

ASSESSMENT OF GOVERNMENT OF INDIA'S GENDER MAINSTREAMING PROGRAMS FOR WOMEN IN SCIENCE

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NORTHERN REGION
HARYANA & DELHI

SUBMITTED BY:
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सत्यमेव जयते

PROJECT COMPLETION REPORT

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[NORTHERN REGION- HARYANA AND DELHI]

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The National Science and Technology Management Information System(NSTMIS), a division of Department of Science and Technology(DST) has been entrusted with the task of building the information base on a continuous basis on resources devoted to scientific and technological activities for policy planning in the country.

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Disclaimer:

Every care has been taken to provide the authenticated information. However, the onus of authenticity of data rests with the National Coordinator Principal Investigator of this Network Mode Project.

PREFACE

Mahatma Gandhi while appreciating the value of educating women said – “When a man is educated, an individual is educated; when a woman is educated, a family and a country are educated”. Women in India constitute fifty percent of the human resource. The role of women in society is vital for its progress, and their contribution to the development of the knowledge base and use of technology is essential if the millennium challenges are to be met.

Despite constituting half of the population, women are an underutilized talent; and need to make their presence felt in science and technology. Dogmas of gender over different periods of time have resulted in women's exclusion from science for a long time, all over the world. Their participation is still restricted and limited because of break in career or family reasons or maternity break etc.

It is important to support and stimulate young girls to involve in the professional and scientific activities. They should be made aware of the developments in science; and opportunities for their respectful living. Efforts to develop appropriate technologies suited to women's needs as well as to reduce their drudgery' be given special attention.

DST always made possible for women by providing various Schemes for WOMEN SCIENTISTS who want to pursue their career in Science due to any reason faced by women. These schemes include WOS-A, WOS-B, WOS-C, UGC-PDF, and Bio care, etc.

Women scientists can provide an opportunity to make an important contribution in bridging the gender gap, remove the barrier of negative attitudes; thus, paving the way for fruitful participation of women in science. The women scientists and also the teachers can be the role models; and become instrumental in providing the women with greater science literacy and competence for their daily lives as well as future activities, with the skilful application of science and technology.

This study is focused on identifying the issues and challenges faced by women in science under the various DST schemes and also we evaluate the impact and effectiveness of various gender mainstreaming programmes initiated by Government of India.

The purpose of this report on “Assessment of Government of India's Gender Mainstreaming Programs for Women in Science” is to maintain national level database of various government schemes on the Women in Science using geometric methods and measure and analyses the data submitted by the individual Women Scientists or respective organizations and can be access online.

We are extremely grateful and extend our gratitude to Department of Science and Technology for making it possible to conduct the project.

A special note of thanks to **Dr Parveen Arora** and **Dr H.B. Singh** and **Dr B.M.K. Prasad** and **Dr Vandana** and all the respondents who took time out of their busy schedules to participate in the survey and help with data collection which is the foundation stone for any research study such as this. This research would not be possible without the research and survey team who have helped with their manifold efforts in conducting the field study, data compilation, processing and analysis. Without their hard work and manifold efforts this study would not have been successful.

Studies and Services is highly appreciated.

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We are gratified to National Science & Technology Management Information System (NSTMIS) Division of the Department of Science & Technology (DST), Government of India, for providing and sponsoring an opportunity to undertake this study on “**Assessment of Government of India's Gender Mainstreaming Programs for Women in Science**”. It gratefully acknowledges the guidance, inputs and cooperation provided by the Local Project Advisory Committee Members, viz. **Dr Parveen Arora**, Head (CHORD-NSTMIS), Department of Science and Technology, Government of India, **Dr H.B. Singh**, Scientist-E, Department of Science and Technology, Dr. P.K. Arya, Scientist-B, Department of Science and Technology, **Dr Vandana Singh**, Scientist-E, Department of Science and Technology and **Dr. Anjana Vyas**, National Principal Investigator from CEPT University. Also I would like to thank other Regional Principal Investigator namely, Dr Maninder Kaur, Dr Brajeshware, Dr N Jyotsana, Dr Tanuja, Dr H.M.Padhy, Dr Archana Reddy, Dr Sophia, Dr Satheesh, Dr Geetha B S, Dr Bharathi, Dr Ekta, and Dr Darshana Rawal for completing this Network Mode project.

I am grateful to **Dr. B.M.K. Prasad**, Principal, Dronacharya College of Engineering, Gurugram for giving all the support and assistance, who forwarded the requisite data of equipment for the database for project work.

I am also thankful to the faculty and staff for passionate support and collaboration which lead us in completing this project successfully. The project team duly acknowledges their support.

