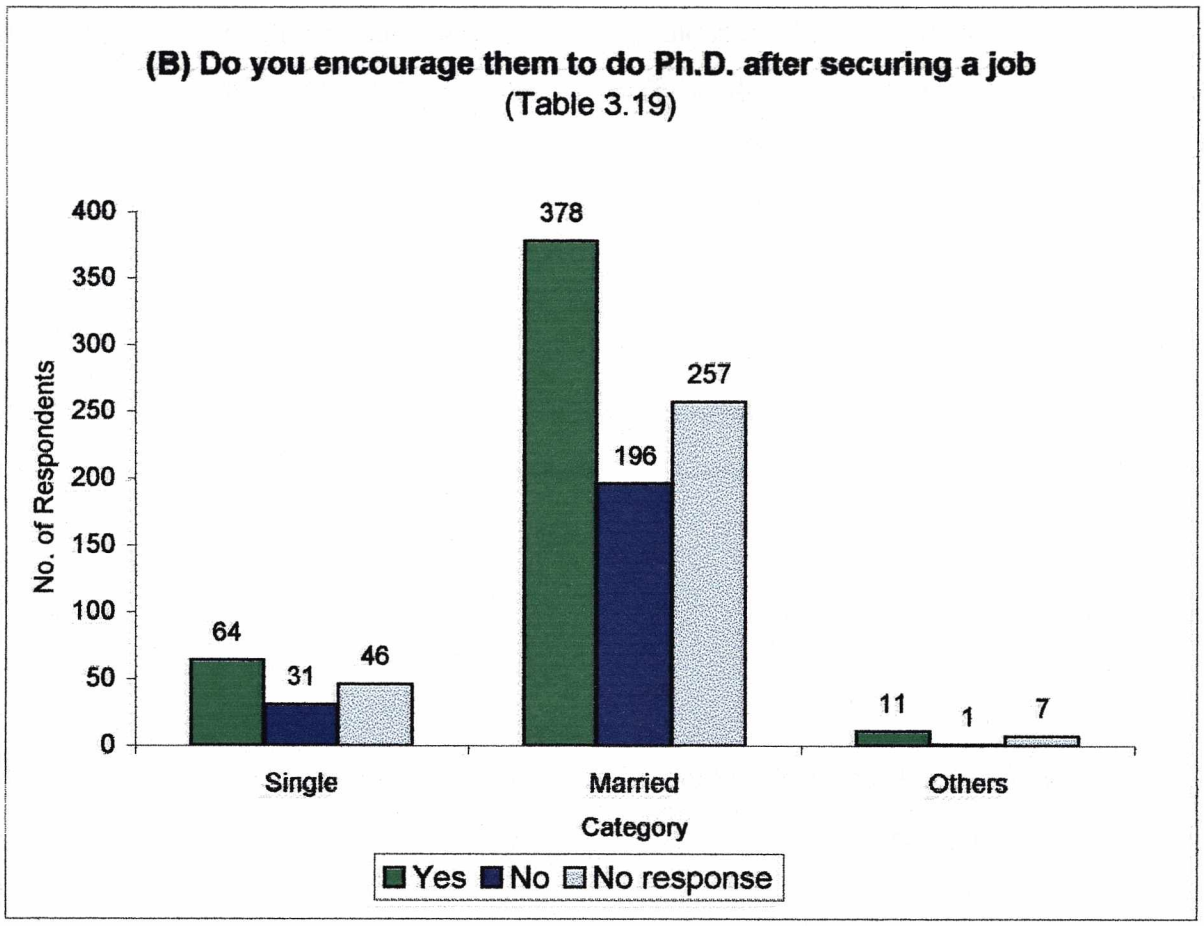


Figure 60

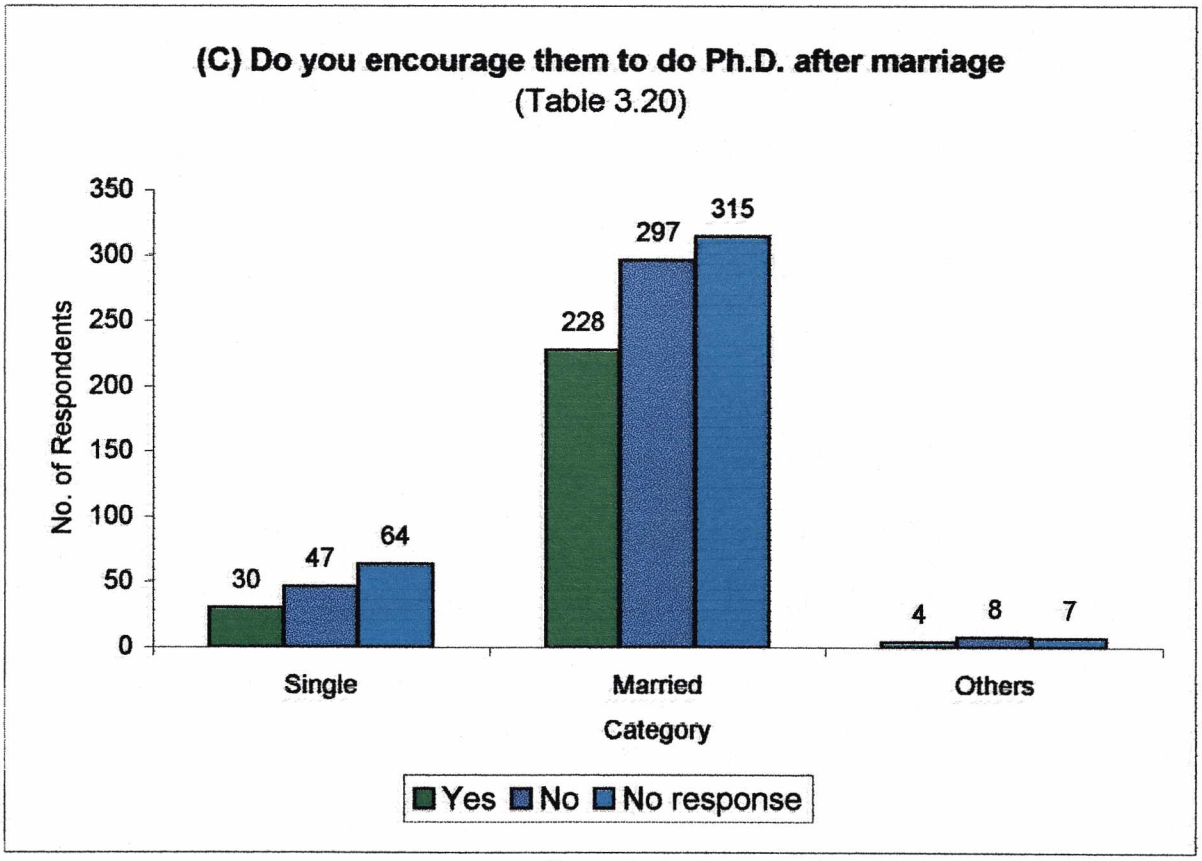


Figure 61

It can be seen from the above table that 46.1% of married respondents suggest taking up Ph.D. after securing the job while 23.3% suggeste to take up Ph.D. before securing the job. The proportions of single members who suggest to take up Ph.D. after securing the job and before securing the job are respectively 45.4% and 22.0%.

The table below provides data relating to the suggestion given by sample members to young women to take up doctoral research after marriage.

Table 3.20 (Q6.2) (C) Do you encourage them to do Ph.D. after marriage.

Category	Yes	%	No	%	No response	%	Total (%)
Single	30	21.3	47	33.3	64	45.4	141(100.0)
Married	228	27.1	297	35.4	315	37.5	840(100.0)
Others	4	21.1	8	42.1	7	36.8	19(100.0)

35.4% of married respondents haven't favoured taking up Ph.D. after marriage while 27.1% advised young girls to pursue research after marriage. In respect of single members the proportions encouraging Ph.D. work, after marriage and before marriage are respectively 21.3% and 33.3%.

The following facts are revealed through the tables no. (Q6.2(d)) and (Q6.2(e))

Table 3.21 (Q6.2) (D) Do you encourage them to do Ph.D. as full-time.

Category	Yes	%	No	%	No response	%	Total (%)
Single	96	68.1	8	5.7	37	26.2	141(100.0)
Married	525	62.5	79	9.4	236	28.1	840(100.0)
Others	14	73.7	1	5.3	4	21.1	19(100.0)

Table 3.22 (Q6.2) (E) Do you encourage them to do Ph.D. as Part-time.

Category	Yes	%	No	%	No response	%	Total (%)
Single	26	18.4	51	36.2	64	45.4	141(100.0)
Married	168	20.0	303	36.1	369	43.9	840(100.0)
Others	5	26.3	6	31.6	8	42.1	19(100.0)

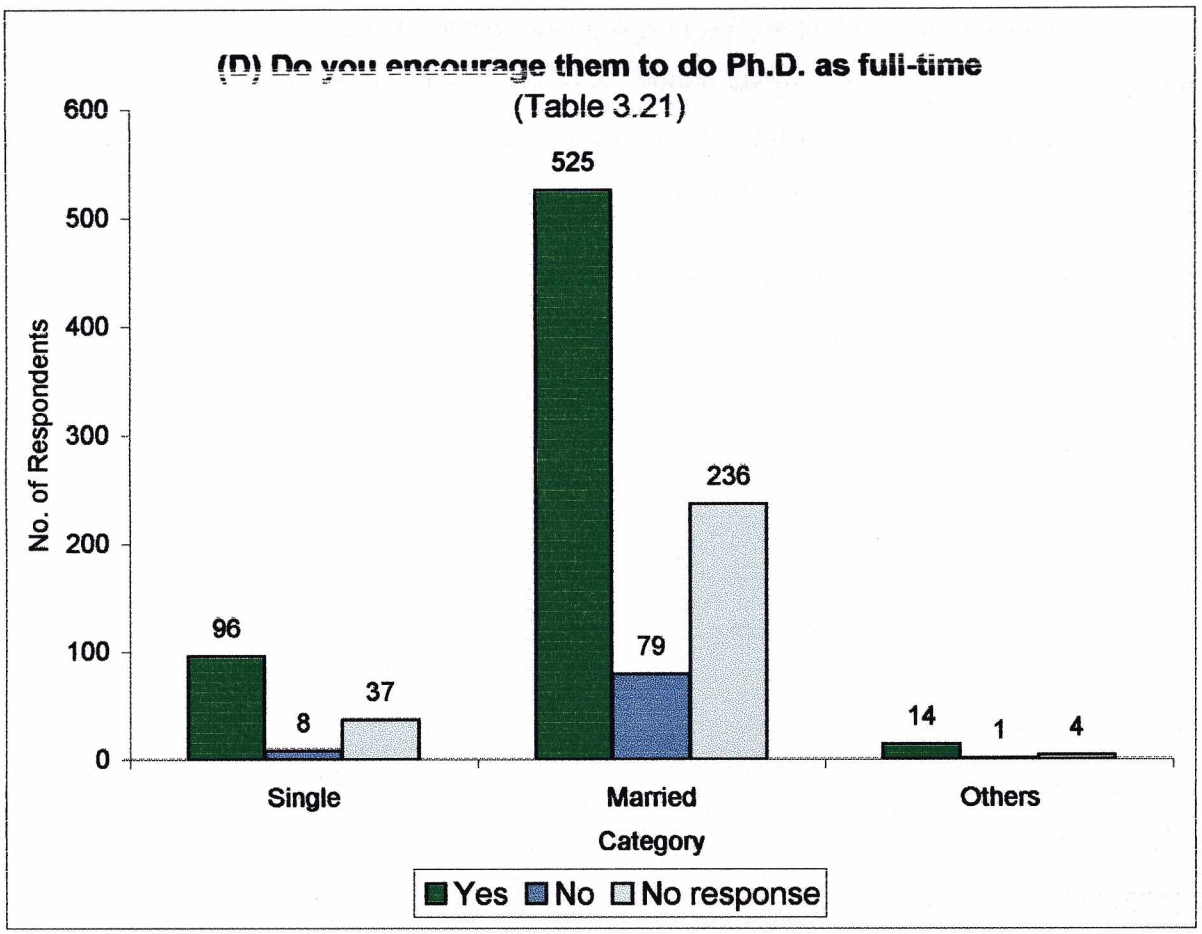


Figure 62

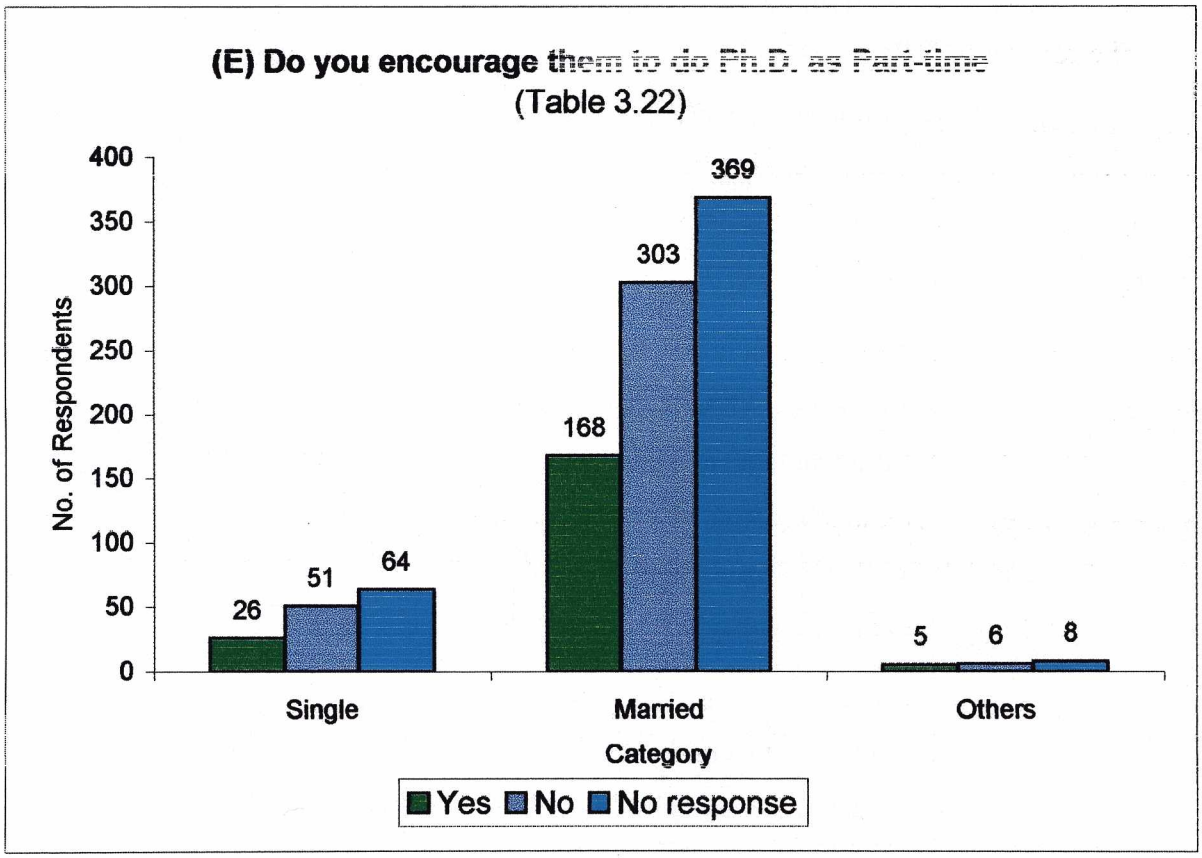


Figure 63

Among married respondents the proportions encouraging young women to take up Ph.D. as full-time is 62.5% and among single members by 68.1% sample members belonging to married and single category who have encouraged part-time doctoral research by young women are respectively 20.0% and 18.4%.

Table 3.23 (Q3.17) Advantages having done Ph.D. degree

Advantages	No. of Respondent	Percentage
Secured a Better Job	286	28.6
Obtained a Promotion	243	24.3
Got a chance to visit abroad	126	12.6
Got Increments	183	18.3
Boosted Morale	301	30.1
Enhanced prestige in the Society	339	33.9
Fulfilled interest / ambition	629	62.9
Not helped in any way	78	7.8
Others	7	0.7
No response	32	3.2

Others

1. One can guide other Ph. D. Aspirants
2. Better experience in the field of work
3. Just a matter of routine

Note: The respondents of our study were asked to list the advantages enjoyed by them due to their Ph.D. degree and some of them indicated more than one advantages. The number of respondents indicating one, two, three, four, five, six and seven advantages are respectively 415, 239, 177, 87, 49, 24 and 9.

It is heartening to note that a significant proportion of women about 63% have fulfilled their interests/ambitions. About 1/3 of the sample members stated that "Enhanced prestige in society" is the advantage of their obtaining Ph.D. degree. The proportions of women doctorates for whom "Boosted Morale" and "Secured a better job" are respectively 30.1% and 28.6%. It is distressing to note that 7.8% of members have stated that Ph.D. degree "has not helped them in any way".

It is well known that breaks in the career of women professional occurs due to marriage, child bearing and rearing children. The women doctorates of our sample study were asked to indicate that details of breaks in their career as well as the reasons for break