Finally, sincere thanks to the LPAC members for their indulgence, commitment and hard work of surveying, collecting, compiling and authenticating data from a plethora of agencies located across the country, and to other DCE, Gurugram research and administrative professionals who contributed towards the timely completion of the project.

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EXECUTIVE SUMMARY

Project Name: “Assessment of Government of India’s Gender Mainstreaming Programs for Women in Science”

The presence of women in science spans the earliest times of the history of science wherein they have made significant contributions. Women scientists are being encouraged to pursue research in frontier areas of science and engineering, on problems of societal relevance and to take up S&T-based internship followed by self-employment. DST provides various schemes for women to continue their career due to any reason. WOS-A provides platform to women scientists and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering. WOS-B focuses on projects related to Science & Technology (S&T) interventions for societal benefit. WOS-C is being implemented by the Patent Facilitating Centre of Technology Information Forecasting & Assessment Council (TIFAC). The scheme aims to train women having qualifications in science/engineering/medicine or allied areas in the field of Intellectual Property Rights (IPRs) and their management for a period of one year. Bio-Care initiated a career enhancement programme i.e., Bio-Care to boost the involvement of women scientist in research field. UGC-PDF was launched by University Grants Commission to support unemployed women scientist holding doctorate degree in different subjects/ fields.

The objective of this present cross-sectional study is to evaluate the record of the women scientist who received any project in women empowering schemes i.e., WOS A, WOS B, WOS C, Bio Care or UGC PDF from 2003 to 2018 were enrolled, and to get detailed information, a questionnaire was prepared by the all regional and national PI and its feasibility was checked with selected women scientists and university professors. Questionnaire had both close ended as well as open ended questions. Pilot study was performed and the process of data generation was started. Data thus collected was subjected to statistical analysis to achieve objective of the study.

The present study is mainly based on responses collected from women in science. The respondent group consists of female belongs to various schemes under subcategory such as physical science, engineering & technology, mathematical foundation, life sciences, etc. The survey also covers both currently unemployed and employed women scientists undergoing a break in career, or family reasons, or maternity or financial problems and also dropouts from studies and research in science without any work experience. Four different questionnaires survey were prepared for the DST scheme mentioned above. The survey has been conducted in Haryana and Delhi covering premier institutes as well as proper data shared by DST. A Data-driven approach was adopted for the survey. Selection of respondents was purely made by data received from DST. Data has been collected through Emails, surveys, manual filling, social networking websites, etc.

A large number of projects from different women centric schemes were sanctioned from year 2003 till date, so it is impossible for funding agency to measure and track the effect based on the data submitted by the beneficiaries at the end of funding support. In order to track individual’s progress over period of time, the present metacentric study was undertaken. For determining the overall effectiveness of basic objective to professionally empower women, the whole country was divided in to thirteen zones under the supervision of a national coordinator. The present study encompasses the north zone representing Haryana and Delhi regions. For any research first step is to define the geographical area where the possible research problem is to be explored.

For this an online questionnaire survey is prepared and distributed among women scientist belongs to Haryana and Delhi region. Based on data collection an analysis is performed on some parameters such as break in career, no of projects sanctioned, no of grant released, supervisor opinion, rating of various DST scheme, overall experience and rating of DST schemes, etc. Although we face many problems which are listed below but project is successful completed with great learning.

The primary data is collected from DST through emails, which helps us in finding appropriate women scientists but we are unable to find missing data although we searched through web-portals such as LinkedIn, social

network sites, etc. Also we had contacted their current institution through HODs, Dean but little response. The secondary data in this study was collected from journals, books, census and governmental web portals and Wikipedia.

Many problems/challenges were faced by the regional PI and her team during data collection. Some women scientist who had completed their research projects long ago and their contact numbers were not available with either DST or their host institute. Some women scientist had not responded to the repeated e-mails. Email ids of some women scientist were not functioning.

Due to Farmer protest in Haryana, mobile as well as internet services have been suspended in parts of the state, so it is difficult to contact women scientist. Also due to in Citizenship act Delhi some services have been suspended. But still regional investigator and her team tried to approach women Scientist by snowball sampling method. Due to limited internet services, they are not able to fill the online form, so the forms are being filled through telephonic conversations.

Sudden lock down due to pandemic of Covid19, personal visit to various universities of the region under consideration was not possible, so repeated requests were sent to the women scientist to fill the online form, but some women scientist didn't agree to provide their details. Despite all these challenges we tried to extract maximum data from the Haryana and Delhi.