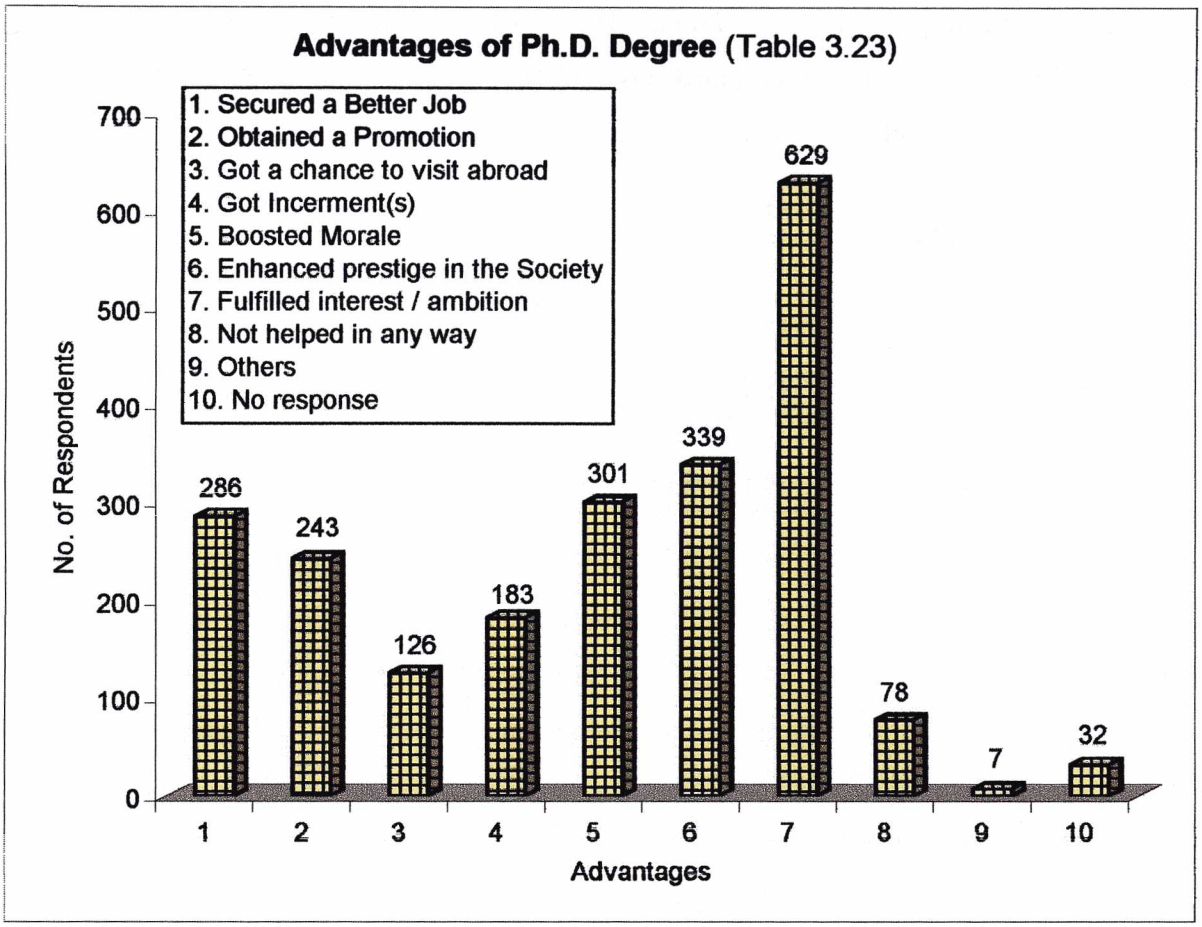


Figure 64

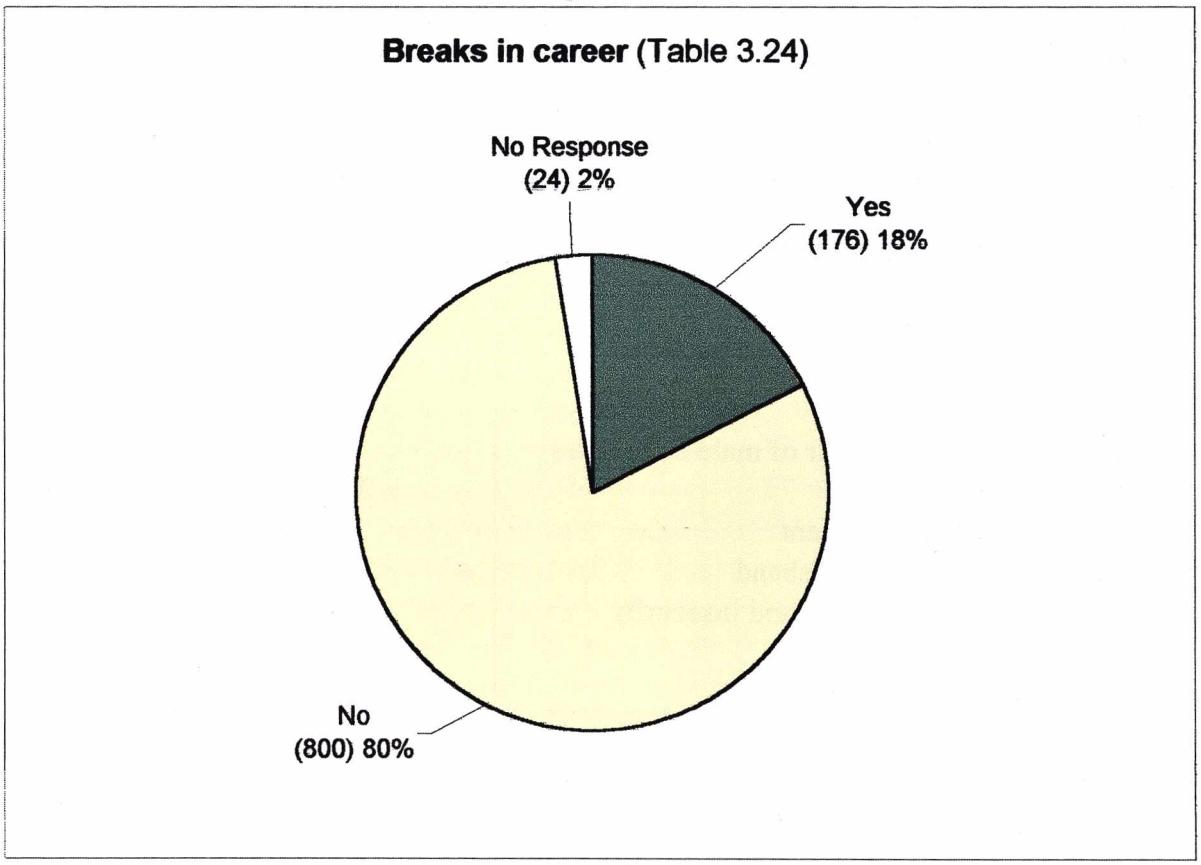


Figure 65

and reasons for returning to work after break. The details of their restart to this aspect of the problem are obtained from the three questions (Q3.18) Table 3.24, (Q3.19) Table 3.25 and (Q3.20) Table 3.26 as tabulated below.

Table 3.24 (Q3.18) Breaks in career

Yes/No	No. of Respondent
Yes	176(17.6)
No	800(80.0)
No Response	24(2.4)
Total	**1000(100.0)**

176 Women doctorates of the sample study had breaks in the career.

It can be seen from the table (3.25) below that Marriage was responsible for the breaks in the career in respect of 23.3% of the sample members while 24.4% of the respondents had breaks in their career due to child birth, "Necessity to stay with the family" was the reason for break in career in the case of 24.4% of the sample members. With respect to about 15% of the respondents the break in their career was due to "transfer of husband/parents". About 11% of the sample members had breaks in career due to "loss of job."

Table 3.25 (Q3.18) Reasons for Breaks in career

S. No.	Reasons	No. of Respondent	Percentage
1	Necessity to stay with the Family	43	24.4
2	Transfer of Husband / Parent	26	14.8
3	Marriage	41	23.3
4	Personal ill-health	11	6.3
5	Inability to cope with family and job	10	5.7
6	Family Way	43	24.4
7	Inappropriate behaviour of male colleagues	1	0.6
8	Loss of Job	20	11.4
9	Professional Environment	8	4.5
10	Decision of Parent / Husband	9	5.1
11	Lack of Hostel facilities and insecurity	1	0.6
12	Others	9	5.1
13	No response	10	5.7

Others

1. Delay in thesis approval and fixing Viva-Voce date
2. Negative attitudes of the employers
3. Ladies are not given importance
4. Lack of financial support.

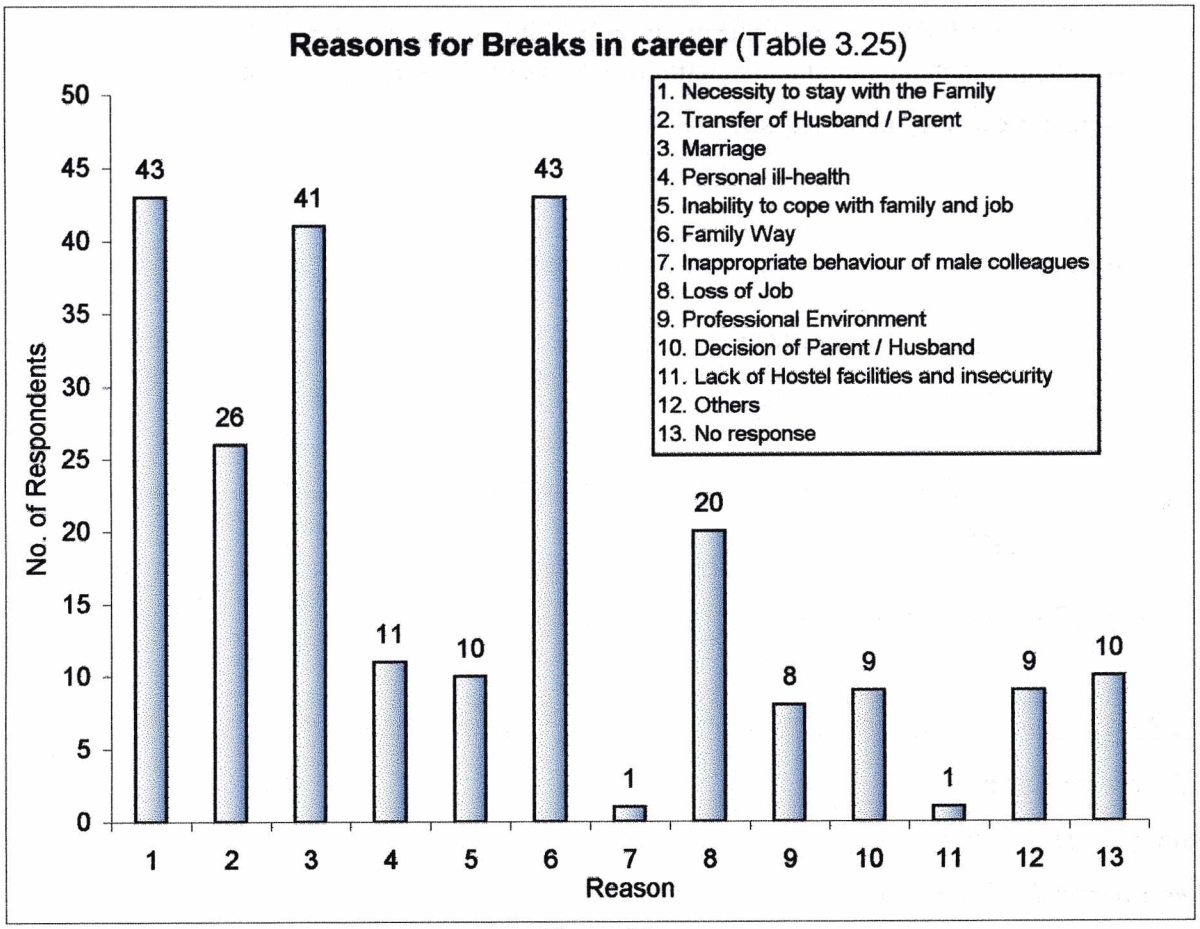


Figure 66

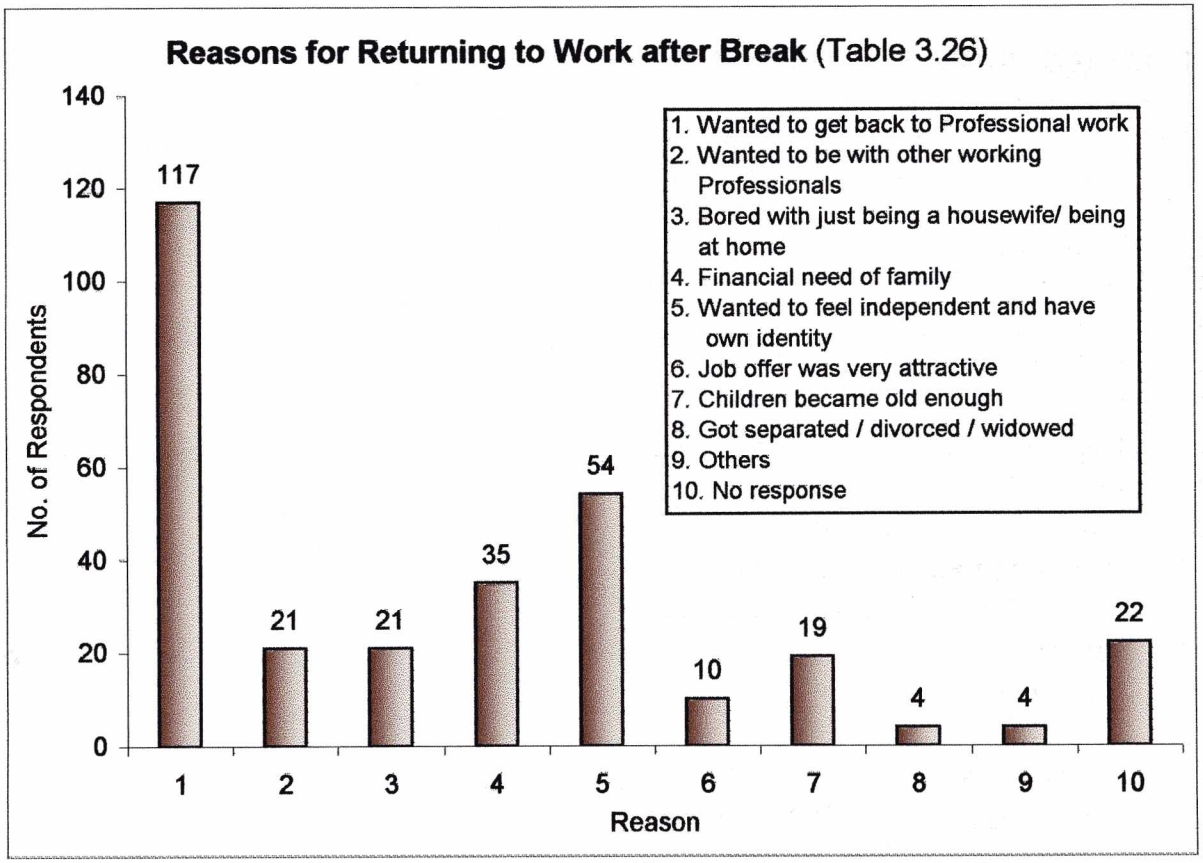


Figure 67

Note: 130 have stated one reason while the number of respondents who gave two, three and four reasons for break in career are respectively 38, 6 and 2.

176 of the sample members have returned to work after break – reasons are obtained through Q 3.19 and tabulated below in Table (3.26).

Table 3.26 (Q3.19) Reasons for Returning to Work after Break

S.No.	Reasons	No. of Respondent	Percentage
1	Wanted to get back to Professional work	117	66.5
2	Wanted to be with other working Professionals	21	11.9
3	Bored with just being a housewife/ being at home	21	11.9
4	Financial need of family	35	19.9
5	Wanted to feel independent and have own identity	54	30.7
6	Job offer was very attractive	10	5.7
7	Children became old enough	19	10.8
8	Got separated / divorced / widowed	4	2.3
9	Others	4	2.3
10	No response	22	12.5

Others

1. Finished the term of office

Note: The number of respondents who mentioned one reason was 95 and two, three, four and five reasons were listed respectively 46, 22, 11 and 2 respondents.

The above table reveals that 66.5% of the sample members "Wanted to get back to professional work". In the case of about 31% of respondents the reason for this was stated as "Wanted to feel independent and have own identity", "Financial need of the family" was reason for about 20% of sample members while the reasons "Wanted to get back to Professional work, Wanted to be with other working Professionals & Bored with just being a housewife/ being at home" have been the reasons for returning to work for about 12% of the respondents.

Table 3.27 (Q3.20) If not returned to work after a break-what are the reasons: -

S.No.	Reasons	No. of Respondent	Percentage
1	Suitable jobs in the field not available	7	70.0
2	Difficulty in finding a job in the city/ town of residence	7	70.0
3	No satisfactory help at home to take care of the children	2	20.0
4	Lack of household help	2	20.0
5	Satisfactory creche facility not available	2	20.0
6	Lack of confidence to get back to work	2	20.0
7	Out-of-date professional skills		
8	Age discrimination	2	20.0
9	Unfavourable family attitude towards resumption of career	1	10.0

Note: 2 respondents have given one reason while the number of respondents who have given two, three and four reasons are respectively 3, 3 and 2.

It can be seen from the above table that most of the women doctorates did not return to work due to (i) Non-availability of Suitable jobs in the field and (ii) Difficulty in finding a job in the city/ town of residence.

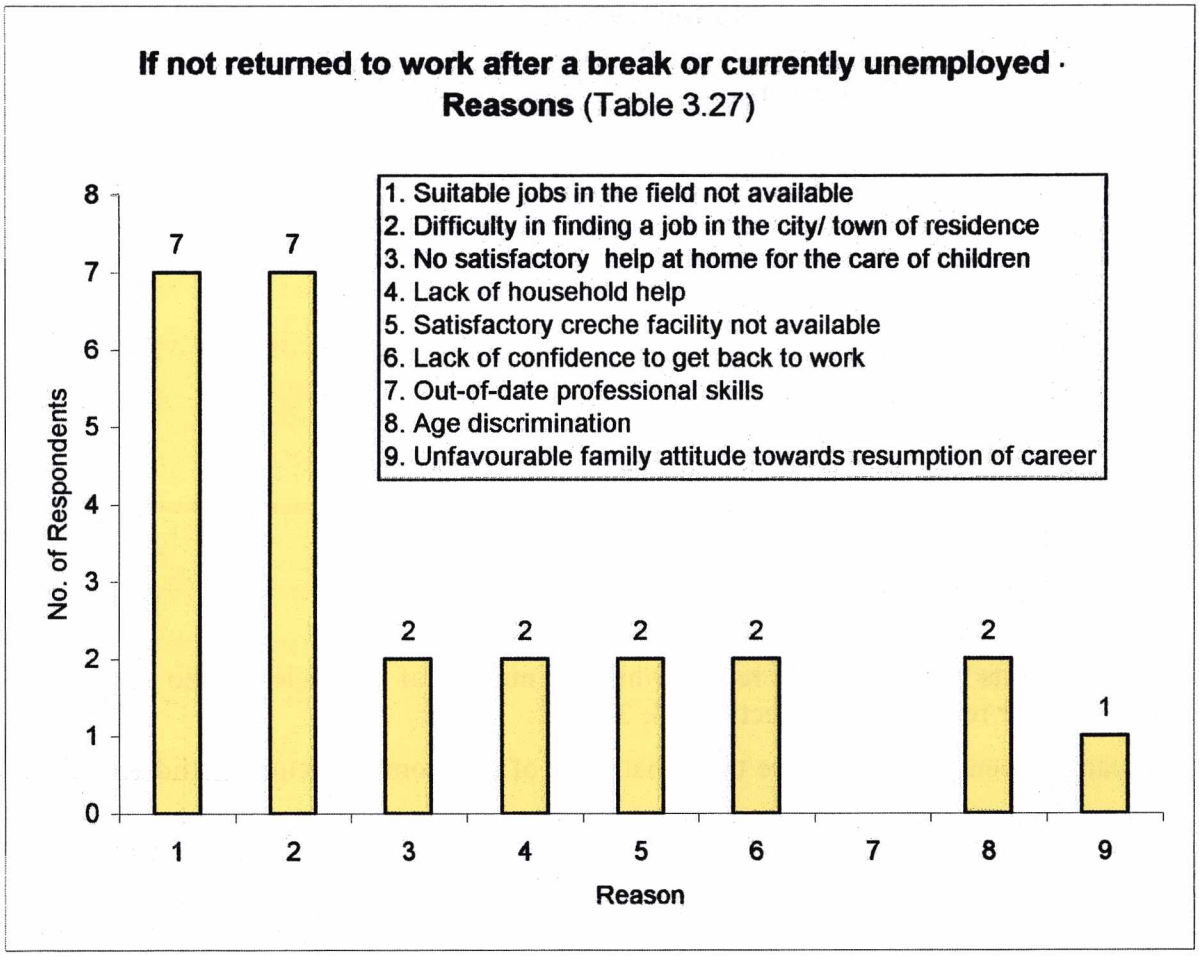

If not returned to work after a break or currently unemployed · Reasons (Table 3.27)
1. Suitable jobs in the field not available
2. Difficulty in finding a job in the city/ town of residence
3. No satisfactory help at home for the care of children
4. Lack of household help
5. Satisfactory creche facility not available
6. Lack of confidence to get back to work
7. Out-of-date professional skills
8. Age discrimination
9. Unfavourable family attitude towards resumption of career
No. of Respondents
0
1
2
3
4
5
6
7
8
7
7
2
2
2
2
2
1
1
2
3
4
5
6
7
8
9
Reason

Figure 68

CHAPTER-VII

CAREER GOALS AND VALUES

Information concerning the career expectations and values cherished by women doctorates was obtained from answers to Q 4.1 through Q 4.4. Also, the advice and views of the respondents to young women to take up Ph.D. research were also elicited through Q 6.2. Data collected in this regard and analysis are presented in this chapter.

Attempts were made to bring out the extent to which the respondents have realised some of the goals as scientists and technologists. Replies received through Q 4.1 are presented in Table 4.1 (Q4.1).