The Statistical analysis of present study revealed an increase in number of projects sanctioned to women scientist from 2003 to 2018 in Haryana and Delhi. Unpredictable with the findings of present study it is also observed a remarkable enhancement in the number of women enrolled in higher education i.e. from 32.3% to 47.9% in various institutes from 1990 to 2017. Most of the women beneficiaries had break in their career and family responsibility was the major reason for this break in all the three regions under consideration. A considerable proportion of women scientists were satisfied from their mentor's, host institutes and family support. Women scientist from Haryana and Delhi revealed little mobility for transferring projects from one statute to another. In Haryana a significant proportion of women scientist had enhanced their educational qualification from postgraduate to doctorate during their research project.

In the present study maximum number of women scientists belonged to life sciences. Very few women scientist from Punjab represented chemical sciences (4.48%), engineering (5.97), mathematical sciences (2.99%) and Engineering and technology development (2.99%) field of specialization. No woman scientist from Haryana and Delhi received any project in engineering and mathematical sciences.

Similarly, health food and nutrition as well as earth science were not very popular among women scientist. Findings of Goal (2007) highlighted the status of women in engineering, and also discussed the underlying determinants responsible for lack of interest among women towards engineering. After analyzing the MHRD data (1950-2001), he revealed that number of women enrolling in sciences has improved much more as compared to engineering.

Analysis of research publication part of women scientists is not very encouraging. It is clearly noticeable from the analysis that out of the total respondents a considerable percentage of the women scientist (35.82%) in Haryana and Delhi have not published even a single research paper from the projects awarded to them. A substantial proportion of women beneficiaries published one to two research papers only. This may be due to majority of women scientist have not developed any skill or attended any seminar or conference/ workshop to update their knowledge with emerging and advanced techniques as well as methods of their subject in all the three regions understudy.

The present study has both direct (academic impact, research impact, professional impact, and capacity building impact) as well as indirect impacts (societal status upliftment of the women in science) on the women beneficiaries. This study provided a holistic perspective of impact of women empowering projects on the women in science. These Gender Mainstreaming programmes helped women scientist to enhance their research

skills. The success stories of women scientist will encourage other women scholars and researchers to pursue their career in science

There are certain weaknesses at the data collection level, institutional level, scheme level and on the part of women beneficiaries, which were encountered while analyzing the topic. During data collection we were unable to track some of the beneficiaries of the schemes, as year wise projects awarded to the women scientist in the respective schemes are missing. In some cases, information regarding PI's name, contact information and research topic was not available. Only mentor's name was provided in the data received from DST. We tried to contact them through their mentors also, but most of them were not supportive.

These women centric schemes initiated by Department of Science and Technology are an attempt to dismantle gender imbalance in science and bring women scientist in the mainstream. Gathering program-specific information about problems faced by beneficiaries or their requirement and impact on their professional development in academia, research and professional settings was a challenging yet vital requirement for successful assessment of these schemes.

It is very important that women scientist is encouraged and helped to establish themselves as professionals. They need to be given opportunities to enhance their professional image through the institution of prizes and awards for their contributions. This will immensely contribute to creating awareness amongst employers, parents, teachers and schoolgirl themselves.

Certain modifications in rules need to be provided to women professionals to help them cope up with the dual responsibilities of the home & profession. Sanctioning of the leave up to one year and flexible working hours are some of the suggestions often made. These facilities are relevant to the child bearing and rearing period.

"Women in Science" believes in a global contribution by creating a platform where challenges and possible solutions are tackled in order to build capacity of its group members as well as of other women who would consider the Working Group as providing a role model for career success.

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RESEARCH SUMMARY

Title of the project “Assessment of Government of India’s Gender Mainstreaming Programs for Women in Science”, By Dr Vimmi Malhotra from Dronacharya College of Engineering, Gurugram, Year 2019:

UN Secretary-General Antonio Guterres addressed on the International Day of Women and Girls in Science “To rise to the challenges of the 21st century, we need to harness our full potential. That requires dismantling gender stereotypes, let’s pledge to end the gender imbalance in science. Hence it is not enough to initiate women centric schemes to bring women in mainstream but carefully evaluation of these polices to assess their long-term impact on the academic excellence of the women scientist are also need of the hour.

Also I mentioned in preface beautiful words said by Mahatma Gandhi while appreciating the value of educating women said – “When a man is educated, an individual is educated; when a woman is educated, a family and a country are educated”

The presence of women in science spans the earliest times of the history of science wherein they have made significant contributions. Women scientists are being encouraged to pursue research in frontier areas of science and engineering, on problems of societal relevance and to take up S&T-based internship followed by self-employment. DST provides various schemes for women to continue their career due to any reason.