Table 4.1 (Q 4.1) Goals In One's Professional Career

Goals	Yes		No		Not applicable	
	Nos	%	Nos	%	Nos	%
Maintaining one's own socioeconomic independence	825	82.5	42	4.2	133	13.3
Opportunity for personal growth and development	797	79.7	72	7.2	131	13.1
Having a feeling of being in one's own group	531	53.1	153	15.3	316	31.6
Opportunity for independent thought and action	731	73.1	87	8.7	182	18.2
A sense of self identity rather than that of husband/family	742	74.2	60	6.0	198	19.8
A sense of accomplishment	674	67.4	73	7.3	253	25.3
Opportunity to help the country	564	56.4	146	14.6	290	29.0
Opportunity to contribute to discipline	665	66.5	91	9.1	244	24.4
Opportunity for intellectual stimulation	709	70.9	67	6.7	224	22.4
Opportunity for improving economic status	686	68.6	95	9.5	219	21.9
Involvement in challenging and creative activities	590	59.0	155	15.5	255	25.5
Others	4	0.4	7	0.7	989	98.9

Others

1. Guiding and counselling
2. Self satisfaction

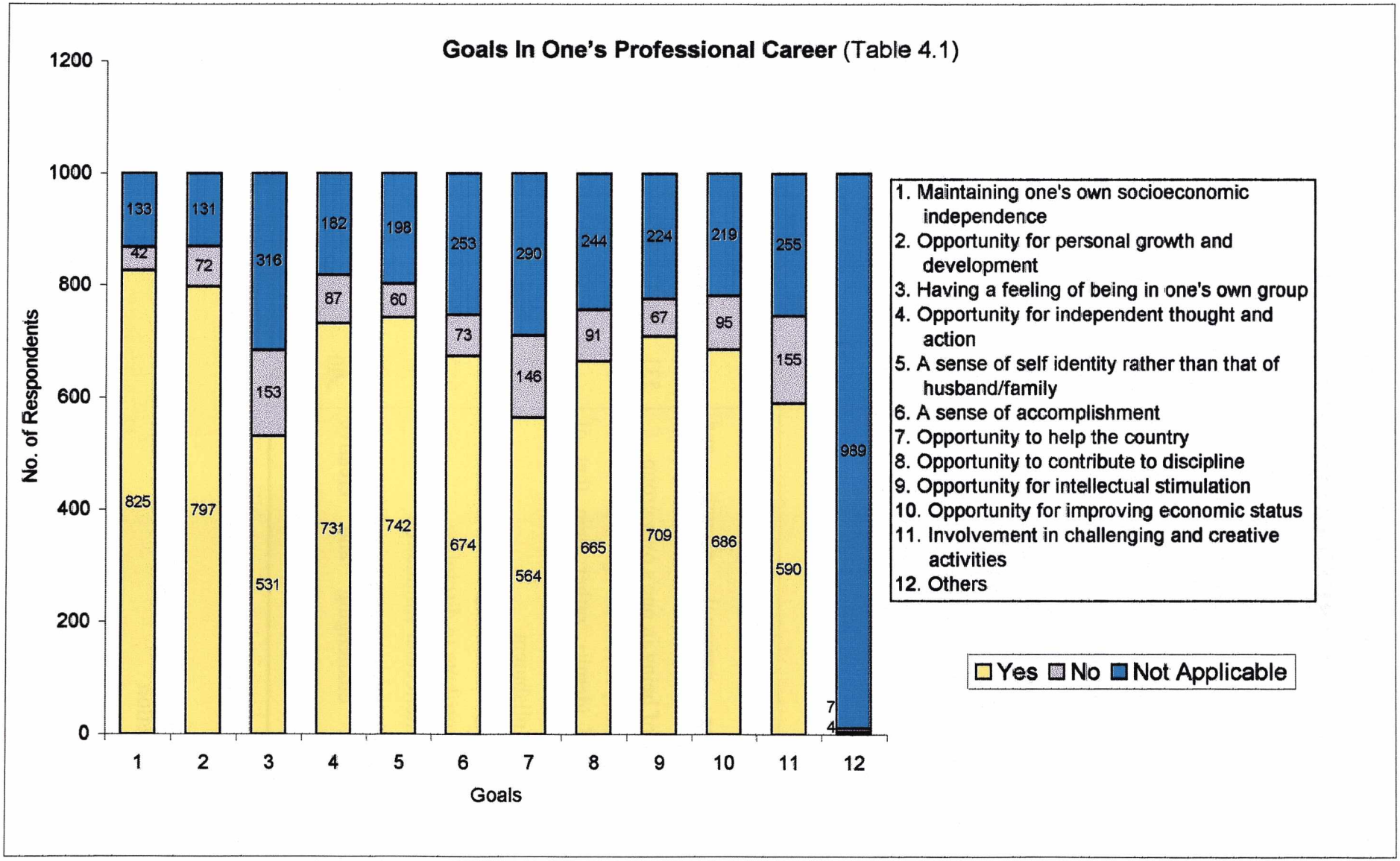

Goals In One's Professional Career (Table 4.1)
No. of Respondents
1200
1000
800
600
400
200
0
Goals
1
2
3
4
5
6
7
8
9
10
11
12
825
42
133
797
72
131
531
153
316
731
87
182
742
60
198
674
73
253
564
146
290
665
91
244
709
67
224
686
95
219
590
155
255
7
4
989
1. Maintaining one's own socioeconomic independence
2. Opportunity for personal growth and development
3. Having a feeling of being in one's own group
4. Opportunity for independent thought and action
5. A sense of self identity rather than that of husband/family
6. A sense of accomplishment
7. Opportunity to help the country
8. Opportunity to contribute to discipline
9. Opportunity for intellectual stimulation
10. Opportunity for improving economic status
11. Involvement in challenging and creative activities
12. Others
Yes
No
Not Applicable

Figure 69

About 83% of women doctorates have realised their goal in maintaining their own socioeconomic independence while the opportunity for improving their economic status was realised by 69% of the respondents.

A good proportion of the sample members indicated that they have a sense of fulfillment of the goals (a) opportunity for personal growth and development (b) opportunity for independent thought and action (c) opportunity for intellectual stimulation and (d) a sense of self identity rather than that of husband/family.

A sense of accomplishment and opportunity to contribute to disciplines are the goals achieved by respectively 67.4% and 66.5% of the respondents.

Though about 16% of the women doctorates feel that they have not realised the goals about half the number of the respondents have said that they achieved their goals. With reference to the opportunity to help the country the percentage of sample members who have realised the goal is 56.4% while 14.6% have not realised the same.

Table 4.2 (Q4.2) Opinion of the respondents' on the following issues related to their career values.

Statements	Agree(%)	DisAgree(%)	No opinion(%)	No Response(%)
A career for a married women should be secondary to her responsibilities as a wife and a mother	375(37.5)	455(45.5)	87(8.7)	83(8.3)
To get equal professional recognition, women have to do better than men	511(51.1)	358(35.8)	60(6.0)	71(7.1)
When mother works full time young Children suffer	718(71.8)	165(16.5)	65(6.5)	52(5.2)
A career oriented women should not have children	70(7.0)	798(79.8)	65(6.5)	67(6.7)
A career women cannot manage both home & work demands without sacrificing either	291(29.1)	568(56.8)	72(7.2)	69(6.9)
Working women often have to face improper behaviour of male colleague	268(26.8)	466(46.6)	192(19.2)	74(7.4)
Even women doctorates end up in doing small roles	473(47.3)	295(29.5)	142(14.2)	90(9.0)
Compared to men, Women find it difficult to gain acceptance to a professional group	443(44.3)	414(41.4)	70(7.0)	73(7.3)
The husband's career should come first, if there is a conflict between the husband's and wife's career	391(39.1)	364(36.4)	163(16.3)	82(8.2)
Unless the family/ husband extends full support, women cannot have a successful career profession	838(83.8)	75(7.5)	36(3.6)	51(5.1)
Men can raise small children as well as women can	481(48.1)	355(35.5)	100(10.0)	64(6.4)
I don't feel uncomfortable if my husband attends housekeeping	623(62.3)	197(19.7)	110(11.0)	70(7.0)
The women's movement has been a major force in making women opt for professional careers	460(46.0)	247(24.7)	202(20.2)	91(9.1)
Women should assume leadership roles in profession as often as men	792(79.2)	71(7.1)	53(5.3)	84(8.4)
Since child rearing is demanding, the present work structure should be modified to prevent any breaks in the career of women	645(64.5)	133(13.3)	124(12.4)	98(9.8)
Despite equal qualification and competence women are not given due recognition	546(54.6)	293(29.3)	86(8.6)	75(7.5)
Women passively accepts denial of legitimate claims in profession	490(49.0)	238(23.8)	179(17.9)	93(9.3)

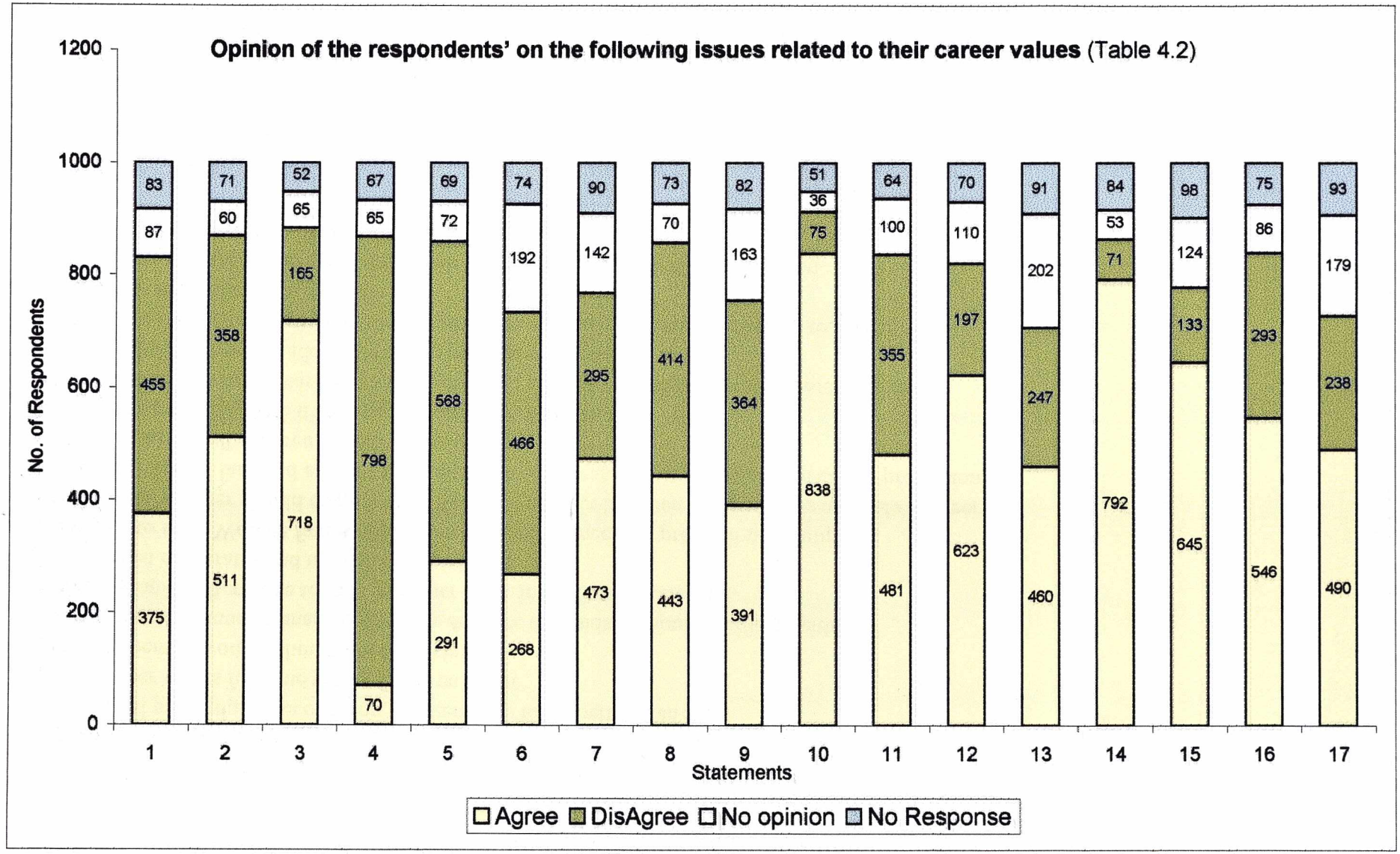

Opinion of the respondents' on the following issues related to their career values (Table 4.2)
No. of Respondents
1200
1000
800
600
400
200
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Statements
83 87 455 375
71 60 358 511
52 65 165 718
67 65 798 70
69 72 568 291
74 192 466 268
90 142 295 473
73 70 414 443
82 163 364 391
51 36 75 838
64 100 355 481
70 110 197 623
91 202 247 460
84 53 71 792
98 124 133 645
75 86 293 546
93 179 238 490
Agree
DisAgree
No opinion
No Response

Figure 70

Statements

1. A career for a married women should be secondary to her responsibilities as a wife and a mother
2. To get equal professional recognition, women have to do better than men
3. When mother works full time young Children suffer
4. A career oriented women should not have children
5. A career women cannot manage both home & work demands without sacrificing either
6. Working women often have to face improper behaviour of male colleague
7. Even women doctorates end up in doing small roles
8. Compared to men, Women find it difficult to gain acceptance to a professional group
9. The husband's career should come first, if there is a conflict between the husband's and wife's career
10. Unless the family/ husband extends full support, women cannot have a successful career profession
11. Men can raise small children as well as women can
12. I don't feel uncomfortable if my husband attends housekeeping
13. The women's movement has been a major force in making women opt for professional careers
14. Women should assume leadership roles in profession as often as men
15. Since child rearing is demanding, the present work structure should be modified to prevent any breaks in the career of women
16. Despite equal qualification and competence women are not given due recognition
17. Women passively accepts denial of legitimate claims in profession

Figure 70a

Views and opinions about various issues concerning career women were obtained from the women doctorates through replies to Q4.2 and presented in the above Table 4.2

45.5% of respondents did not agree with the statement "A career for a married women should be secondary to her responsibilities as a wife and a mother" where as 37.5% of respondents favoured (agreed) the statement. In regard to the issue that "A career women cannot manage both home & work demands without sacrificing either", it has been found that about 57% of sample members expressed their disagreement while only the proportion of members who agreed was about 29%. A majority (72%) of the respondents agreed with the issue "When mother works full time young Children suffer" where as 17% expressed their disagreement in this regard. The view that a career-oriented woman should not have children has been opposed by a major proportion (80%) of the sample members. In regard to the issue that "Since child raring is demanding, the present work structure should be modified to prevent any breaks in the career of women" had been approved by 64.5% and disapproved by 13.3%.

A majority (84%) of women doctorates agreed with the view that the support of husband/family is essential for women to have a successful career in profession. With reference to the opinion that "Women should assume leadership roles in profession as often as men" 79% of sample members expressed their agreement while 7% stated their disagreement. It is disturbing to note that 54.6% of sample members felt that "Despite equal qualification and competence women are not given due recognition." Among the respondents 51.1% supported the view that "To get equal professional recognition, women have to do better than men" while about 36% did not subscribe to that view. With regard to the issue that "Compared to men, Women find it difficult to gain acceptance to a professional group" 44.3% of women doctorates expressed their agreement while 41.4% stated their disagreement.

About 47% of sample members disagreed with the view that "Working women often have to face improper behavior of male colleague" though a proportion of about 27% of the respondents agreed this statement. A proportion of the women doctorates who opted for and against the issue that "The husband's career should come first, if there is a conflict between the husband's and wife's career" are respectively 39.1% and 36.4%. The view "I don't feel uncomfortable if my husband attends housekeeping" was favoured by a majority (62.3%) of the sample members though 19.7% among the sample members didn't approve. It is the sad commentary of the situation that 47.3% of women doctorates expressed their agreement with

the view "Even women doctorates end up in doing small roles" though 29.5% of sample members didn't approve of this view.

In regard to the issue "Women passively accepts denial of legitimate claims in profession" 49% of women doctorates expressed their agreement while 24% expressed their disagreement. Issue on "The women's movement has been a major force in making women opt for professional careers" was favoured by 46% of sample members while 24.7% of the members didn't favour the same.

Table 4.3 (a) (Q 4.3) Reasons For Low Participation Of Women In The Science & Technology Education And Profession

In order to focus on the reasons for low participation of women in S & T Education and profession, data were collected and replies to Q4.3 are presented below

EDUCATION

Reason	Yes		No		No response	
	Nos	%	Nos	%	Nos	%
Most parents discourage their daughters from taking up Ph.D.	573	57.3	318	31.8	109	10.9
Qualifying for Ph.D. restricts women's chances of marriage	535	53.5	340	34.0	125	12.5
Women are afraid that they would be overqualified and job opportunities will be narrowed down	247	24.7	589	58.9	164	16.4
Doctorate research requires skills and characteristics that women do not possess	44	4.4	781	78.1	175	17.5
Most teachers tend to think that girl's lives are essentially defined by family roles	417	41.7	411	41.1	172	17.2
Non-acceptability of women Scientist & Technologist in Indian-society	222	22.2	579	57.9	199	19.9
Others	21	2.1	--	--	979	97.9

Others

1. Lack of proper job opportunity
2. Unawareness of opportunities for women scientists
3. Financial returns not attractive
4. Men show power to women in Indian society
5. Ph. D. Is thought of only as a stopgap arrangement before marriage
6. Lack of accommodation (Hostel facilities to women scientists)
7. By the time they take Ph.D. their age will be over for marriage
8. Conflict between family needs and demands of the career
9. Feeling that women are frail & can't protect themselves
10. Restricted movement and exposure compared to men

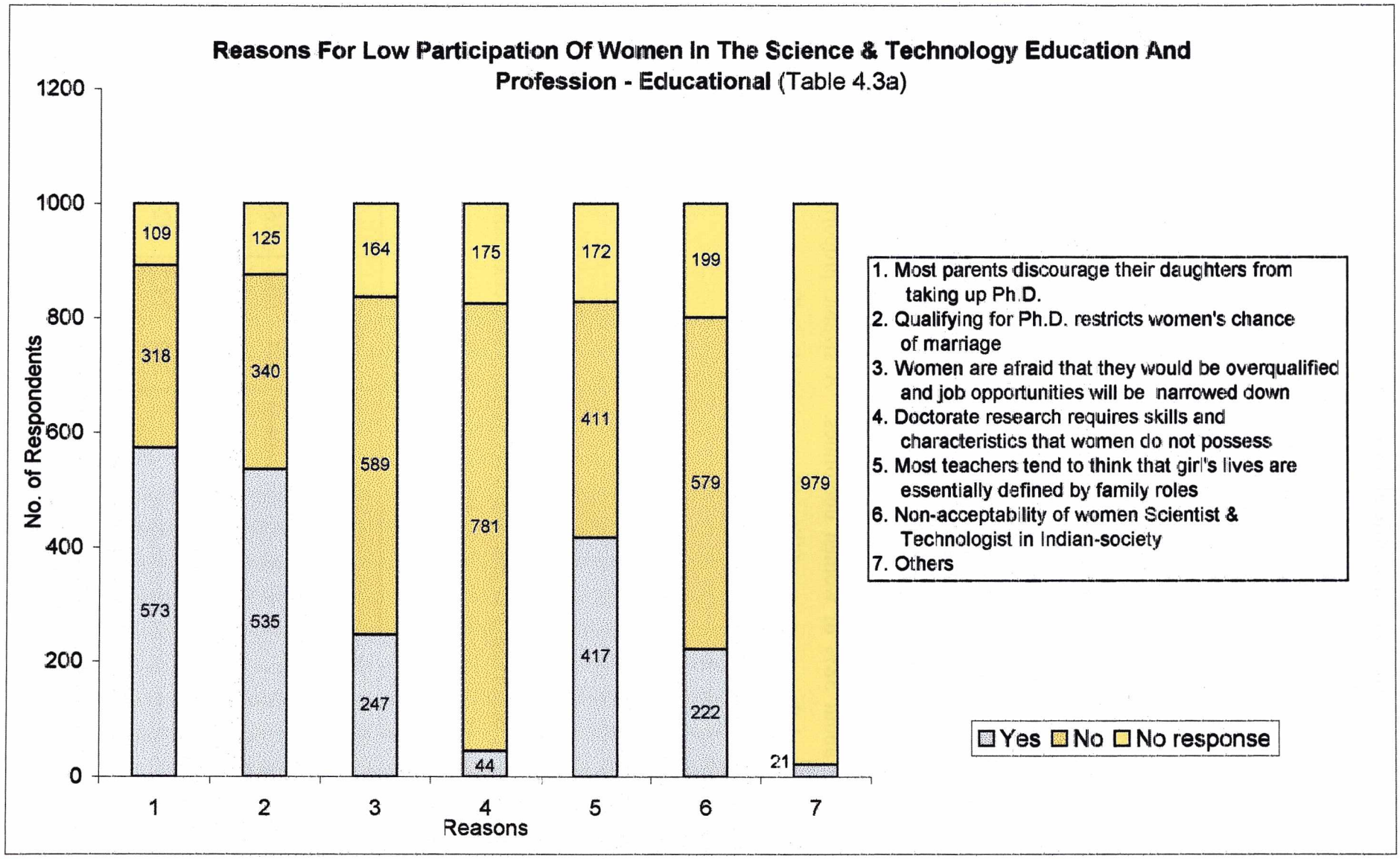

Reasons For Low Participation Of Women In The Science & Technology Education And Profession - Educational (Table 4.3a)
No. of Respondents
1200
1000
800
600
400
200
0
109
318
573
125
340
535
164
589
247
175
781
44
172
411
417
199
579
222
979
21
1
2
3
4
5
6
7
Reasons
1. Most parents discourage their daughters from taking up Ph.D.
2. Qualifying for Ph.D. restricts women's chance of marriage
3. Women are afraid that they would be overqualified and job opportunities will be narrowed down
4. Doctorate research requires skills and characteristics that women do not possess
5. Most teachers tend to think that girl's lives are essentially defined by family roles
6. Non-acceptability of women Scientist & Technologist in Indian-society
7. Others
Yes
No
No response

Figure 71

11. Unwillingness to work and take official responsibility
12. Family responsibilities
13. Ph.D. often takes very long

Discouragement from parents and chances for marriage being restricted were mentioned respectively by about 57% and about 54% of respondents as important reasons for low participation of women to take up doctoral research, although about one third of the sample members do not subscribe to this fact.

About 59% of women doctorates declared that women are not afraid of being over qualified and of job opportunities narrowing down but about 25% of sample members expressed their fear that doctorate degree is an over qualification and that job opportunities will be narrowed down.

A majority (78%) of sample members do not agree with the reason that women do not possess skills and characteristics required for doctoral research.

That women scientists and technologists are non-acceptable in Indian society has been negatived by about 58% of women doctorates. A sizable proportion (22%) of sample members admitted the non-acceptability of women in S & T as one of the rasons for low participation in education and this calls for suitable steps to eradicate this type of negative approach in Indian Society.

Women doctorates are equally divided in regard to acceptance and non-acceptance of the reason as more teachers tried to think that girls' lives are essentially defined by family roles.

Some of other reasons for low participation of women in S & T education include non-awareness of opportunity at graduate level, conflict between family needs and demands of the career, feeling that women are frail and cannot be successful etc.

Table 4.3 (b) (Q4.3) Profession

Reason	Yes		No		No response	
	Nos	%	Nos	%	Nos	%
A job in research field is too demanding for women to combine with family responsibilities	604	60.4	267	26.7	129	12.9
Women today want to work only occasionally and on part-time basis	198	19.8	603	60.3	199	19.9
Men in this field resent women colleagues	242	24.2	524	52.4	234	23.4
This society will never accept women doctorates	66	6.6	737	73.7	197	19.7
Difficulty in getting a suitable job by women Ph.Ds	425	42.5	406	40.6	169	16.9
Others	6	0.6	1	0.1	993	99.3

Others

1. Men are jealous of women progress
2. Very difficult to balance home, children and social relation
3. Support from family is essential
4. Men do not share domestic work

It reveals that a major reason for low participation of women in S & T profession is that a job in research field is too demanding for women to combine with family responsibilities as indicated by about 60% of women doctorates. About 27% stated that they did not feel that research career is too demanding and that it is difficult to combine with family commitment. Difficulty in getting suitable jobs has been mentioned by 42% of sample members for low representative of women doctorates in S & T Professions though about 41% of member did not subscribe to this view.

The general opinion that "Women want to work occasionally and on part-time basis" "Society will never accept women doctorates" and "men is S & T profession resent women colleagues" are not accepted by sizeable proportion of sample members.

Women feel that "men not sharing the domestic work" and "men being jealous of women progress" are some of the other reasons for low representation of women in S & T profession.

Table 4.4 (Q 4.4) Denial of opportunities for being a women Scientist

Category	No.of Respondents	Percentage
Yes	167	16.7
No	745	74.5
No Response	88	8.8
Total	**1000**	**100.0**

The above table 4.4 reveals that a majority (74%) of sample members declared that there is no denial of opportunities for being a women scientist/professional. In the opinion of 17% of respondents denial of opportunities in responsible for low representation of women in the S & T profession.

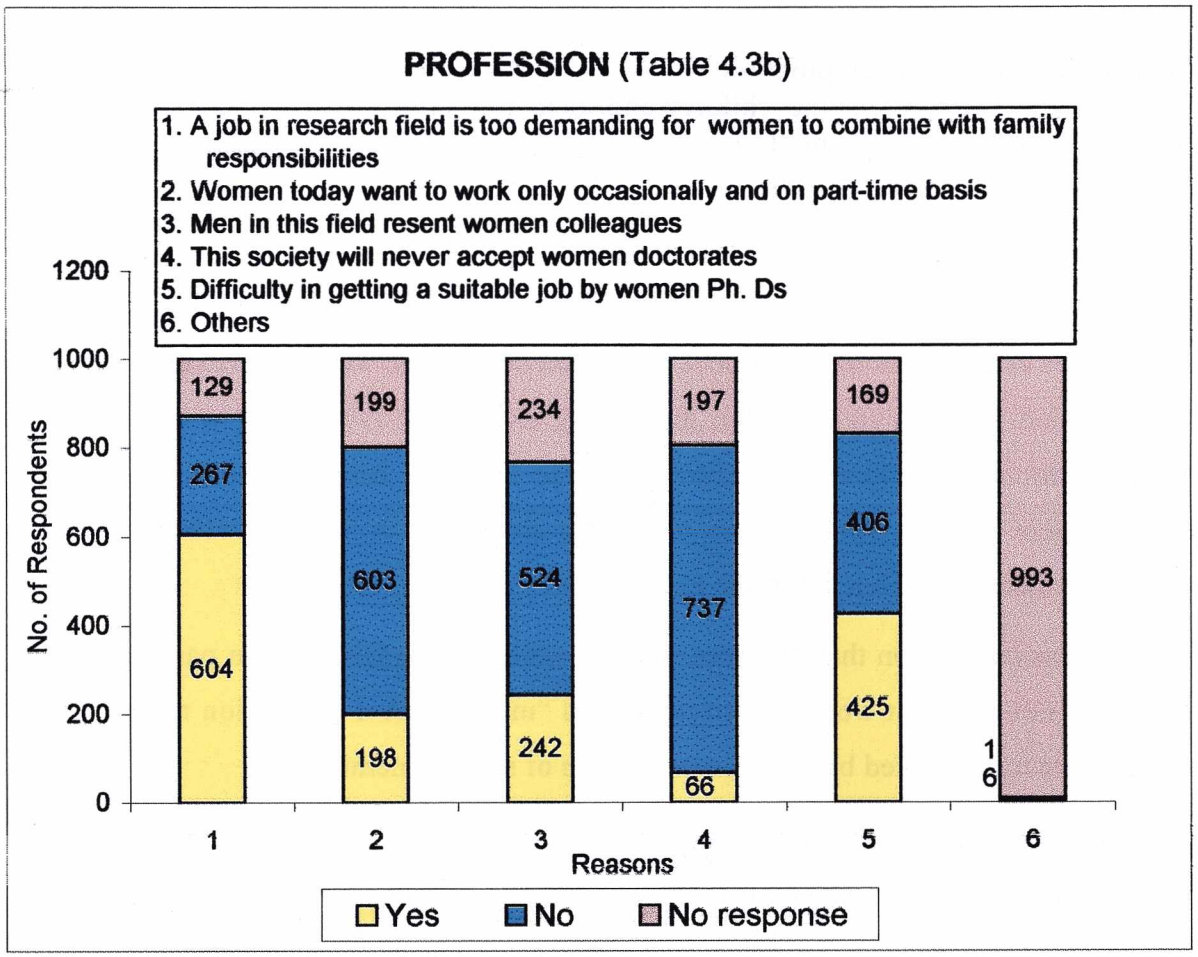


Figure 72

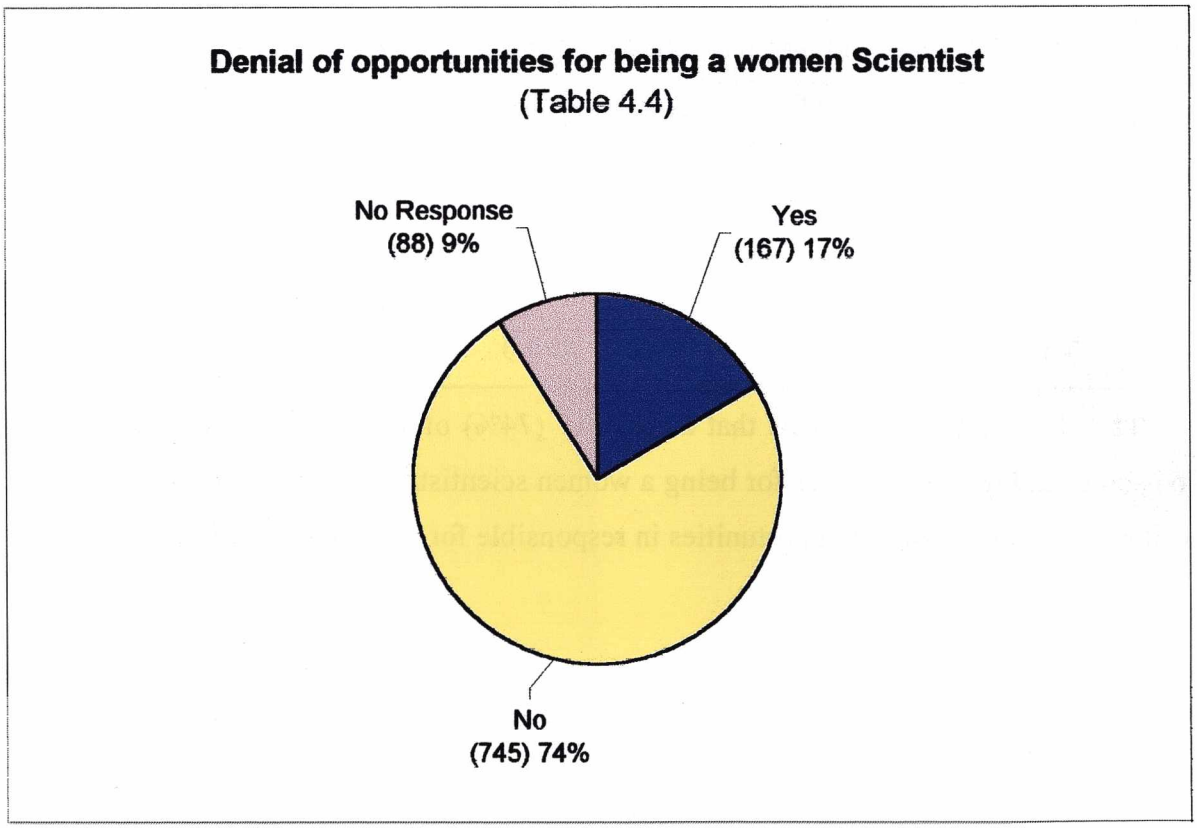


Figure 73

CHAPTER-VIII

CAREER PROBLEMS

The present chapter focuses on the career problems faced by women doctorates such as gender discrimination, stagnation in the career, and promotion to top-position etc.

With a view to examine the nature of career problems to the extent of gender discrimination data were collected through Q 5.1 and tabulated below

Table 5.1 (Q 5.1) Prevalence of Gender Discrimination

Category	Yes		No		Not applicable		Total	
	Nos	%	Nos	%	Nos	%	Nos	%
In promotions	128	13.4	679	71.0	149	15.6	956	100.0
Salary and fringe benefits	60	6.3	729	76.3	167	17.5	956	100.0
Participation in important work-related decisions	297	31.1	512	53.6	147	15.4	956	100.0
Access to professional job opportunities	244	25.5	538	56.3	174	18.2	956	100.0
Travel assignments	376	39.3	397	41.5	183	19.1	956	100.0
Inclusion in informal work-related social activities (e. g. lunch groups)	223	23.4	526	55.0	207	21.7	956	100.0
Acceptance of Women's decisions and judgments	245	25.7	524	54.8	187	19.6	956	100.0
Interesting assignments	222	23.2	517	54.1	217	22.7	956	100.0
Formal recognition of actual duties and accomplishments	220	23.0	523	54.7	213	22.3	956	100.0
Access to important communication channels	210	22.0	536	56.1	210	22.0	956	100.0
Opportunity to move into higher position	247	25.9	528	55.2	181	18.9	956	100.0

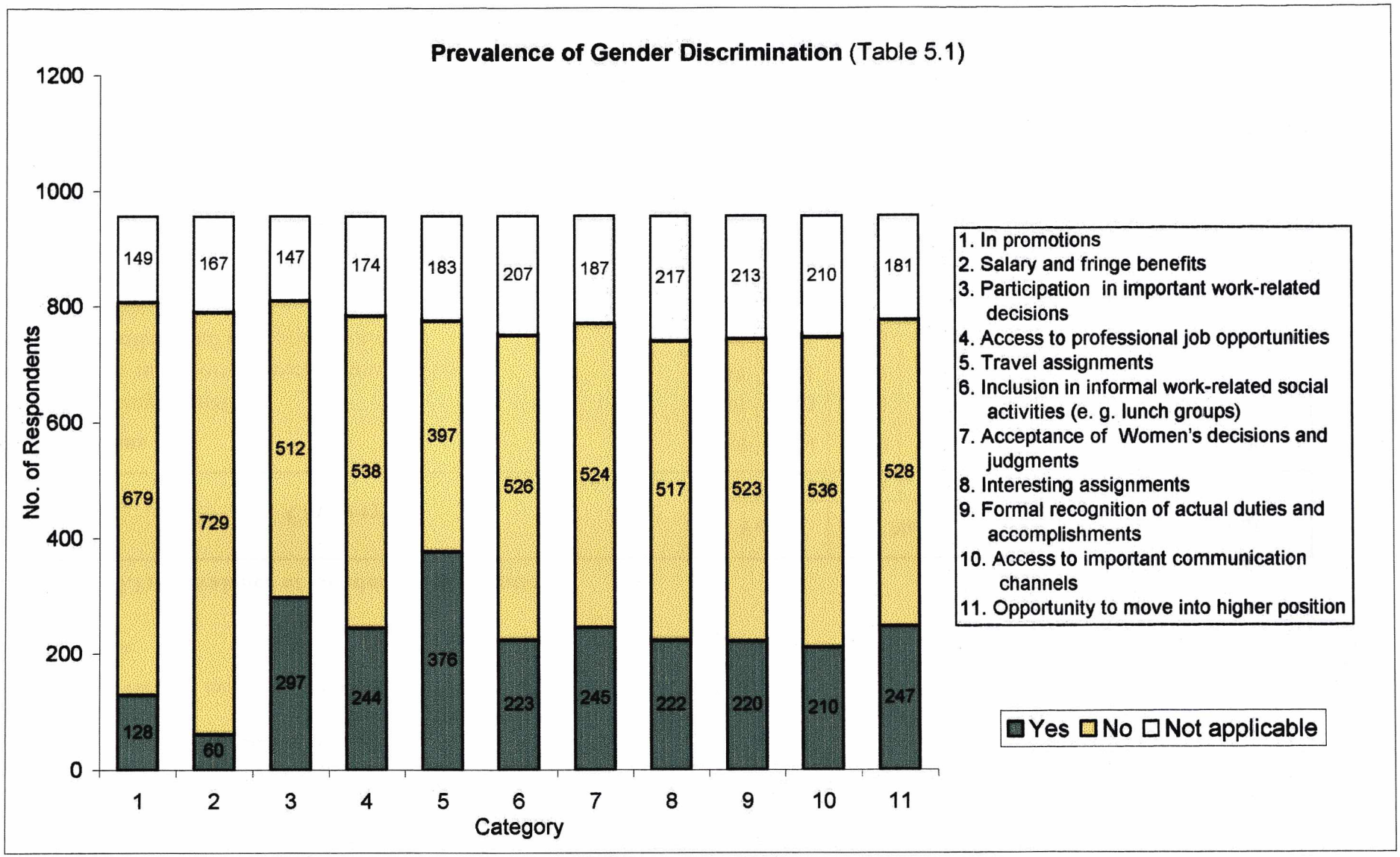

Prevalence of Gender Discrimination (Table 5.1)
No. of Respondents
1200
1000
800
600
400
200
0
149
167
147
174
183
207
187
217
213
210
181
679
729
512
538
397
526
524
517
523
536
528
128
60
297
244
376
223
245
222
220
210
247
1
2
3
4
5
6
7
8
9
10
11
Category
1. In promotions
2. Salary and fringe benefits
3. Participation in important work-related decisions
4. Access to professional job opportunities
5. Travel assignments
6. Inclusion in informal work-related social activities (e. g. lunch groups)
7. Acceptance of Women's decisions and judgments
8. Interesting assignments
9. Formal recognition of actual duties and accomplishments
10. Access to important communication channels
11. Opportunity to move into higher position
Yes
No
Not applicable

Figure 74

There is considerable amount (39.3%) of gender discrimination in regard to travel assignments. This may be the due to the general view that the women may find it difficult to take up travel assignments in view of their domestic commitments.

In regard to participation in important work-related decision about one-third of respondents (6.3%) feel that there is gender discrimination while 76.3% of respondents have not experienced discrimination.

Gender discrimination has been perceived by about one fourth of the respondents in regard to access to professional job opportunities and in respect of acceptance of decisions judgements & opportunity to move into higher position.

Majority of respondents indicated that there is no gender discrimination in regard to promotions, salary & fringe benefits. About 55% of the respondents state that there is no gender discrimination in informal work related activities and in respect of acceptance of decisions and judgements.

A sizeable proportion (23%) indicated that there is gender discrimination in regard to formal recognition of actual duties and accomplishments as well as with reference to access to important communication. It is unfortunate that there is gender discrimination with respect to promotion as indicated by 13.4% of respondents.

In regard to salary and fringe benefits 6.3% of the sample members have indicated discrimination although 76.1% have not experienced discrimination. The general inpression conveyed by the data in Table 5.1 (Q 5.1) is that gender discrimination is prevalent with respect to a number of aspects including promotion, salary and fringe benefits which will be deterant for women doctorates to take up careers as scientists and technologists.

Table 5.2(a) (Q 5.2) Reasons for Women not Holding the Top Positions

Attempts were made to find out the reasons, which prevented women doctorates from holding top position, necessary data were collected through answers to Q 5.2. The respondents were asked to rank the reasons, which are person-related and task-related. Data thus collected are presented in two tables given below

Table 5.2(a) (Q5.2A) Person Related

Ranks	Reasons						No response	Total
	A Nos	B Nos	C Nos	D Nos	E Nos			
Rank 1	213	252	232	83	44	824	176	1000
Rank 2	126	133	154	96	5	514	486	1000
Rank 3	107	83	81	58	2	331	669	1000
Rank 4	40	36	39	115	4	234	766	1000
Rank 5	3	--	--	--	3	6	994	1000
Total	489	504	506	352	58	1909	3091	5000

Reasons

A. Lack of self confidence
B. Lack of power motive
C. Lack of competitive tendencies
D. Inability to take decision
E. Others

Others

1. No encouragement and No suitable opportunities
2. Balancing Home and Profession
3. Family Duties
4. Lack of time
5. Lack of co-operation and moral support
6. Lack of recognition
7. Physical, Physiological and Social limitation
8. Inability to be as mobile as men such as in transfer
9. Dependence to parent
10. Male domination
11. Inexperience
12. Passive
13. Lack of opportunity
14. Lack of awareness

It can be seen from the above Table 5.2(a) (Q5.2 A) that about half of the respondents mentioned that the lack of power motive and lack of competitive tendencies and lack of self confidence are the major reasons for women not holding top positions. Some of the other person-related reason which stood in the way of holding top position are lack of encouragement, moral support, recognition etc.

Table 5.2(b) (Q5.2B) Task Related

Ranks	Reasons								No response	Total
	A Nos	B Nos	C Nos	D Nos	E Nos	F Nos	G Nos			
Rank 1	156	123	77	183	161	78	--	778	222	1000
Rank 2	67	108	68	125	97	87	1	553	447	1000
Rank 3	48	48	59	79	73	64	--	371	629	1000
Rank 4	49	44	44	46	43	26	--	252	748	1000
Rank 5	32	29	19	26	37	27	--	170	830	1000
Rank 6	17	18	28	8	9	50	--	130	870	1000
	213	247	218	284	259	254	1	2254	3746	6000

Reasons

A. Male chauvinism
B. Gender discrimination
C. Influence of political parties
D. Politics in the institutions
E. Lack of exposure to management administrative strategies
F. Non-involvement in decision making processes
G. Other

Table 5.2(b) (Q5.2 B) reveals that among the task-related reasons standing in the way of respondents occupying top positions 'Politics in the organization/ Institution' has been mentioned as the major reason. Adequate steps to eliminate the evil of internal politics. Lack of exposure to management, administrative strategies is another important reason for women not holding top position. It will be good if women are provided with facilities and/or training in management and administrative strategies. Male chauvinism and gender discrimination are two other significant reasons working against women to not holding top positions. It is very much desired that women as well as organization take up suitable steps to eliminate these two significant evils.