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Many problems/challenges were faced by the regional PI and her team during data collection. Some women scientist who had completed their research projects long ago and their contact numbers were not available with either DST or their host institute. Some women scientist had not responded to the repeated e-mails. Email ids of some women scientist were not functioning. Despite all these challenges we tried to extract maximum data from the Haryana and Delhi.

It is very important that women scientist is encouraged and helped to establish themselves as professionals. They need to be given opportunities to enhance their professional image through the institution of prizes and awards for their contributions. This will immensely contribute to creating awareness amongst employers, parents, teachers and schoolgirl themselves.

At last, I will conclude with quotation said by Nichelle Nichols (Former NASA Ambassador) “Science is not a boy’s game, it’s not a girl’s game. It’s everyone’s game.”

CHAPTER ONE: INTRODUCTION

1.1 OVERVIEW

Science & Technology activities are gaining momentum in the country towards shaping the way people think, behave and respond to various events in their life. Scientific temper can play an important role especially when it comes to decision making. Science and Technology has advanced into many areas of our lives, making information more accessible, improving communication, changing transportation, and the list goes on.

National Council for Science & Technology Communication (NCSTC) has been working towards developing scientific temper, creating awareness in order to bridging the gap between science and society through achieving the goal of better public appreciation of science, engineering and technology.

Research and Development (R&D/ R'n'D/ R+D) is undertaken by companies and governments to foster innovation to develop new products or services, and/or to improve the existing product lines. R&D encompasses all activities within an organization geared towards increasing innovation, including, developing incubators, helping innovators take their innovations to scale and fostering an innovation ecosystem within the sector. India accounts for about 10% of all expenditure on research and development in Asia and the number of scientific publications grew by 45% over the five years to 2007.

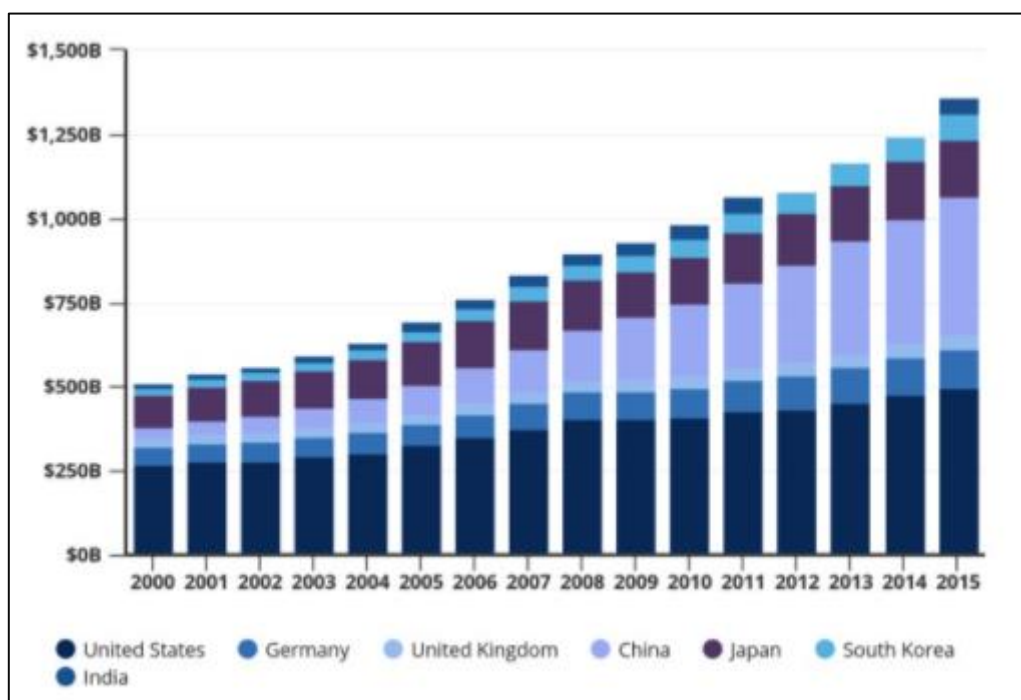


Figure 1: R&D expenditure country-wise [Source: National Science Board, Science and Engineering Indicators (2018), Global R&D: One Measure of Commitment to Innovation.]

The Department of Science and Technology (DST) is a department within the Ministry of Science and Technology in India. It was established in May 1971 to promote new areas of science and technology and to play the role of a nodal department for organizing, coordinating and promoting Scientific and Technological activities in the country. It gives funds to various approved scientific projects in India. It also supports various

researchers in India to attend conferences abroad and to go for experimental works. DST supports open access to scientific knowledge, originated from the public-funded research in India. In December 2014, the DST and the Department of Biotechnology (DBT), Government of India had jointly adopted their Open Access Policy.

India's gross expenditure in R&D has tripled between 2008 & 2018 driven mainly by Govt sector and scientific publications have risen placing the country internationally among the top few, as per the R&D Statistics and Indicators 2019-20 based on the national S&T survey 2018 brought out by the National Science and Technology Management Information (NSTMIS), Department of Science and Technology (DST).

Various studies have observed the negative impact of gender inequality on sustainable well-being, growth, governance and poverty reduction. Hence Department of Science and Technology (DST) has incorporated agender perspective, while making critical decisions for allocation and investment of resources, education and training. Women act as both the corner stone of the society and for bearer of the changing world, as their contribution in science determine the relationship between science and society in various ways. The DST had made various efforts after analysing women component plan under gender budgeting and report of the Task force and finally constituted several actions for "women in science" for initiating gender schemes in the country.

At last, the importance of mainstreaming gender in all walks of life cannot be over-emphasized. This is not just to make sure that women get a chance to give expression to their creativity and abilities but also because it is essential for the balanced development of any society. In fact, when considering women in science, it is even truer: research is a highly creative and individualistic activity and each person makes his/her unique contribution. The process of scientific development, innovation and discovery can only benefit from diversity, gender being just one component. Also given the fact that women are 50% of humanity, their intellectual potential is something that we can ill afford to ignore.

1.1.1 VARIOUS GENDER MAINSTREAMING PROGRAMMES FOR WOMEN IN SCIENCE

The Department of Science and Technology through its various schemes specially targeting the women, has contributed to improve gender ratio and the improvement is evident today specially at the lower level in scientific establishments. As per the NASI report, the percentage of women contributing to science education at the school level has increased significantly and percentage of women in government laboratories has also increased. However, the percentage in high profile institutions still remains low as does women's participation at leadership positions in science and technology.

In order to progress and introduce women scientist in INDIA, the DST is increasingly boosting its interventions for participation of women in S&T at multiple levels through various new schemes:

- ❖ **KIRAN:** KIRAN (Knowledge Involvement in Research Advancement through Nurturing) embraces women-exclusive schemes of DST with the mandate to bring gender parity in S&T through gender mainstreaming. Different programs and components of KIRAN deal with various crucial issues (break in career primarily due to family responsibilities, self-employment, part time career, relocation, etc.) faced by women scientists in their career path.
- ❖ **WOS-A:** Women Scientist Scheme-A is aimed to provide opportunities to women scientists and technologists for pursuing research in basic or applied sciences in frontier areas of science and engineering. The foremost purpose of the scheme is to provide an opportunity to women scientists to re-enter into mainstream academic, research, design and development work, who have had a break in their careers due to unavoidable reasons.

Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

- ❖ **WOS-B:** Women Scientists Scheme-B is focused on S&T solutions of challenges/issues at the grassroots level for social benefit. Under this segment, women scientists are required to work in the domain of lab-to-land technology development, its adaptation, transfer and scaling up and is primarily location specific interventions.
- ❖ **WOS-C:** Women Scientists Scheme-C aims to create opportunity of self-employment and/or also sustainable career for the women scientists. The scheme provides one year internship in the domain of Intellectual Property Rights (IPRs) which includes theory as well as hands-on training in law firms. Three days of hands-on training on patent search using various tools were also imparted.
- ❖ **Biotechnology Career Advancement and Re-orientation Programme (Bio-CARe):** The department of biotechnology initiated a career enhancement programme i.e., BioCare to boost the involvement of women scientist in research field. This scheme supports both employed and unemployed women (having Bio-care as the first extramural grant) in science up to 55 years of age. The main purpose of this scheme is to escalate the research opportunities for women who are either unemployed or employed fulltime in universities, small research laboratories, after a break in their career, and keen to undertake an independent R&D Project. Women from different realms of Life Sciences or Biology (including agriculture, veterinary science and medicine) are qualified for this scheme.
- ❖ **UGC- Post Doctoral Fellowship for Women:** This scheme was launched by University Grants Commission to support unemployed women scientist holding doctorate degree in different subjects/ fields. It was an effort of UGC to bring such talented women in the mainstream and to boost up their interest of research. The tenure of this fellow ship is five years, with no further extension. Every year around 100 women are selected to avail this fellowship.
- ❖ **Indo-U.S. Fellowship for Women in STEMM:** The program provides opportunities to Indian Women Scientists, Engineers & Technologists to undertake international collaborative research in premier institutions in U.S.A, to enhance their research capacities and capabilities.
- ❖ **Women Entrepreneur Quest (WEQ):** WEQ is a comprehensive platform that provides mentoring, learning and networking opportunities for real business growth. The objective of this competition is to encourage, promote and showcase technology start-ups, founded by women entrepreneurs. Top 10 winners of WEQ received an all-expenses-paid experiential learning visit to Silicon Valley, US and meetings with key stakeholders in the Silicon Valley ecosystem such as leading technology companies, start-ups, investors, officials, incubators, accelerators, universities and so on.
- ❖ **S&T for Women:** The program “Science and Technology for Women”, under KIRAN mandates to promote gender equality and empower women at grassroots level with inputs of S&T through development, adaptation, adoption, transfer, demonstration and replication of appropriate and successful technologies. Since inception, more than 2000 projects have been sponsored and more than 500 technologies developed.
- ❖ **Women Technology Parks (WTP):** These WTPs act as a single window hub for convergence of diversified technologies, leading to socio economic development of women through capacity building and adoption of location-specific technologies. Diverse technology areas like agriculture (including fisheries, animal husbandry, horticulture technologies), aromatic and medicinal plants, forestry, alternate livelihoods, Post-harvest technologies, natural resource management, health & sanitation, occupational hazards, construction, energy, management of natural resources, rural development, rural industry, rural engineering, micro enterprise, sustainable agricultural practices etc. form the core areas of interventions for WTP.

Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

- ❖ **Consolidation of University Research for Innovation and Excellence in Women (CURIE):** CURIE was launched in 2009 to strengthen R&D infrastructure of women-only Universities. This unique model of support has led to significant increase in number of quality publications including papers in journals of repute by the faculty and researchers of beneficiary universities.
- ❖ **Vigyan Jyoti:** A dedicated program for girl students to pursue their careers in Science, Engineering and Technology. The programme aims to encourage and inspire girl students to pursue higher education and become self-reliant and also offers exposure for girl students coming from rural background to help understand how to plan their journey from school to college and thereafter from research to a job of their choice in the field of science.

Given the focus of the present government on promotion of girl and women education we need concerted efforts to promote intellectual capacities of women in general and women scientist in particular. In this direction, Department of Science and Technology initiated various funding schemes and programs, but it is impractical for funding agency to assess and track the impact merely on the basis of the data submitted by the beneficiaries at the completion of the project. Since, the nature of support is targeted toward overall professional development, the resulting impact can only be determined by tracking individual's progress over period of time, long enough after funding support stopped. For determining overall effectiveness, the analysis should span across schemes to evaluate demography of beneficiaries to reveal any trends or patterns. Therefore, in order to evaluate impact of multiple funding programs, appropriate analytical framework and systematic study is required. This proposal offers an approach to perform such analysis for DST's programs targeted at gender mainstreaming.

1.2 AIM

To assess the impact and effectiveness of various gender mainstreaming programmes initiated by Government of India.

1.3 OBJECTIVES

- ❖ To maintain national level database of various government schemes on the Women in Science using geometric methods.
- ❖ To measure and trace the data submitted by the individual Women Scientists or respective organizations and can be access online.
- ❖ To develop a web portal to monitor and provide real time information for effective policy planning
- ❖ To analyses data and prepare a dashboard that helps in improvement of current Government schemes.
- ❖ To appreciate Women in Science for active participation in the survey by awarding certificate.

1.3.1 METHODOLOGY

In the present cross-sectional study, the women scientist who received any project in women empowering schemes i.e., WOS A, WOS B, WOS C, Bio Care or UGC PDF from 2003 to 2018 were enrolled. To get detailed information, a questionnaire was prepared by the all regional and national PI and its feasibility was checked with selected women scientists and university professors. Questionnaire had both close ended as well as open ended questions. Pilot study was performed and the process of data generation was started. Data thus collected was subjected to statistical analysis to achieve objective of the study.

1.4 LIMITATIONS (SCOPE OF THE WORK)

The study is designed to understand the reasons why women in science does not get opportunity to proceed their career after break or matrimonial or family reason, etc. even though DST had provided various women young scientist various schemes. Also we consider the scope of these DST schemes.

Women are an important section of the workforce, more particularly in the science & technology (S&T) domain. The challenges faced by them are several but most often the "break in career" arises out of motherhood and family responsibilities. To address such issues DST always have scope for these kind of schemes but due to the pandemic condition we were unable to find DST Women Scientist physically and most of the contacted information such as emails, contact numbers, departments are insufficient to find the correct or appropriate person.