Table 5.3(a) (Q 5.3) Stagnation In Ph.Ds Career

Stagnation	No. of Respondents	**Percentage**
Yes	**378**	37.8
No	**565**	56.4
No response	**57**	5.8
Total	**1000**	100.0

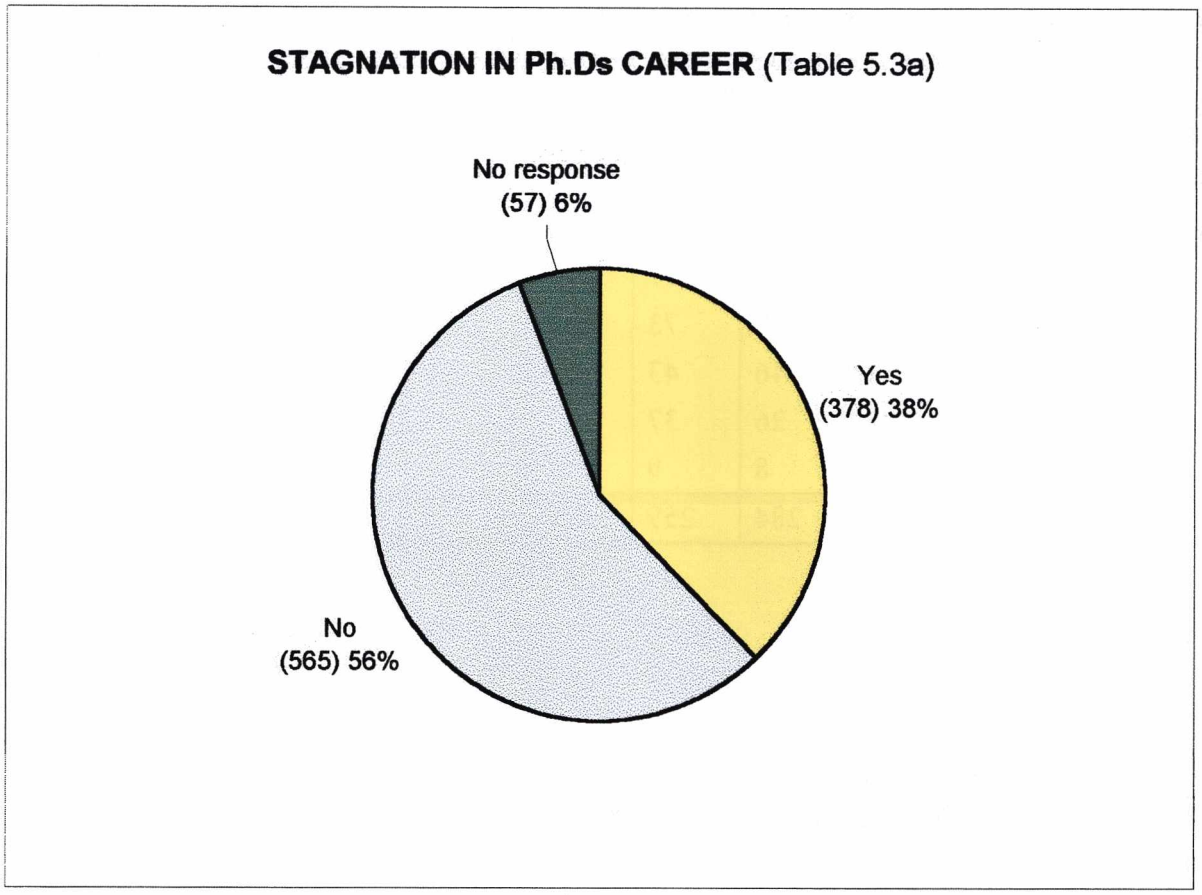


Figure 75

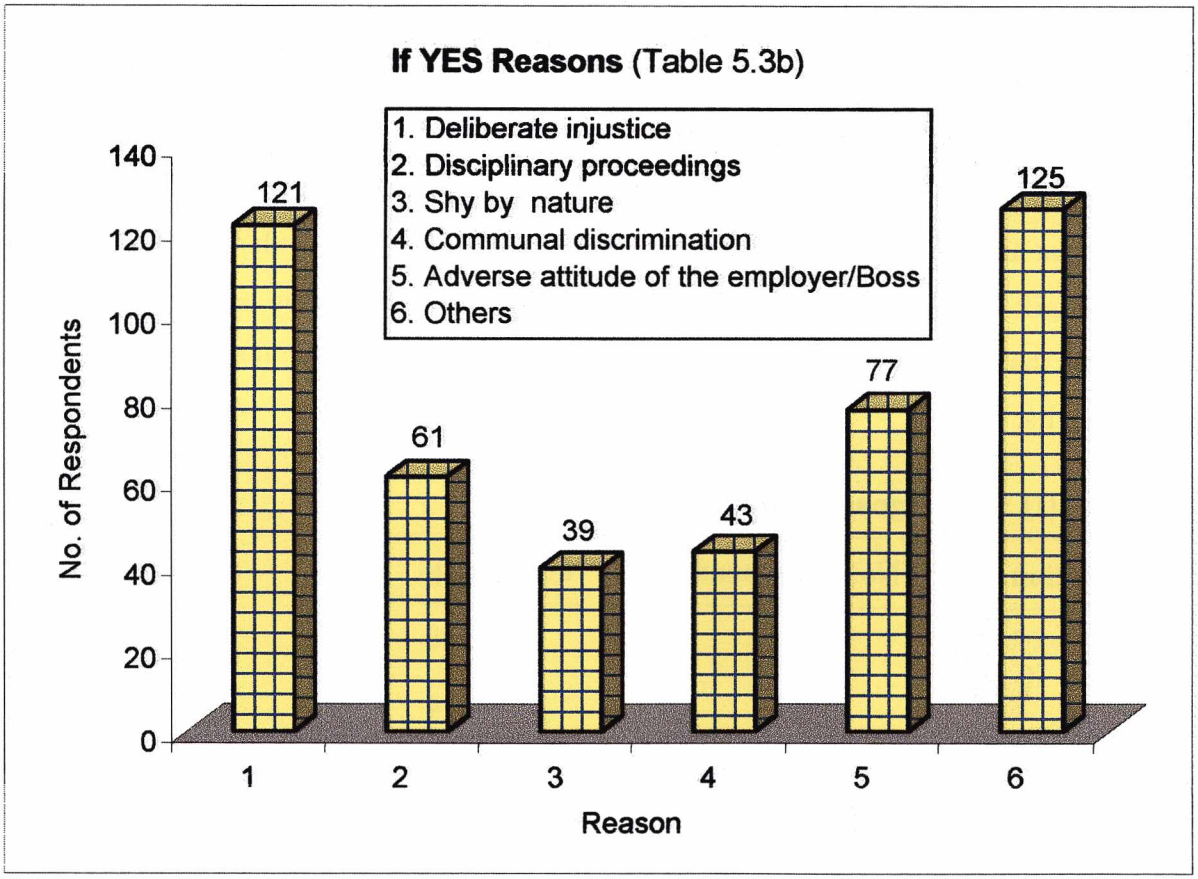


Figure 76

Table 5.3(b) (Q5.3)

Reasons	No. of Respondents	Percentage
Deliberate injustice	121	32.0
Disciplinary proceedings	61	16.1
Shy by nature	39	10.3
Communal discrimination	43	11.4
Adverse attitude of the employer/Boss	77	20.4
Promotion chances are less	22	5.8
Family responsibilities	10	2.6
Lack of opportunities	15	4.0
No political influence	2	0.5
Infrastructure (Lack of better posts)	11	2.9
Personal Policies of the Government	2	0.5
Due to job insecurity	2	0.5
Lack of competitive tendency	1	0.3
The Dept. is fully saturated. No posts were sanctioned.	1	0.3
No recognition for merit-sincerity & No punishment for culprits.	1	0.3
Professional Jealousy	1	0.3
No response	57	15.1

Note: 312 respondents have given one reason for the stagnation in their career, while the number of respondents who have give 2,3,4 and 5 are respectively 51, 9, 5 and 1.

Data regarding the extent of stagnation in career and the reason for stagnation were collected through answers to Q 5.3 and displayed in Table 5.3(a) and 5.3(b). From the above table 5.3(a), about 38% of respondents experienced stagnation in their career. About 32% of the women doctorates suffered stagnation due to delibrate injustice; adverse attitude of employer/boss; resulted in stagnation in the case of 10% of the sample members. About 8% of the women doctorates indicate the reason as 'shy by nature'. Stagnation in career due to disciplinary procedures was the reason for 16% of respondents. Less chance for promotion and lack of opportunities were the reasons citied by about 4% of respondents.

Table 5.4 (Q 5.5) Job demands late night work.

Category	No.of Respondents	Percentage
Yes	454	45.5
No	475	47.4
Some times	6	0.6
No Response	65	6.5
Total	**1000**	**100.0**

The table reveals that it is rather unfortunate that about 45% of women doctorates have to stay late in the night in the research workspot. About 47% of the sample members do not face the problem of staying late at the work place.

Table 5.5(Q5.4) Criteria adopted for promotion to the Top Position in their organisation

Respondents to Q5.4 provided the information regarding the criteria followed in their organisations for promotion to top position are presented in the following table

Category	No. of Respondents	Percentage
Service seniority	462	30.0
Selection by a committee	479	31.0
Special qualification / training	281	19.0
Decision of management	189	13.0
Others	9	1.0
Not applicable	87	6.0

Others

1. Political Influence
2. Competence
3. Sincerity, devotion to duty
4. Open selection beyond Assistant Professor / Reader level
5. Capability and commitment

Note: 655 respondents have mentioned one criteria while 2,3 and 4 criteria are mentioned by 221, 86 and 38 respectively.

It can be seen from the above table that 'Service by seniority' is the criterion adopted for promotion to top position with case of 30% of the respondents while 31% of the sample members mentioned 'selected by committee' as the criteria followed in their organisation for promotion to top positions.

Job demands late night work (Table 5.4)

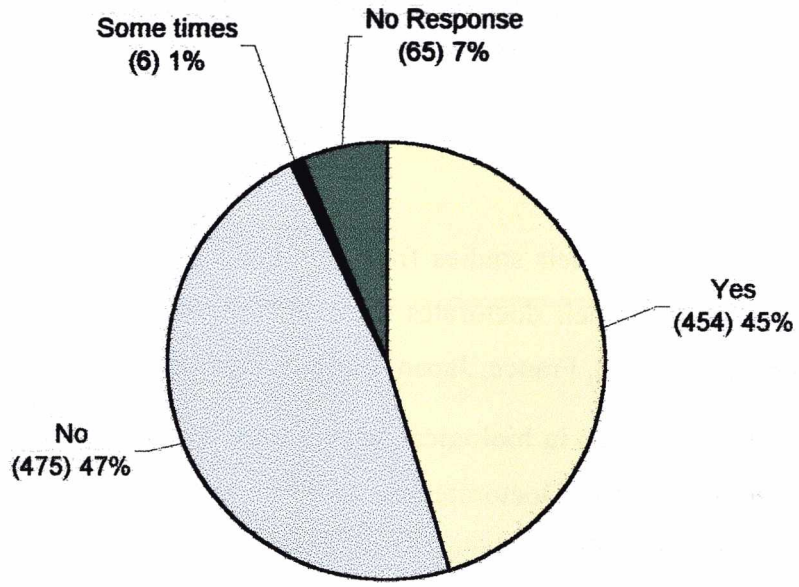


Figure 77

Criteria adopted for Promotion to the Top Position in their Organisation (Table 5.5)

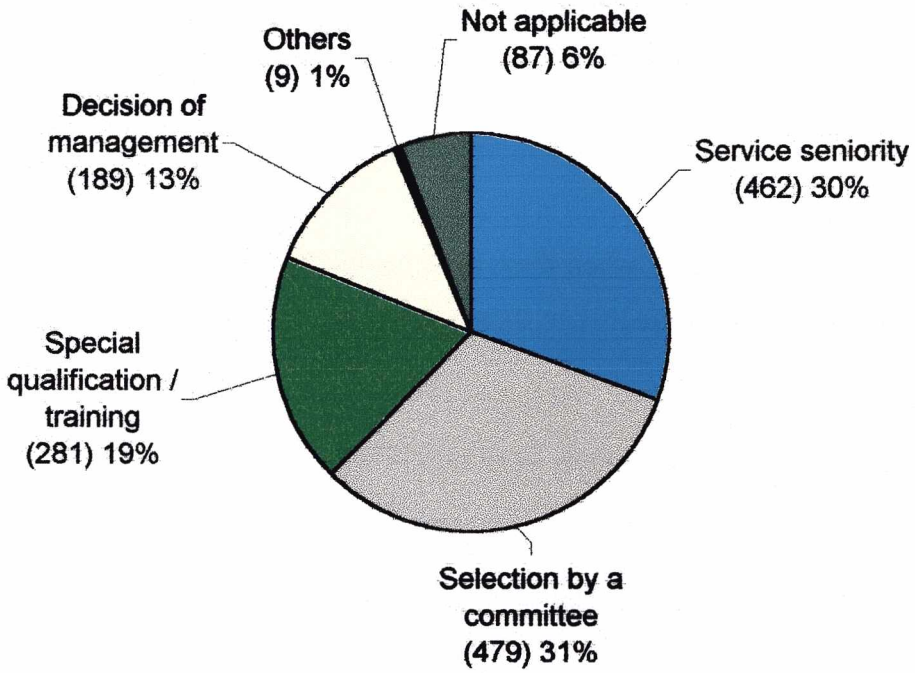


Figure 78

MAJOR FINDINGS OF THE STUDY-1X

1. Subject wise, State wise and Year wise distribution of women scientist:

(41%) of the respondents have done their doctoral studies in Biological sciences. Next come the Agricultural sciences (23%), Chemical sciences (13%), Physical sciences (7.6%), Medical sciences (3.9%), Technological sciences (4.3%) and Earth Sciences (2.1%).

2. About 88% have done their studies from universities in southern states and the remaining 12% have finished their doctorates from outside the southern states including countries like USA, UK, Poland, France, Japan, Finland, Norway Korea etc.

3. The number of doctorates in biological sciences are more in Andhra (139), Tamil Nadu (111) and Karnataka (80). Doctorates are more in Agricultural sciences in Kerala (85). Similarly, Kerala 18 and Tamil Nadu 15 rank better in Technological Sciences.

4. More thesis(101) have been submitted in the year 1996, next(90) in the year 1995 and 1997(88). Less number of theses have been submitted during 1980 – 1987. The number of theses submitted rose in number from 1987 onwards.

5. **Age Distribution of the respondents**:

About 24% of the respondents belong to the age group 40-44 and about 20% are in the age group 35-39 and the remaining 35% are above 45.

6. Marital Status:

About 84% of the respondents are married and 14% are single.

7. Age at Marriage:

About 40% got married when they were below 25, 46% when they were between 26-30 years and 10% got married when they had crossed 30 years.

8. Children :

About 11% of the respondents have no children; 82% have 1-2 children and 7% have 3 to 4 children.

9. Time taken for submission of Thesis :

About 67% have taken 3 to 5 years for completing their doctoral degrees. Among them 44% are full time scholars and the rest belong to part time. About 30% took more

than 5 years to submit their degrees and among them 11% were full time and the rest were part time. 3% took only 3 years to complete their degrees and they were full time scholars.

10. Fellowship recieved by the respondents :

About 34.5% respondents had received UGC fellowships. About 28.6% had enjoyed CSIR fellowships. State Govt. has provided fellowships to 7% of the candidates. Few had received NCERT fellowship; CERA Fellowship, Gate fellowships, Department of Atomic Energy fellowships etc.

In general, 542 respondents have received financial assistance from one source while 69 have received help from more than one source. In total out of 1000 respondents, 611 received some financial assistance from one source or other for doing their doctoral studies.

11. Reasons for taking more than 5 years to complete their Ph.D degrees :

About one fourth had said that their topic of research was tough and that is the reason they took more than 5 years to complete their degree. Interruption due to family responsibilities was mentioned by about 17% of the respondents. Lack of proper guidance by the guides was remarked by 16% of the respondents.

12. Current Employment Status :

About 95.6% of the respondents are employed; 4.2% are remaining unemployed and 0.2% have not responded.

13. Designation of the respondents:

About 66% of the respondents are engaged in teaching posts. About 25.6% are engaged in Research work. Only 1.8% are in the managerial Cadre. About 3.5% are in the Technical Assistant cadre.

14. Gross Monthly Income:

About 61% of the respondents receive between Rs. 10,000 and Rs.20,000 as monthly gross income, 2.4% receive between Rs.20,000 to Rs.30,000 and only 1% receive above Rs.30,000/- per month. Even though about 64% have put in more than 10 years of service and about 61% of them receive below Rs.20.000/- per month.

15. Educational level of Father, Mother, Sisters and Brothers of the respondents

The fathers of 37 respondents are doctorates and the mothers of 8 respondents are doctorates. The parents of about one third of respondents are graduates. Besides the husbands of one third of the respondents are also doctorates. Hence, it is inferred that educated parents are the main source of inspiration to respondents. The mothers of 15% of the respondents are in teaching profession. In general, the professional background of the sisters and brothers are very encouraging. One third of the fathers of the respondents are engaged Administrative/public/Govt. services. At the same time, 7% of the mothers, 14.7% of the sisters and 20.4% of brothers of the respondents are also engaged in Administration/ Public/ Govt. service.

16. **Academic Background**:

About 65% of the respondents had their education in urban schools while only 32.6% had their education in rural schools. About 43% had studied through English medium and the rest had studied through their regional languages like Tamil, Telugu, Kannada & Malayalam. About 50% of the respondents have studied in the Government aided and the municipal and corporation schools and other 50% had studied in private and missionary schools. Regarding the performance of the respondents in the academic side 78% of the respondents have secured above 60% marks in their P.G. Course. About 50% of the respondents remarked that they decided to do their doctoral course even when they were doing their P.G. course. About 70% of the respondents had taken the decision for doing Ph.D even before they got married. The respondents were getting good encouragement to take up their doctoral programme. The main sources of encouragement were parents and their husbands. Very less source encouragement came from in-laws. About 78% of the respondents were getting only encouragement and hardly 13% remarked that they were discouraged from getting into the research work.

17. Membership in Professional Associations:

Among the respondents, only 63% have enrolled themselves as members of the national professional bodies and 16% have become members of International professional societies. About 75% had attended National Conferences and Seminars while 39% had attended National and International Conferences. When asked about the contribution of their personal achievement towards the success of their career, majority remarked that their personal desire and determination had alone led to their success.

18. Professional Status And Current Work

Among the 1000 respondents 41.4% are working as researchers in the academic institutions, 52.2% are employed in research projects as scientists or research officers. About 95% of the respondents are employed in areas related to their research work. While about 3% are employed in jobs unrelated to their research like clerical job, employers, personal work, public relations job etc.

"Desire for getting the highest degree" is the main reason for having decided to do Ph.D. was the response given by 72% of the respondents when they were asked as what prompted them to go for research. Next, reason for opting research degree was "to secure better job opportunities."

19. Preference of Jobs:

The predominant preference of jobs is for Research and Teaching as pointed by majority of the respondents. About 61% of the sample prefer teaching job mainly because it gives them more job satisfaction, higher status in society, more leisure hours to look after their family and more autonomy. About one fourth give their preference for research as they feel more independent in their job. Majority of the sample 58% say that they are able to devote enough time and attention to their families as well. Only about one fourth complain that they are able to give enough attention to their families. About 48% have said that they had aspired to get into research and the desire has been fulfilled for about 31%. About 38% wanted to get into teaching profession and 34% said that their ambition has been fulfilled.

20. Job Satisfaction

About 73% of the respondents say that they have job satisfaction and they are happy in their working place, where as about 15% say that they are not very happy with their current job.

21. Problem at the working place

When the respondents were asked whether they encounter any problems at the working place, about 40% said yes and about 58% said no and about 2% gave no response.

Among the respondents who said that they have problems in the work place, 14% have mentioned problems related to management, 15% have mentioned problems related to

colleagues, about 12% said that they are neglected and their experties is not fully utilised. However 88% favored Flexi-time schedule for work.

22. Policies not supportive to women professionals:

When asked about the policies and rules and regulations which are not supportive to women employees, 41% have mentioned that the rigid time schedule of employees are not supportive to women professionals. The respondents ask for childcare facilities, housing facilities, transport facilities etc.

23. Facilities required by the respondents in the working place:

Categorising the facilities as intellectual , majority ask for computer facilities, library, telephone, etc. Regarding physical facilities, the respondents expect the employers to provide flexi-time schedule, transport, creche, housing children's school etc. As far as facilities for job enrichments, they want their expertise to be recognised, involvement in decision making inservice training, timely promotions etc.

However 94% of the respondents say that inspite of some minor problems and inconveniences, they feel happy that they have secured their doctorate degrees. Majority of the married women want to advise young women to take up Ph.D. of after securing a job whereas majority of single women prefer taking up Ph.D. before securing a job. About 92% of the respondents have said that their doctoral degree has boosted their 'image' and their degrees have secured them better job and enhanced their image in the society. About 8% has given a distressing note that their Ph.D. has not helped them in any way.

25. Breaks in the career

About 17% of the respondents had breaks in between, before they complete their doctoral degrees, due to childbirth; transfer for husbands; etc.

26. Career Goals and Values

About 83% of the women feel satisfied that by getting their doctorates they have achieved their goals and have fulfilled their ambitions. They also remark that they have obtained a sense of accomplishments.

27. Views and opinions

About 505 of the Sample don't agree with the statement that a " a career for a married women should be secondary to her responsibilities as a wife and a mother."

Majority (72%) agree that "when mother works full-time young children suffer" about 80% disagree with the statement that a career oriented woman should not have children. Majority (84%) agree that for women to be successful in their career, the support of the husband and the family is essential. Only very few persons (27%) say that working women often have to face improper behavior of the male colleagues. About 50% of the women professionals agree that "women passively accepts denial of legitimate claims in profession."

28. Reason for low participation of women in S & T education and profession

Many parents feel that by educating the girls up to doctorate degrees would narrow down their opportunities for marriage. Majority feel that in the Indian Society women's involvement in Technical field is not yet welcomed. The girls roles are essentially framed and set by the family members and this poses as a constraint for her to get into S & T. Women are unable to devote more attention to the family responsibilities if they get themselves involved more in S & T research. This was expressed by about 60% of the scientists. Many agree with the statement that "Man are not sharing domestic work" and "Men are jealous of women's progress".

29. Career Problems

22% of the respondents feel that there is gender discrimination in the working place. 76% say that there is no discrimination shown in promotion or in salary or in fringe benefits.

When asked for reasons for women professionals not holding top positions majority mention that lack of competitive spirit, lack of self-confidence and lack of power motive among women are the reasons. 4.4% of respondents mentioned that lack of encouragement, lack of moral support and recognition also discouraged women from aiming up to top positions.

Thus, reasons for women scientists not reaching top positions are catetgorised as person related and task related.

Responsibilities

Women are not generally exposed to responsibilities related to management or administration Male chauvinism prevents women from attaining top position. These comments were given by about 60% of the scientists.

30. Stagnation in the career

About 38% had suffered stagnation in their career.

Deliberate injustice, adverse attitude of the employers were reported to be reasons for the stagnation in the career of about 32% of the Scientists.

31. Criteria adopted for Promotion Where the Scientists are employed

About 47% of the scientists in their lab had to stay in their work spot beyond 5 P.M. and atleast up to 8 P.M. for their project work.

About 80% of the scientists have mentioned that seniority, qualification, devotion to duty are adjudged as pre requisite qualifications for promotions in their concerned organisations.

RECOMMENDATIONS OF THE STUDY

1. Steps could be taken by the Universities to encourage women candidates to choose science subjects in their School and College education as done in western Universities.
2. The Organisations which employ women should have Creche, Transport facilities and should as far as possible relieve women from work at 5 p.m.
3. Mothers with children below 3 years could be permitted to follow flexible time schedule.
4. Eligible and competent women candidates should be involved in the decision making bodies of the organisations.
5. Preference should be given for senior and qualified women officers to occupy important positions in the Management. The Reservation policy of 33% has to be implemented in both Governmental and Non-governmental organisations.
6. The Administrative committee of every organisation should maintain 33% of Reservation of women.
7. In assigning international travel fellowships,women ought to be given preference
8. Leadership training, Inservice Management training, Administrative/Executive training programme should be organised frequently for women executives.
9. Educated mothers happen to send their daughters for higher education. Hence women have to be encouraged by parents, teachers and employers to prosper in their career.
10. A review of women's position in various sectors of employment has to be undertaken and the policy making bodies of the Government has to assess the progress and take necessary steps to redress the situation.

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CAREER PROFILE OF WOMEN Ph.Ds DEGREE HOLDERS IN SCIENCE AND TECHNOLOGY IN SOUTHERN STATES

(THE QUESTIONNAIRE)

SPONSORED BY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF INDIA
NEW DELHI

UNIVERSITY STUDENTS ADVISORY BUREAU
UNIVERSITY OF MADRAS
CHEPAUK, CHENNAI 600 005,
TAMIL NADU, INDIA.

FIELDS OF SCIENCE & TECHNOLOGY (Refer Question No.1.5)

1 MATHEMATICS

101 Algebra
102 Analysis and Functional Analysis
103 Computer Science
104 Geometry
105 Number Theory
106 Numerical Analysis
107 Operations Research
108 Probability
109 Statistics
110 Topology
111 Applied Mathematics

2 PHYSICAL SCIENCES

200 Astronomy and Astrophysics
201 Cosmology and Cosmogony
202 Interplanetary medium
203 Optical astronomy
204 Planetology
205 Radio-Astronomy
206 Solar System
300 Physics
301 Acoustics
302 Electro-megenetism
303 Fluids (physics of)
304 Mechanics
305 Molecular Physics
306 Nuclear Physics
307 Nucleonics
308 Optics
309 Solid State Phsics
310 Theoretical Physics
311 Thermodynamics
312 Units and Constants

3 CHEMICAL SCIENCES

401 Analtical Chemistry
402 Biochemistry
403 Inorganic Chemistry
404 Macromolecular chemistry
405 Nuclear Chemistry
406 Organic Chemistry
407 Physical Chemistry

4 BIOLOGICAL SCIENCES

501 Animal Biology(Zoology)
502 Anthropology(Physical)
503 Biochemistry
504 Biomathematics
505 Biometrics
506 Biophysics
507 Cell Biology
508 Ethology
509 Genetics
510 Human Biology
511 Human Physiology
512 Immunology
513 Insect Biology(Entomology)
514 Microbiology
515 Molecular Biology
516 Palaeontolgy
517 Plant Biology(Botany)
518 Radiobiology
519 Symbiosis
520 Virology

5 EARTH AND SPACE SCIENCES

601 Atmospheric Sciences
602 Climatology
603 Geochemistry
604 Godesy
605 Geography
606 Geology
607 Geophysics
608 Hydrology
609 Meteorology
610 Oceanography
611 Soil Science
612 Space Science

6 AGRICULTURAL SCIENCES

701 Agricultural Chemistry
702 Agricutural Engineering
703 Agronomy
704 Animal Husbandry
705 Fish and wildlife
706 Forestry
707 Horticulture
708 Phytopathology
709 Veterinary Sciences

7 MEDICAL SCIENCES

801 Clinical Sciences
802 Epidemiology
803 Forensic medicine
804 Internal medicine
805 Nutrition Science
806 Pathology
807 Pharmacodynamics
808 Pharmacology
809 Preventive Medicine
810 Psychiarty
811 Public Health
812 Surgery
813 Toxicology

8 TECHNOLOGICAL SCIENCES

901 Aeronautical Technology and engineering
902 Biochemical Technology
903 Chemical Technology and Engineering
904 Computer Technology
905 Construction Technology
906 Electrical Technology and Engineering
907 Electronic Technology
908 Environmental Technology and Engineering
909 Food Technology
910 Industrial Technology
911 Instrumentation Technology
912 Materials Technology
913 Mechnical Engineering and Technology
914 Medical Technology
915 Metallurgical Technology
916 Metal Products Technology
917 Motor Vehicle Technology
918 Mining Technology
919 Naval Tecnology
920 Nuclear Technology
921 Petroleum and Coal Technology
922 Power Technolgy
923 Railway Technlogy
924 Space Technology
925 Telecommunications Technology
926 Textile Technology
927 Transportation Systems Technolgy
928 Unit Operations Technology
929 Urban Planning

DST Project on Women Ph.D. in
Science & Technology

Dr.(Mrs.) SUSILA MARIAPPAN

University Students Advisory Bureau

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Chepauk, Chennai 600 005.India
Phone : 568776 Ext.218

Dear Madam,

SUB : **"CAREER PROFILE OF WOMEN Ph.D. DEGREE HOLDERS IN SCIENCE AND TECHNOLOGY IN SOUTHERN STATES"**

Education and Career are not only the rights of women but critical constituents in the process of improving the quality of life of women themselves. It has been well recongnised that it is an integral part of the economic and social development of a country. It has been identified that the active participation of women in all spheres of activities enables the economic and rural development of a Nation.

The Post Independence period witnessed increasing role of women in Indian economy. However their participation in Higher Education including Science and Technology and Management is low.

The statistics of India reveal that the percentage of women in the total number of Ph.D. degree holders is about 30%. The share in the employment market is not comparable with that of men. Their rights in the society, and share in the whole range of activities are found to be inequitable. The University Students Advisory Bureau reviewed the current scenario and ventured to undertake a detailed investigation entitled "Career Profile of Women Ph.D. Degree Holders In Science and Technology In Southern States".

The broad objectives of the study are to quantify participation of Women in Higher Education and Research in Science and Technology as well as to study their contribution to the development of Science and Technology. Analysis of factors influencing the career of Women Scientists and Technologists forms an important part of the study. This study is motivated by the concern about the possible difficulties faced by

women as Scientists and Technologists. It is hoped that the present survey will enable us to understand the career prospects and constraints of women Scientists and Technologists and to help us in proposing an approach towards betterment of the situation.

The enclosed questionnaire has been formulated with the above objectives in view. This questionnaire have six Sections: Personal Background, Academic Career, Personal Achievements, Job Status and Current work, Career Expectations and Values, Career Problems and General. This questionnaire is the instrument through which we endeavour to collect specific data about the stated six aspects. Answering this questionnaire should not take more than 45 minutes of your precious time. Frank and careful response to each of the questions is extremely important and crucial for achieving the objectives of the study. We are therefore approaching you to kindly spare sometime and help us to arrive at useful conclusions. It is important to emphasize that ***your reply will be kept confidential***. Information supplied by you shall be used only for the purpose of the study. Complete anonymity of the individual respondent would be maintained in the final report.

Please fill in the questionnaire and return to us at the earliest convenience.

I earnestly solicit your active co-operation in this endeavour.

With best wishes and regards,

Yours sincerely,

Susila Mariappan

(Dr. (Mrs.) SUSILA MARIAPPAN)
Principal Investigator.

CAREER PROFILE OF WOMEN Ph.Ds DEGREE HOLDER IN SCIENCE AND TECHNOLOGY IN SOUTHERN STATES

1 PERSONAL BACKGROUND

1.1 Full Name (in block letters)

First Name _____ Second Name _____ Last Name _____

1.2 Address for Correspondence

a. Present

Pincode: [ ][ ][ ][ ][ ][ ] Phone: _____

b. Permanent

Pincode: [ ][ ][ ][ ][ ][ ] Phone : _____

1.3 Age (in years) : [ ][ ]

1.4 Marital Status (Please circle the appropriate code)

1 = Single
2 = Married
3 = Any other, specify_____

If your answer is 2 & 3 please indicate the following.

1. Age at your Marriage [ ][ ]

2. Number of Children [ ][ ]

1.5 Discipline in which Ph.D. degree was obtained (Please circle the appropriate Discipline)

1 = Mathematics
2 = Astronomy & Astrophysics
3 = Physics
4 = Chemistry
5 = Life Sciences
6 = Earth and Space Sciences
7 = Agricultural Sciences
8 = Medical Sciences
9 = Technology Sciences
10 = Any other, specify_____

1.6 University / Academic Institution awarded the Ph.D. degree:

_____

1.7 Year of Ph.D. registration | 1 | 9 | | |

1.8 Year of submission of Ph.D. Thesis | 1 | 9 | | |

1.9 Year of Ph.D. awarded | 1 | 9 | | |

1.10 Give details of the period of your Ph.D. work.

	Years	Months
1 = As a full-time Scholar		
2 = As a Part-time Scholar		

3 = Any other, specify_____

4 = Both (full-time and Part-time)

1.11 Details of the fellowship? (Please circle the appropriate code)

1 = Stipendary
2 = Non stipendary

If your response is 1 nature of the fellowship is

1 = National level Educational Test/U. G. C. (J.R.F./ S.R.F.)
2 = Council of Scientific Industiral Research
3 = Quality Improvement Programme.
4 = State Government
5 = Private Educational Trust
6 = Any other, specify_____

1.12 If the duration for completion of Ph.D. is more than 5 years, state the reason(s)(please circle the appropriate code(s)).

1 = Topic was complex
2 = Guidance was lacking
3 = Marriage/ child birth
4 = Interruption due to family responsibilities
5 = Frequent interruption due to personal and official tasks assigned by Department/Guide
6 = Sexual harassment
7 = Any other (e.g. Part-time Scholar etc.), specify_____

1.13 Are you currently employed? (Please circle the appropriate code)

1 = Yes
2 = No

If **Yes**, please fill in the following

1. Your Designation : _____

Name and Address of the Institution/ Organisation. : _____

Pincode: | | | | | | | Phone: _____

2. How long have you been working? (Please circle the appropriate code)

1 = Below 5 years
2 = 5 to 10 years
3 = 10 to 20 years
4 = 20 to 30 years
5 = Above 30 years

3. Gross Monthly income (Please circle the appropriate code)

1 = Below Rs.10,000
2 = Rs.10,000- Rs.20,000
3 = Rs.20,000- Rs.30,000
4 = Above Rs.30,000.

1.14 Educational level of your FATHER, MOTHER ,BROTHERS AND SISTERS (Please circle the appropriate code)

	Mother	Father	Sisters (1)	Sisters (2)	Brothers (1)	Brothers (2)
1 = Ph.D.	1	1	1	1	1	1
2 = Post Graduate	2	2	2	2	2	2
3 = Graduate	3	3	3	3	3	3
4 = School education	4	4	4	4	4	4
5 = No formal education	5	5	5	5	5	5

1.15 If married, please give the educational level of your husband and in-laws (Please circle the appropriate code)

	Husband	Mother-in-Law	Father-in-Law
1 = Ph.D.	1	1	1
2 = Post Graduate	2	2	2
3 = Graduate	3	3	3
4 = School education	4	4	4
5 = No formal education	5	5	5

1.16 Please check the profession and occupation of the following relatives, enter the code from the lists given below (Please circle the appropriate code)

	I Profession	II Occupation
Husband	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
Father	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
Mother	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
Sisters	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9
Brothers	1 2 3 4 5 6 7 8 9	1 2 3 4 5 6 7 8 9

Code for profession / occupation

I Profession	II Occupation
1 = Agriculture	1 = Administrative/Public/Government service
2 = Medical	2 = Private service/N.G.O.
3 = Engineering	3 = Business
4 = Law Practice	4 = Consultancy service
5 = Teaching	5 = Housewife
6 = Social Sciences	6 = Research and Education (Govt./Autonomous)
7 = Science	7 = Banks/Insurance/Finance (Govt./Autonomous)
8 = Management	8 = International organisaiton
9 = Any other, specify_____	9 = Any other, specify_____

1.17 At the time of joining Ph.D. and during the tenure of research (Mention the the source of financial support) (Please circle the appropriate code)

1 = Fellowship / Scholarship
2 = Self-earning
3 = Parents
4 = Husband
5 = Any other,specify_____

1.18 Gross monthly income of the parents / husband during your joining of Ph.D. (Please circle the appropriate code)

	A	B
1 = Below Rs.10,000	1	1
2 = Rs.10,000 - 30,000	2	2
3 = Above Rs.30,000	3	3

A- If living with parent, total income of the respondent, father, mother, brothers & sisters

B- If living with husband & children, total income of the respondent, husband & children

2. ACADEMIC CAREER

2.1 Category of place where you did most of your schooling (Please circle the appropriate code)

1 = Rural
2 = Urban

2.2 Medium of Instruction in which you did most of your schooling? (Please circle the appropriate code)

1 = Tamil
2 = English
3 = Telugu
4 = Malayalam
5 = Kanada
6 = Hindi
7 = Any other, specify _____

2.3 Type of school (Please circle the appropriate code)

1 = Municipal/Corporation/Public School
2 = Missionary
3 = Government aided
4 = Central School
5 = Private school
6 = Any other, specify_____

2.4 When did you first plan on doing Ph.D. Career? (Please circle the appropriate code)

1 = At the Undergraduate level
2 = At the Postgraduate level
3 = At the Post Post-Graduate level (eg. M.Phil., etc)
4 = Any other, specify(eg. During job)_____

2.5 Have you planned for your Ph.D. before marriage?

1 = Yes
2 = No

2.6 Who among the following people encouraged you for taking up Ph.D. ?
(Please circle the appropriate code(s))

1 = Parent
2 = Teachers
3 = Siblings
4 = In-laws
5 = Peer Group
6 = Husband
7 = Employer
8 = Self

2.7 Who among the following people discouraged you for taking up Ph.D. ? (Please circle the appropriate code(s))

1 = Parent
2 = Teachers
3 = Siblings
4 = In-laws
5 = Peer Group
6 = Husband
7 = Employer
8 = None

2.8 During your Ph.D. work were you a (Please circle the appropriate code)

1 = Day scholar?
2 = Resident Scholar?

2.9 Please list your educational records, beginning with Post Graduate Degree.

Degree	Year	Discipline	University / Institution	State	Class / Percentage

2.10 Indicate the number of Professional societies / Association in which you are a member / office bearer. (Please circle the appropriate code)

National 0 1 2 3 4 5 6 or More

International 0 1 2 3 4 5 6 or More

Mention the THREE important Societies / Associations. (If necessary attach sheets)

_____

_____

_____

2.11 During the past **FIVE** years mention the number of Conferences / Workshops / Seminars / Symposia you have taken part. (Please circle the appropriate code)

National	0	1	2	3	4	5	6 or	More
International	0	1	2	3	4	5	6 or	More

Mention the THREE important Conferences/Workshops etc. (If necessary attach a sheet)

_____

_____

_____

3. PERSONAL ACHIEVEMENTS, JOB STATUS AND CURRENT WORK

3.1 Rate the contribution of the following in the achievement of your academic goals. (Please circle the appropriate codes)

	High	Medium	Low
1 = Personal drive and determination for achievement	1	2	3
2 = Self confidence	1	2	3
3 = Intellectual abilities	1	2	3
4 = Motivation from families		1	2
3			
5 = Motivation from Institution	1	2	3
6 = Motivation from friends	1	2	3

3.2 Which of the following predominantly fits your current professional status? (Please circle the most appropriate code).

1 = Research scientist
2 = Executive/Manager
3 = Industrialist/Entrepreneur
4 = Academic research
5 = Consultant (Self-employed)
6 = Consultant (employee)
7 = Teacher
8 = Any other, specify_____

3.3 Is the job you currently hold related to your area/course/discipline? (Please circle the appropriate code)

1 = Yes
2 = No

If **No**, what type of job, are you currently engaged in?