But if this condition should not exist this project had done marvellous in all schemes of the beneficiaries and scope is vast and Under this scheme, women scientists are being encouraged to pursue research in frontier areas of science and engineering, on problems of societal relevance and to take up S&T-based internship followed by self-employment.

Women constitute over one-third of the total science graduate and post-graduate degree holders, but comprise only 15-20% of the tenured faculty across research institutions and universities in India, (INSA Report, 2004). During data collection we were unable to track some of the beneficiaries of the schemes, as year wise projects awarded to the women scientist in the respective schemes are missing. In some cases, information regarding PI's name, contact information and research topic was not available. Only mentor's name was provided in the data received from DST. We tried to contact them through their mentors also, but most of them were not supportive

The finding of this study is expected to assess the impact and effectiveness of various gender mainstreaming programmes initiated by Government of India and appreciate Women in Science for active participation in the survey and their courage and determination for pursuing their career after such difficult situation in the field of Science & Technology.

SUMMARY

The regional report of present study is divided into six chapters. First chapter is Introduction which encompasses introduction of the subject, aims, objective and methodology used in the present study. Second chapter gives a detailed account of study region, their education as well as literacy rate scenario. This part of the report highlights the situation of stem and benefits of this study in the Haryana and Delhi. Chapter three explains about survey questionnaire and methodology employed in getting primary data as well as secondary data. It narrates the various problems and challenges faced by regional Principal investigators during data collection. Fourth chapter includes the analysis as well as interpretation of all the indicators of questionnaire to achieve the objectives of the study. Chapter five provides suggestions and strategies adopted for successful implementation of schemes by government and beneficiaries followed by concluding remarks of the study.

CHAPTER TWO: STUDY REGION

2 INTRODUCTION

A large number of projects from different women centric schemes were sanctioned from year 2003 till date, it is impossible for funding agency to measure and track the impact merely based on the data submitted by the beneficiaries at the end of funding support. In order to track individual's progress over period of time, the present multicentric study was undertaken. For determining the overall effectiveness of basic objective to professionally empower women, the whole country was divided in to thirteen zones under the supervision of a national coordinator. The present study encompasses the north zone representing Haryana and Delhi regions. For any research first step is to define the geographical area where the possible research problem is to be explored. This Chapter deals with the details about the area to which the participants forming the database of the present study belongs.

2.1 ABOUT THE STATES

2.1.1 HARYANA

Haryana is a landlocked state in northern India. The Vedic land of Haryana has been a structure of Indian culture and civilization. It is ranked 22nd in terms of area, with less than 1.4% of India's land area. Haryana has the fifth highest per capita income among Indian states and territories, more than double the national average for year 2018–19. Haryana's state GSDP is 12th largest in India and grew at 12.96% between 2012 and 2017. There are by 30 special economic zones (SEZs), mainly located within the industrial corridor projects connecting the National Capital Region (NCR). Faridabad has been described as eighth fastest growing city in the world and third most in India. In services, Gurugram ranks number 1 in India in IT growth rate and existing technology infrastructure. Also, it is the 7th highest among Indian states by human development index ranking.

Haryana as a state came into existence on 1 November 1966 the Punjab Reorganization Act (1966). The Indian government set up the Shah Commission under the chairmanship of Justice JC Shah on 23 April 1966 to divide the existing state of Punjab and determine the boundaries of the new state of Haryana after consideration of the languages spoken by the people. The commission delivered its report on 31 May 1966 whereby the then-districts of Hisar, Mahendragarh, Gurgaon, Rohtak and Karnal were to be a part of the new state of Haryana. Further, the tehsils of Jind and Narwana in the Sangrur district – along with Naraingarh, Ambala and Jagadhri – were to be included.

The commission recommended that the tehsil of Kharar, which includes Chandigarh, the state capital of Punjab, should be a part of Haryana. However Kharar was given to Punjab. The city of Chandigarh was made a union territory, serving as the capital of both Punjab and Haryana.

2.1.1.1 RELIGION

According to the 2011 census, of total 25,350,000 population of Haryana, Hindus (87.46%) constitute the majority of the state's population with Muslims (7.03%) (mainly Meos) and Sikhs (4.91%) being the largest minorities. Muslims are mainly found in the Nuh. Haryana has the second largest Sikh population in India after Punjab, and they mostly live in the districts adjoining Punjab, such as Sirsa, Jind, Fatehabad, Kaithal, Kurukshetra, Ambala and Panchkula.