1 = Employees personal work
2 = Routine clerical work/ official work
3 = Public relation work
4 = Sales and marketing

5 = Any other, specify _____

3.4 Why did you choose/opt for doing Ph.D.?, (Please circle the appropriate code(s), Rank if more than one).

		Rank
1	= Desire for getting the highest degree	____
2	= No specific reason but accidental	____
3	= Parents' wish	____
4	= Husband's/In-Laws wish	____
5	= For better job opportunities	____
6	= For getting promotion	____
7	= Teachers' encouragement	____
8	= Inspired by friend	____
9	= Stopgap arrangement between getting job & marriage	____
10	= Getting fellowship	____
11	= Any other, specify_____	____

3.5 State your preference of job (Please circle the appropriate code(s), Rank if more than one)

		Rank
1	= Research lab	____
2	= Teaching institute	____
3	= Corporate sector in private	____
4	= Corporate sector in Govt. / Public	____
5	= Entrepreneurship	____
6	= Any other, Specify _____	____

3.6 State the reasons for the preference of job you have indicated in Q 3.5 (Please circle the appropriate code(s), Rank if more than one)

		Rank
1	= Suitability for women	____
2	= Light work	____
3	= More autonomous	____
4	= Increased emoluments	____
5	= Special privileges	____
6	= Higher status in the society	____
7	= More leisure to look after home & children	____
8	= Any other, specify_____	____

3.7 Are you satisfied that enough time is devoted to your family? (Please circle the appropriate code)

1 = Yes
2 = No
3 = No opinion

3.8 Particulars of the jobs that you have held (Excluding the present job) (start with the first job) (Please circle the appropriate code)

Sr. No.	*1 Type of employer	*2 Full-Time or Part-Time	*3 Change in Salary	Period of service (Years)	*4 Reasons for leaving
1	1 2 3 4 5 6 7	1 2			1 2 3 4 5 6 7 8
2	1 2 3 4 5 6 7	1 2	1 2 3		1 2 3 4 5 6 7 8
3	1 2 3 4 5 6 7	1 2	1 2 3		1 2 3 4 5 6 7 8
4	1 2 3 4 5 6 7	1 2	1 2 3		1 2 3 4 5 6 7 8
5	1 2 3 4 5 6 7	1 2	1 2 3		1 2 3 4 5 6 7 8

* - Under "Type of Employer", "Full-Time or Part-Time", "Change in salary", and "Reasons for leaving" Circle the appropriate code(s).

1. Code for "Type of employer"

   1 = Government service
   2 = Private industry (large scale)
   3 = Government R&D organisation
   4 = Private industry (small scale)
   5 = Public sector organisation
   6 = Educational Institution
   7 = Any other, specify_____

2. Code for "Full-Time or Part-Time"

   1 = Full-Time
   2 = Part-Time

3. Code for "Change in Salary"

   1 = Increased
   2 = Decreased
   3 = No change

4. Code for "Reasons for leaving"

   1 = Better professional prospects
   2 = Children's education
   3 = Transfer not acceptable
   4 = Other family reasons
   5 = Transfer of husband / father
   6 = Not satisfied with type of job
   7 = Harassment of Superior or Boss
   8 = Any other, specify_____

3.9 a) Which were the following aspirations you had? (Please circle the appropriate code(s)).

1 = Going abroad
2 = Career development
3 = Research scientist
4 = Executive/Manager
5 = Industrialist / Entrepreneur
6 = Academic research
7 = Consultant (Self-employed)
8 = Consultant (employee)
9 = Teacher
10 = Any other, specify_____

b) Were your aspirations fulfilled?

1 = Yes	1	2	3	4	5	6	7	8	9	10
2 = No	1	2	3	4	5	6	7	8	9	10

3.10 Are you satisfied with your current job? (Please circle the appropriate code)

1 = Yes
2 = No
3 = No opinion

3.11 Have you encountered any problems at workplace? (Please circle the appropriate code)

1 = Yes
2 = No

If **Yes**, Which of the following create problems? (Please circle the appropriate code(s))

1 = Management/ Authorities/ Head of Department
2 = Colleagues
3 = Subordinates
4 = Rules and Regulations
5 = Work content related
6 = Your expertise is not fully utilized
7 = Any other, specify _____

3.12 Is flexible time schedule of work suitable for a professional / scientist like you?

1 = Yes
2 = No

If **No**, what are your suggestions?

_____

_____

3.13 Are you hampered (conditioned) by any of the following factors in the progress of your career? (Please circle the appropriate code)

	Freedom to move to places	Lack of opportunities	Employer's nonpreference for women
1 = Yes	1	1	1
2 = No	2	2	2

3.14 In your opinion, what policies of the employer are not supportive to you as women scientist / professional? (Please circle the appropriate code number(s))

1 = Rigid time schedule
2 = Non availability of child care center/creche
3 = Non availability of medical facilities
4 = Non availability of Accommodation
5 = Non availability of Wash room/ Toilets
6 = Non availability of Women association
7 = Any others, specify_____

3.15 Do you think it right to claim special privileges as a woman professional?

1 = Yes
2 = No
3 = No opinion or don't know

3.16 What employment policies will you advocate for utilizing women power efficiency? (Please circle the appropriate code number(s))

a. Intellectual facilities

1 = Library Books, Journals, etc.
2 = Computer facilities
3 = Telephone and other communication facilities
4 = Freedom to publish articles, monographs, etc.
5 = Any other, specify _____

b. Physical facilities

1 = Flexible work hours
2 = Transport to workplace
3 = Transport while working beyond office hours
4 = Creche
5 = Rest room facilities
6 = Health facilities
7 = Accommodation
8 = Children's School
9 = Favourable infrastructural facilities
10 = Indoor games
11 = Any other, specify_____

c. Job enrichments

1 = Involvement in decision making
2 = Timely promotions
3 = Permission for attending conferences/ seminars/ workshops, etc.
4 = Incentives
5 = Inservice training
6 = Recognition of merit
7 = Any other, specify _____

3.17 What are the advantages enjoyed by you due to your Ph.D. degree? (Please circle the appropriate code number(s))

1 = Secured a better job
2 = Obtained a promotion
3 = Got a chance to visit abroad
4 = Got increment(s)
5 = Boosted morale
6 = Increased my prestige in the society
7 = Fulfilled my Interest / ambition
8 = Not helped me in any way
9 = Any other, specify_____

3.18 Did you have breaks in your career? (Please circle the relevant code number), (Any kind of leave is not considered as a break)

1 = Yes
2 = No

If **Yes**, give the reasons for the break (from the code given below)

1 = Necessity to stay with the family
2 = Transfer of husband/parent
3 = Marriage
4 = Personal ill-health
5 = Inability to cope with family and job
6 = Family way
7 = Inappropriate behaviour of male colleagues
8 = Loss of job
9 = Professional environment
10 = Decision of Parent / Husband
11 = Lack of hostel facilities and insecurity
12 = Any other, specify_____

3.19 Give the reasons for **returning to work after break**
(Please circle the appropriate code number(s))

1 = Wanted to get back to professional work
2 = Wanted to be with other working professionals
3 = Bored with just being a housewife/being at home
4 = Financial need of family
5 = Wanted to feel independent and have own identity
6 = Job offer was very attractive
7 = Children became old enough
8 = Got separated/divorced / widowed
9 = Any other, specify_____

3.20 If not returned to work after a break or currently unemployed give the reasons.
(Please circle the appropriate code number(s))

1 = Suitable jobs in the field not available
2 = Difficulty in finding a job in the city/town of residence
3 = No satisfactory help at home for the care of children
4 = Lack of household help
5 = Satisfactory creche facility not available
6 = Lack of confidence to get back to work
7 = Out-of-date professional skills
8 = Age discrimination
9 = Unfavourable family attitude towards resumption of career
10 = Any other, specify_____

4. CAREER EXPECTATIONS AND VALUES

4.1 The goals in one's professional career are listed below. Have these goals been realised by you in your career? (Please circle the appropriate code number(s))

	Yes	No
1. Maintaining one's own socioeconomic independence	1	2
2. Opportunity for personal growth and development	1	2
3. Having a feeling of being in one's own group	1	2
4. Opportunity for independent thought and action	1	2
5. A sense of self identity rather than that of husband/family	1	2
6. A sense of accomplishment	1	2
7. Opportunity to help the country	1	2
8. Opportunity to contribute to discipline	1	2
9. Opportunity for intellectual stimulation	1	2
10. Opportunity for improving economic status	1	2
11. Involvement in challenging and creative activities	1	2
12. Any other, specify_____	1	2

4.2 Do you agree or disagree with the following statements? (Please indicate by circling all relevant code number(s))

	Agree	Disagree	No opinion
1. A career for a married woman should be secondary to her responsibilities as a wife and a mother	1	2	3
2. To get equal professional recognition, women have to do better than men	1	2	3
3. When mothers work full time young children suffer	1	2	3
4. A career oriented woman should not have children	1	2	3
5. A career woman can't manage both home & work demands without sacrificing either	1	2	3
6. Working women often have to face improper behaviour of their male colleagues	1	2	3
7. Even women doctorates end up in doing small roles	1	2	3
8. Compared to men, it is difficult for women to gain acceptance to a professional group	1	2	3
9. The husband's career should come first, if there is a conflict between the husband's and wife's career	1	2	3
10. Unless the family/husband extends full support, woman can't have a successful career profession	1	2	3
11. Men can raise small children just as well as women can	1	2	3
12. I don't feel uncomfortable if my husband attends to house keeping	1	2	3
13. The women's movement has been a major force in making women opt for professional careers	1	2	3
14. Women should assume leadership roles in profession as often as men	1	2	3
15. Since child rearing is demanding, the present work structure should be modified to prevent any breaks in the career of women	1	2	3
16. Despite equal qualification and competence women are not given due recognition	1	2	3
17. Women passively accepts denial of legitimate claims in profession	1	2	3

4.3 Do you think that the following are the reasons for low participation of women in the Science & Technology education and profession? (Please circle the appropriate code(s))

EDUCATION	Yes	No
1 = Most parents discourage their daughters from taking up Ph. D.	1	2
2 = Qualifying for Ph.D. restricts women's chances of marriage	1	2
3 = Women are afraid that they would be overqualified and job opportunities will be narrowed down	1	2
4 = Doctorate research requires skills and characteristics that women do not possess	1	2
5 = Most teachers tend to think that girl's lives are essentially defined by family roles	1	2
6 = Non-acceptability of women Scientist & Technologist in Indian-society	1	2
7 = Any other, specify_____	1	2

PROFESSION	Yes	No
1 = A job in research field is too demanding for women to combine with family responsibilities	1	2
2 = Women today want to work only occasionally and on part-time basis	1	2
3 = Men in this field resent women colleagues	1	2
4 = This society will never accept women doctorates	1	2
5 = Difficulty in getting a suitable job by women Ph. Ds	1	2
6 = Any other, specify_____	1	2

4.4 Have you been denied of opportunities for being a woman scientist / professional?

1 = Yes
2 = No

5. CAREER PROBLEMS

5.1 Do you find gender discrimination on the following? (Please indicate by circling all relevant code number(s))

	Yes	No
1. In promotions	1	2
2. Salary and fringe benefits	1	2
3. Participation in important work-related decisions	1	2
4. Access to professional job opportunities	1	2
5. Travel assignments	1	2
6. Inclusion in informal work-related social activities (e. g. lunch groups)	1	2
7. Acceptance of your decisions and judgments	1	2
8. Interesting assignments	1	2
9. Formal recognition of actual duties and accomplishments	1	2
10. Access to important communication channels	1	2
11. Opportunity to move into higher position	1	2

5.2 Which of the following do you think are the reasons for women not holding the top positions in many institutions/organisations? (Please circle appropriate code(s), Rank if more than one).

Person Related	Rank
1 = Lack of self confidence	____
2 = Lack of power motive	____
3 = Lack of competitive tendencies	____
4 = Inability to take decision	____
5 = Any other specify_____	____

Task Related

1 = Male chauvinism	____
2 = Gender discrimination	____
3 = Influence of political parties	____
4 = Politics in the institutions	____
5 = Lack of exposure to management administrative strategies	____
6 = Non-involvement in decision making processes	____
7 = Any other, specify _____	____

5.3 Do you feel that there is a stagnation in your career?

1 = Yes
2 = No

If **Yes** mention the reasons (Please circle appropriate code(s))

1 = Deliberate injustice
2 = Disciplinary proceedings
3 = Shy by nature
4 = Communal discrimination
5 = Adverse attitude of the employer/Boss
6 = Any other, specify_____

5.4 What are the criteria for promotion to the top position?

1 = Service seniority
2 = Selection by a committee
3 = Special qualification / training
4 = Decision of management
5 = Any other, specify_____

5.5 Have you to stay late in the night / holidays in your research workspot?

1 = Yes
2 = No

6. GENERAL

6.1 Do you feel happy for having done your Ph.D.? (Please circle the appropriate code)

1 = Yes
2 = No

If **No**, specify the reasons:_____

_____

6.2 As a woman Ph.D. would you advise other young women to do Ph.D.? (Please circle the appropriate code(s))

1 = Yes
2 = No

		Yes	No
a.	Do you encourage them to continue their Ph.D. at a stretch?	1	2
b.	Do you encourage them to do Ph.D. after securing a job?	1	2
c.	Do you encourage them to do Ph.D. after marriage?	1	2
d.	Do you encourage them to do Ph.D. as full-time?	1	2
e.	Do you encourage them to do Ph.D. as part-time?	1	2

6.3 List **THREE** most significant achivements in your career like Publications, Books written, Patents registered, Technology devoloped, Awards received, etc.

_____

_____

_____

_____

6.4 Do you wish to work for the upliftment of women Science and Technology, give **THREE** important suggestions.

_____

_____

_____

6.5 Please give the name and current addresses of women Ph.D. in Science and Technology known to you who are unemployed or employed.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

3. _____

_____

_____

_____

4. _____

_____

_____

_____

(Please add more pages if necessary)

6.6 Please feel free to make any comments or suggestions pertaining to this study and also the questionnaire.

******

APPENDIX - II

Q 6.6 Comments and Suggestions offered by the respondents pertaining to this study

Indications of the Code Numbers.

Example: 1 . 4 . 108 . 87 / 2

1	– Andhra Pradesh	- First Number indicates State Code
4	– Chemical Science	- Second number indicates Discipline Code.
108	– Osmania University	- Third number indicates Name of the University.
87	– 1987	- Fourth number indicates Year in which Ph.D. was Awarded.
2	– 2	- Fifth number indicates Serial no. of the respondent.

Details of the code numbers for States, Subject disciplines, Universities and the year in which Ph.D. was awarded are furnished in the pages 174,175 and 176.

RES. NO.: 2 1.4.108.87/2

Based on this questionnaire steps should be taken to encourage women Ph.D's and also proper placements should be given to them without exploitation.

RES. NO.: 12 1.4.203.89/12

It would be nice if the results that are obtained by this study are made public through TV, Radio, Women's Magazine etc. So that, other people know about it.

RES. NO.: 22 1.6.101.95/22

I studied mostly in Women's College and worked in Women's Colleges. I found women being more concerned about Gossip, dresses, purchases rather than academic work. I found women more partial and Gossipping. Unless we change, we can not blame the other gender.

RES. NO.: 26 1.2.108.83/26

1) Most of the women Ph.Ds generally work for it out of their own interest with high ambitions upto the age of marriage. Generally marriage puts an end to further improvement. The reasons are like child bearing, rearing the children, taking care of the in-laws etc. etc. 2) Mot of the women Ph.D's remain as spinsters because of they cross the age limit of marriage by the time they finish the Ph.D. Later the loneliness takes over the progress which hinder further improvement. 3) For those who do Ph.D. after marriage the obstacles are innumerable. Thus after the completion of the degree the thought of further improvement becomes a nightmare. The only advantage of doing Ph.D. is that one develops a self-confidence and an identity which is a pleasant thing to carry along.

RES. NO.: 28 1.6.101.94/28

The questionnaire is very lengthy and time consuming.

RES. NO.: 48 1.4.108.96/48
If the suggestion given in the questionnaire is implemented, I hope the role of women in Science & Technology can be uplifted.

RES. NO.: 53 1.4.108.94/53
The questionnaire could be further modified to suit the part-time and unemployed also.

RES. NO.: 72 1.3.108.92/72
This questionnaire extracts our feelings, a feeling of contention (or) a feeling of agony that are experienced in our profession.

RES. NO.: 75 1.4.108.92/75
The work undertaken is very constructive. I hope that it will surely be helpful to the society especially the women folk. Through there is a lot of transformation of the ideas of the older generation women towards the modern outlook that women should be educated and that they should be well placed in society. Your survey must be able to enlighten them or rather in more constructive and perspective lines.

RES. NO.: 81 1.4.108.81/81
It is a good chance to comeout freely as it will be kept as secret. The field of Science and Technology is also got polluted by the ill devices like favoritism and partiality shown by the guides and higher officials and producing low standard Ph.D's. Lack of nobility among higher officials & corruption is found everywhere in the Education System. No encouragement to a sincere Teacher or Worker. So in such a state of instability among the lady Ph.D's this questionnaire is a welcome device to make us speak freely without inhibition.

RES. NO.: 88 1.4.108.89/88
Respected Sir, The Ph.D. holders who are working in Private Colleges are facing more difficulties then those Women Ph.D. holders who are unemployed. The women who are working in Private Colleges with nominal salaries do not have job satisfaction when they compare themselves with the Ph.D's who have permanent jobs in Govt. Colleges.

RES. NO.: 119 1.2.108.95/119
The topic chosen is highly appreciable and the questionnaire is also interesting.

RES. NO.: 121 1.3.115.97/121
The study is interesting. I would appreciate it if you also communicate the results.

RES. NO.: 134 1.3.108.95/134
This is an important study being sponsored by DST to asses the utilization of Science & Technology knowledge acquired by women.

RES. NO.: 135 1.4.101.96/135
Questionnaire is well planed and it is necessary to gather this type of information for further planning in the upliftment of Women. After completion of your project, kindly send a copy of your project report for which I' will be greatful to you.

RES. NO.: 145 1.4.106.80/145
Questionnaire is simple and self explanatry. It clearly reveals the objectives of the project work.

RES. NO.: 148 1.4.112.91/148
I eagerly look forward for a copy of major findings of this project. With best wishes.

RES. NO.: 170 1.4.105.97/170
At the outset I want to congratulate you Madam for your interest in pooling up the women Ph.D holders into a group and to discuss various problems pertaining to research. Please arrange a conference so that we can have a detailed discussion and we can exchange our views. The questionnaire which you have sent is very informative and appropriate. Through your investigation please encourage more number of girls to opt for Ph.D and to build up their career.

RES. NO.: 171 1.3.105.86/171
The questionnaire is very relevant and very interesting.

RES. NO.: 176 1.2.105.97/176
Dear Madam, I am very happy to know that you have undertaken this project. A very good subject. Good luck. Madam, After marriage, I had joined for Ph.D. in 1992. I completed this Ph.D. after 5 years and given birth to two sons. Thinking that we will get a good job and status. But things are different. With this high degree, we can't do low level jobs. We have to wait to get a good job. More over UGC/CSIR made it compulsory to pass NET/SLET for Govt. service job. I have a request - If you really want to uplift woman in jobs please make exemption of NET/SLET for woman candidate. At 35, we can't read all sylabus of NET/SLET which we studied about 10 years ago.

RES. NO.: 179 1.4.103.81/179
The questionnaire is good. It is best opportunity for us as women Doctorate to express our opinion.

RES. NO.: 202 2.4.201.91/202
This study should not remain in paper but should be implemented for the upliftment of women doctorates by ensuring that they get suitable jobs for them, I know many Ph.D. (both Women and Men) who are either unemployed or employed with very nominal pay who regret for having done Ph.D. wasting time effort and money without any returns. Exploitation by guides (Both by Men and Women guides) are a common feature. Law must be implemented to overcome this problem.

RES. NO.: 224 2.4.209.93/224
A very important period in women's life is soon after marriage - when children are young. That is the time when she needs to devote more time & responsibilities are more at home. However, it is only a temporary phase - Hence, service or employment rules have to be framed to accommodate women in those years. The contribution of women to Science should be measured by a different yardstick since, they have a family responsibility and

motherhood is more important as well.

RES. NO.: 226 2.4.209.96/226
This type of study regarding women Ph.D. degree holders is very few in number. Only few women Ph.D's are there in India. Men's are sacred to marry Ph.D. women's why? Your studies & research should find a solution for this question. I wish you a very good luck & thank you for giving me an opportunity to fill this questionnaire.

RES. NO.: 235 2.4.201.96/235
The Questionnaire was quite interesting and was in detail. I would be much happy if the organisation works for getting better job opportunities for women candidates. I do not have the slightest idea of how it could be done. How much I can contribute (in terms of work). Kindly let me know if I can be of some help.

RES. NO.: 236 2.6.207.98/236
Excellent study. It would give a comprehensive idea about career women particularly those who are having higher degree qualification. By making a study of their problems, aspirations, strengths and weaknesses improvement can be sought in Govt. policy decisions.

RES. NO.: 247 2.4.201.81/247
This is very well planned and neatly prepared questionnaire. It includes all most all the aspects with respect to career profile of women Ph.Ds.

RES. NO.: 258 2.4.201.96/258
For the first time I have come across this type of study. I feel that this study will focus on the problems faced by the women Ph.D. holders during their practical life. It is necessary to prepare a comprehensive report highlighting the difficulties faced by women Ph.D. holders both during obtaining the degree and after the beginning of their practical life so that concrete measures should be taken to eliminate gender discrimination especially in Indian Society. To achieve this goal, in my opinion an Association of women Ph.D. degree holders should be formed on all India level with State/University branches so as to bring highly qualified women in Science/Technology on one platform so as to share the different views on varied topics.

RES. NO.: 263 2.4.201.91/263
Though I am very much interested in research-line, I couldn't continue in that field because of various reasons. They are 1) Family responsibilities are more for women. 2) No permanent job opportunity in research line in India. 3) Work-load is heavy and no infrastructure in the undergraduate colleges to carry on the research work.

RES. NO.: 288 2.4.209.89/288
For a woman, to proceed with her Ph.D. - family responsibilities comes in the way. In most of the Research plates, motivation is lacking. Discrimination based on Gender, Caste etc. is dominating. This has to be eliminated.

RES. NO.: 294 2.4.201.84/294
Questionnaire is well framed. Lot of thoughts have gone into it. But the outcome should be known public and has to be put to practice.

RES. NO.: 306 2.4.209.93/306
1) Your questionnaire is good. I want you to help or give better ideas to the governemnt to give uniform pay package to all Ph.D. holder irrespective of the subject in which they have done Ph.D. 2) I am ready to support or work for you if you are in need of my help. 3) I want to know the goal you are going to achieve after compiling the questionnaire. Kindly circulate the results of your findings, improvement achieved etc. I wish you good luck for taking up a good task.

RES. NO.: 320 2.7.208.97/320
Very useful to boost the morale of working women. Please let me know the outcome of your study.

RES. NO.: 401 3.2.301.95/401
No other person can substitute a mother. Hence I spend more time with my family. If I was not a woman I would have spent more time for investigations and studying. Hence I had to sacrifice my intellectual abilities and potentials to a certain extent. I feel God has created us this way and this type of questionnaire has nothing to do with that plain fact.

RES. NO.: 431 3.5.306.95/431
When this study is being conducted, it should be good to relate the responses made against the existing values and attitudes of the society in relation to the status of women. For eg: in Kerala, the matriarcheal system has given a top priority for women (this is so far communities like Nair, Ezhava etc.) and so they are given an important place in making decisions concerning their own choice of profession, Marriage, education etc. Kerala would, therefore, (I persume) present a totally different picture in this study.

RES. NO.: 435 3.6.302.85/435
Studies like this will be very useful in understanding the problems of women Scientists and technologists and such studies will help to improve the situations of the women workers.

RES. NO.: 436 3.4.306.88/436
The questionnaire is relevant, probing and comprehensive. More work of this type should be done in future.

RES. NO.: 451 3..6.207.90/451
The topic choosen by Mrs. Mariappan is excellent, and preparation of questionnaire is very detailed and excellent, covering all aspects.

RES. NO.: 456 3.8.301.86/456
I am retiring in April 1998. During the past 4 decades I have worked with dedication, vision and could achieve my pet programme for woman - woman in Fisheries

Development Programme. The theme on informal Education & Training was initiated in 1975 and worked for its growth. Now it is accepted internationally which gives me Job Satisfaction. However, my superiors were unkind to me for undertaking such a new theme of development of women. I was rewarded by God - a Foreign Assignment for 3.1/2 years. After returning also I had problems in the Department, I was not allowed to continue my work.

RES. NO.: 502 3.4.306.84/502

I appreciate the person behind for taking up this study. Usually no body bothers about women Ph.D's and their problems. There must be a National level Committee to see whether all Ph.D. holders (Women) are employed after getting their degree. In my opinion more than 80% of women Ph.D's remain discouraged and depressed.

RES. NO.: 504 3.4.306.88/504

This type of study encourages in uplifting the status, improving the quality of life and above all to point out the problems of career women, even though, filling the questionnaire is time consuming.

RES. NO.: 519 3.4.306.92/519

It is my pleasant previlege to answer this questionnaire which is very exhaustive. Dr. (Mrs.) Susila Mariappan, P.I. Of this DST Project deserves special appreciation for her effort in locating and co-ordinating the interest of the women Ph.D. holders in South India. To me it appears that as far as Women Ph.D. holders are concerned, there is not much harassment. They mostly enjoy freedom and are sincere in their work. They are hard-working and self confident. They can compete equally with men in their field of specialisation. To combine both research and family matters is difficult but there are both sides of the same coin. God almighty strengthens us will all his blessings. I regret my delay in sending this questionnaire back, which was quite unavoidable because of my busy schedule in my laboratory, where I am living with all biogents which help us in suppressing the important coconut pests.

RES. NO.: 520 3.4.304.94/520

The Doctorate Degree is the result of hard work & patience for more than 3 years. So they should be elevated to a higher scale & position in comparsion to the other incumbants.

RES. NO.: 554 3.4.305.96/554

In my opinion I won't encourage young, postgraduate degree women to spend their precious time for Ph.D. work alone. They have to concentrate more on some other job-oriented courses. After getting a job then they should find time in taking this higher educational qualification. Otherwise after Pest-graduation they have to spend at least 4.5 years for their Ph.D. and by that time their age will be 26-27. If they get married with in that period, 90% of women will discontinue their Ph.D. Studies. At the same time young women should be encouraged for getting their highest degree and Government should find some way for solving the unemployment problem of these over qualified young women.

RES. NO.: 565 3.6.302.98/565
The study is found to be very appropriate for studying the problems of women research workers.

RES. NO.: 566 3.6.510.96/566
Well Planned study. Gives an insight to the various aspects being enjoyed/suffered by women Ph.D's. Helps to find the motives and feelings of women Ph.D's who are with a job and who are simply at home. Role of family members (like parent, husband, in-laws & children) is very crucial for a woman to secure her Ph.D. after marriage. More questions in this line if included will throw light on the amount of strength and support obtained from the family.

RES. NO.: 569 3.4.304.96/569
When I started my Ph.D. work my ambition was to do something for the society. But now I understood that with this existing conditions I can't do anything. Because for women Ph.D's, the job opportunities are less. We can't go outside the state due to the family circumstances and within the state job opportunities are very less. Even now I am not having a permanent post. I am still working as an R.A. Our salary is Rs.4000/- per month. Even the last grade employment in our institution is getting more salary than me. Before taking my Ph.D. I was working as a clerical staff in a University. Now my mind does not allow me to go back to that job. Openly speaking I am new in a dilemma.

RES. NO.: 717 4.4.512.89/717
I work in a girls college and my family has been extremely supportive. I have not faced many of the problems, which other women must be facing in Co-educational Institutions.

RES. NO.: 773 4.4.105.80/773
1) I request you to establish a net work with all Indian women Ph.D's (S&T). 2) Publish a Directory with their names, address occupation etc. 3) It will be good if it is associated with international network also. 4) An Institute of women Ph.D's should be established where seminars and symposia can be conducted. Exchange of information etc.

RES. NO.: 781 4.3.501.95/781
Women Ph.D. in Science &Technology have more difficulties in finding jobs in organisations other than Academic Institutions, in South India more than in North India though they are highly efficient.

RES. NO.: 783 4.4.512.89/783
A very appreciatable and commendable attempt. A follow up action will be highly appreciated. The questionnaire is framed aptly.

RES. NO.: 787 4.3.501.93/787
Women Scientists and Technologists should be there in every working group. There are certain work which a woman can do better than man. At the same time woman quite often requires help from male colleagues especially in hard & difficult physical work. Depending on the nature of work a team should have the correct ratio of man and woman.

RES. NO.: 793 4.4.507.91/793
Very good attempt to highlight the problems among working women and also it is an encouragement for the women to involve in research.

RES. NO.: 827 4.4.507.98/827
To some extent I am successful in my career that is because, my family responsibilities are shouldered by my parents. This family burdens are main reason for non participation of women in most of the responsible jobs.

RES. NO.: 845 4.4.512.88/845
It is a well planned questionnaire. It gave me an opportunity to share some of my opinions.

RES. NO.: 856 5.6.509.96/856
Women with Ph.D. holders related in Science and Technology can form an association and once in a year we all can meet in a common place and discuss for our betterment.

RES. NO.: 878 5.4.504.95/878
It is my pleasure that you have selected me for your study. I am very much thankful to you in this regard. I hope that the details which I gave you will help you to a maximum. As for as I am concerned higher education is necessary during the coming years because of the fast developing science and technology. But even now there are people who discourage women from going for higher education mainly because, they feel that they have to finish their duties. For the married women, especially in a joint family, if all the other in-laws are highly educated then there will not be any problems. But if it is vice-versa, it is difficult to cope up with the family. We have to compromise for each and everything. The family circumstances suppress our ambitions. We have to drag the days. This is my personal experience.

RES. NO.: 880 5.4.504.96/880
Ladies should be given preference in job opportunities, promotions etc. Reservations are necessary. Apart from house hold responsibilities & child care, the educated women need to help their children in their school lessons' learning. In the Indian way of living, educated & employed Indian ladies have to toil much. Amidst all, when the ladies achieve something in their career, that shows their interest & talent which has to be appreciated and duly recognized. In total, the employed ladies shoulder much more responsibilities than employed men. Men get more time to plan and execute. Due to household responsibilities women get less time to plan. But this special responsibility of women is necessary for the society. The dual role of employed women should be given due recognition by way of 30% reservations at all stages (including promotions) flexible timings, leave opportunities etc. Right now not many ladies are at higher posts. Men colleagues should encourage & help lady colleagues instead of envying at them.

RES. NO.: 909 5.6.516.98/909
1) Questionnaire is very convenient to answer. 2) It has quite a few cross check questions, hence answers can easily be checked for correctness and reliability. 3) Study is very

relevant to the present day environment. 4) Study will be useful only if certain findings are used to bring about changes in the working environment of women Ph.Ds' 5) Inservice training on current research topics, research methodology, funding agencies and on procedural aspects for getting research projects will help the women scientists to a great extent.

RES. NO.: 911 5.4.505.98/911
In general women researchers have certain restrictions in their research programme like (i) Their work time is restricted (ii) No security (iii) discrimination is there (iv) outward communication network is limited. (v) Competition with men is very high (vi) family support to most of the researchers is also limited.

RES. NO.: 914 5.4.512.90/914
1) Age relaxation to be given to Women Ph.D. Holders for job opportunities. 2) Liberal Grant for Post doctoral research work and for attending Workshop and Conferences should be made available.

RES. NO.: 915 5.4.512.85/915
1. More workshops and seminars should be conducted at national and international levels to discuss the various problems of research oriented women workers. 2. The preferences must be given for women to attend the International Seminars. 3. Separate funding facility should be available for the Women Researchers to do their post-doctoral works.

RES. NO.: 929 5.4.507.95/929
1) There is no discrimination between men & women on their mental-intellectual capabilities. Sometimes women display better analytical sense. 2) As for me the only difference in gender is the physical capacity. Certainly men are stronger. May be this weakness itself adds to the stronger will power of women. Long term physical exertion may not be suitable for women. 3) Low participation of women in Science & Technology cannot be generalised. More often family set-up and her personal values have a decisive role.

RES. NO.: 940 5.3.504.96/940
1) Though she is employed she has to look after all the household works (working, maintanence, cleaning, child care etc.). Whereas a gentleman can take rest after comming from office . Absolutely he has no work except sleeping, reading newspapers and watching T.V. 2) She has to look after the children's education 3) Actually employed women are riding to in two horses. 4) The only satisfaction is that the earning (financially independent)

RES. NO.: 947 5.4.512.86/947
Establish a women's cell in each University, so that, problems faced by women can be answered and be solved.

RES. NO.: 959 5.6.509.95/959
This study covered a deep profile of women Ph.D. holders in their career as well as in

their personal development.

RES. NO.: 968 5.4.507.91/968
Quite interesting & thought provoking study.

RES. NO.: 972 5.1.504.96/972
The format of the questionnaire is highly appreciate.

RES. NO.: 1004 5.7.508.98/1004
This study is a good attempt to tap the potentials of Women.

RES. NO.: 2003 1.3.108.76/2003
The suggestions should be conveyed to DST for encouraging more research projects on women.

RES. NO.: 2005 1.4.103.79/2005
I feel this type of study is encouraging. The data collection on women is necessary, so that assessment of women role in the society in respect to higher education can be evaluated.

RES. NO.: 2006 1.4.103.72/2006
An exhaustive questionnaire! Could perhaps be made more precise and short.

RES. NO.: 2008 1.3.103.70/2008
Education and career of women gives upliftment of society in not only economic condition but also in the social conditions. By educating women we can control the population of the country and we can have clear environment. Better living condition of the society can be aimed by educating the rural public for discriminatory use of fertilizers, Agrochemicals and medicines and also caution them from hazards. The proposed study will throw some light on status of Indian women in general and South Indian women in particular. The project is timely when Govt. of India is proposing 30% Reservation to women in studies, jobs. The principal Investigator is to be congratulated for the focus of the project and arranging the questionnaire to cover women Scientists and Technologists.

RES. NO.: 2012 1.4.103.74/2012
1) Women are to be selected for decision making bodies. 2) More women VCs are to be appointed. The questionnaire is quite adequate to make a survey of this kind.

RES. NO.: 2028 1.3.108.71/2028
1) Ladies are suppressed by Men 2) Political interference is increasing every where by suppressing intelligent women and men. The intelligence is not utilised properly by the governments.

RES. NO.: 2034 1.6.209.77/2034
The questionnaire is well written covering all aspects.

RES. NO.: 2035 1.6.512.69/2035
The questionnaire is good and covers all aspects for upliftment of women.

RES. NO.: 2053 1.4.803.96/2053
Questionnaire is good and women should be given equal opportunities and status in the area of science.

RES. NO.: 2204 2.4.5602.93/2204
Its been a long hard road. But there is a big need to offer & develop infrastructural support for women in general.

RES. NO.: 2212 2.2.702.93/2212
Perhaps there should be question on attitude of male students on female students. I was shocked when my classmate at IIT said I should not have joined IIT as I was depriving a boy of a seat in IIT. I would like to know of the outcome of this survey.

RES. NO.: 2241 2.5.201.74/2241
1) Gender discrimination is more in Technical Universities. 2) There is no unity amongst women scientists within the research institute/University. 3) Women scientists do not try to give publicity for their work through media. 4) The opinion amongst male is that ladies are decked up dolls and they should be eliminated. 5) Women scientists lack self confidence and try to cling to godfathcrs which inturn creater adverse publicity.

RES. NO.: 2253 2.2.201.78/2253
1) No comments. Questionnaire is really well framed covering each and every required point.

RES. NO.: 2401 3.6.1002.87/2401
It is a useful study to know the role of women scientists in all professional branch of the society.

RES. NO.: 2416 3.6.1002.87/2416
This study can be extended to women with post graduate degree rather than Ph.D. holders.

RES. NO.: 2423 3.4.703.89/2423
Study is of course good and appreciated, if you can give job to our unemployed women Ph.Ds.

RES. NO.: 2602 4.4.702.80/2602
Very important study.

RES. NO.: 2810 5.8.5116.94/2810
1)Most women who are highly qualified have to give up their careers mainly because their spouses/in-laws will not help them with the work & rearing children. 2) Indian parents-in-law in general look upon the daughter in law as the only person who should do the entire household work.

INDICATIONS OF THE CODE NUMBERS

First Number - State Code

1. Andhra Pradesh
2. Karnataka
3. Kerala
4. Pondicherry
5. Tamil Nadu

Second Number - Discipline Code

1. Mathematical Sciences
2. Physical Sciences
3. Chemical Sciences
4. Biological Sciences
5. Earth and Space Sciences
6. Agricultural Sciences
7. Medical Sciences
8. Technological Sciences

Third Number - University Code: -

Southern State Universities

Andra Pradesh

101 = Andhra Pradesh Agriculture University
102 = Andhra Pradesh Open University
103 = Andhra University
104 = Jawarlal Nehru Technological University
105 = Kakatiya University
106 = Nagarjuna University
107 = Nizam's Institute of Medical Science
108 = Osmania University
109 = Rastriya Sanskrit Vidyapith
110 = Sri Krishnadevaraya University
111 = Sri Padmavathi Mahila Viswavidyalam
112 = Sri Venkateswara University
113 = Telugu University
114 = University of Health Sciences
115 = University of Hyderabad
116 = Central Institute of English and Foreign Languages(Deemed University)
117 = Sri Sathya Sai Institute of Higher Learning(Deemed Universities)

Karnataka

201 = Bangalore University
202 = Gulbarga University
203 = Karnataka University

204 = Kuvempu University
205 = Mangalore University
206 = National Law School of Indian University
207 = Uiversity of Agriculture Sciences, Bangalore
208 = University of Agriculture Sciences, Dharwad
209 = University of Mysore
216 = Indian Institute of Science(Deemed University)
217 = National Institute of Mental Health and Neuro Sciences(Deemed University)

Kerala

301 = Cochin University of Science and Technology
302 = Kerala Agriculture University
303 = Kerala State Open University
304 = Mahathma Gandhi University
305 = University of Calicut
306 = University of Kerala
351 = Sree Chitra Tirunal Institute for Medical Science and Technology(National Institute)

Pondicherry

401 = Pndicherry University

Tamil Nadu

501 = Alagappa University
502 = Anna University
503 = Annamalai University
504 = Bharathiyar University
505 = Bharathidasan University
506 = Dr. M.G.R. Medical University
507 = Madurai Kamaraj University
508 = Mother Teresa Women's University
509 = Tamil Nadu Agriculture University
510 = Tamil Nadu Veterinary and Aninal Sciences University
511 = Tamil University
512 = Madras University
513 = Periyar University
514 = Manonmaniam Sundranar University
516 = Avinashilingam Institute of Home Science and Higher Education for Women
517 = Gandhigram Rural University (Deemed University)
551 = Indian Institute of Technology, Madras (National Institute)

Other State Universities

West Bengal

601 Institute of Chemist, Calcutta
602 I.I.T., Kharagpur
603 Calcutta University
604 Jadavpur Univesity

Maharashtra

701 Nagpur University

New Delhi

1001 Delhi University
1002 I.A.R.I., New Delhi
1003 Jawaharlal Nehru University

Madya Pradesh

1101 Bhopal University
1102 Jivagi University

702 Bombay University
703 Pune University
704 SNDT University

751 I.I.T. Bombay

Uttra Pradesh

801 Agra University
802 I.I.T., Kanpur
803 Banaras Hindu University
804 Meerut University
805 University of Roorkee

Gujarat

901 University of Baroda
902 M.S. University
903 Gujarat University, Ahamadabad

1103 Rani Durgavathi Vishva Vidyalaya
1104 Vikram University

Rajastan

1201 Udaypur University
1202 Bits Plany
1203 Rajestan University

Haryana

1301 Kurukshetra University

Orissa

1401 Sambalpur University
1402 Uppkal University

Punjab

1501 Panjab University,Chandigarh

Other Country Universities

U.S.A

5101 University of Denvar Colorado

5102 University of Geogia
5103 Drexel University(Philadalphia)
5104 University of South Carolina

5105 University of California
5106 State University of New Yark
5107 Baylor University, WACO, Texas

5108 University of Maryland, College Park
5109 Kausar State University
5110 Yale University, Connecticut

Philippines

5201 University of Philippines

Unitted Kingdom

5301 Hull University
5302 University of Cambridge
5303 University of Manchester, U.K.
5304 London School of Hygions & Traphical Medicine
5305 Bristol University

Poland

5401 Medical Academy, Szczelin, Poland

West Germany

5501 West Germany Technical University

France

5601 University of Paris
5602 University of Louis Pasteur, Strasbourg (IBMP,CNRS)

Belgium

5701 University of Ghent, Belgium

Japan

5801 GIFU University, Japan

Germany

5901 University of Freiburg, Germany