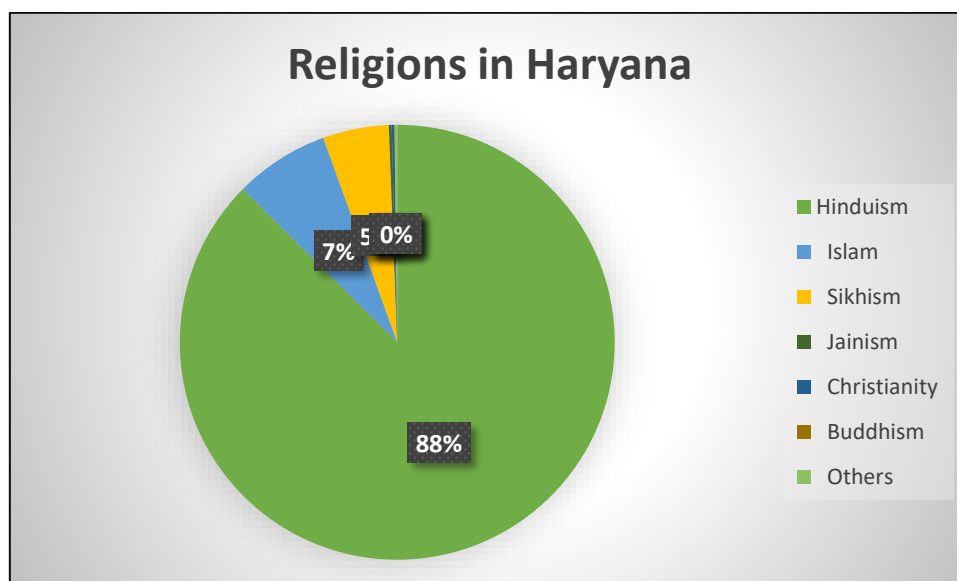


Figure 2.1: Religions in Haryana [Source: "Population by religion community - 2011". Census of India, 2011. The Registrar General & Census Commissioner, India. Archived from the original on 25 August 2015.]

2.1.1.2 GEOGRAPHY

The total geographical area of the state is 4.42 m ha, which is 1.4% of the geographical area of the country. The altitude of Haryana varies between 700 and 3600 ft (200 meters to 1200 meters) above sea level. Haryana may be divided into five natural topographic divisions which provide a suitable framework upon which a systematic study of landform environment may be founded. These are :The Bagar and the undulating sandy plains-the sand dunes and the tals (230-350 metres, The Alluvial Plain or the Ghaggar-Yamuna Plain comprising Bangar, Khadar, Naili and Bet (below 300 metres), The Aravalli outliers (300-600metres), The Shivalik's-The hills (over 400 metres), and The Foot Hill Zone-The piedmont plain (300-400 metres). Haryana has only 4% (compared to national 21.85%) area under forests. Himalayas range located near Morni Hills area of Panchkula district, is highest point in Haryana.

2.1.1.3 LANGUAGES

The official language of Haryana is Hindi. Several regional languages or dialects, often subsumed under Hindi, are spoken in the state. Predominant among them is Haryanvi. There are also significant numbers of speakers of Urdu and Punjabi, the latter of which was recognized in 2010 as a second official language of Haryana for government and administrative purposes. After the state's formation, Telugu was made the state's "second language" – to be taught in schools – but it was not the "second official language" for official communication. Due to a lack of students, the language ultimately stopped being taught.

2.1.1.4 CLIMATE

Haryana is extremely hot in summer at around 45 °C (113 °F) and mild in winter. The hottest months are May and June and the coldest December and January. The climate is arid to semi-arid with average rainfall of 354.5 mm. Around 29% of rainfall is received during the months from July to September, and the remaining rainfall is received during the period from December to February.

2.1.1.5 DISTRICTS

The table 2.1 shows total districts covered by state Haryana with one main division are as follow:

Table 2.1: Districts in Haryana

<i>Divisions</i>	<i>Districts</i>
Ambala	Ambala, Kurukshetra, Panchkula, Yamuna Nagar
Faridabad	Faridabad, Palwal, Nuh
Gurgaon	Gurgaon, Mahendragarh, Rewari,
Hisar	Fatehabad, Jind, Hisar, Sirsa,
Rohtak	Jhajjar, Charkhi Dadri, Rohtak, Sonapat, Bhiwani
Karnal	Karnal, Panipat, Kaithal

[Source: https://en.wikipedia.org/wiki/List_of_districts_of_Haryana]

2.1.1.6 GEOGRAPHICAL MAP OF HARYANA

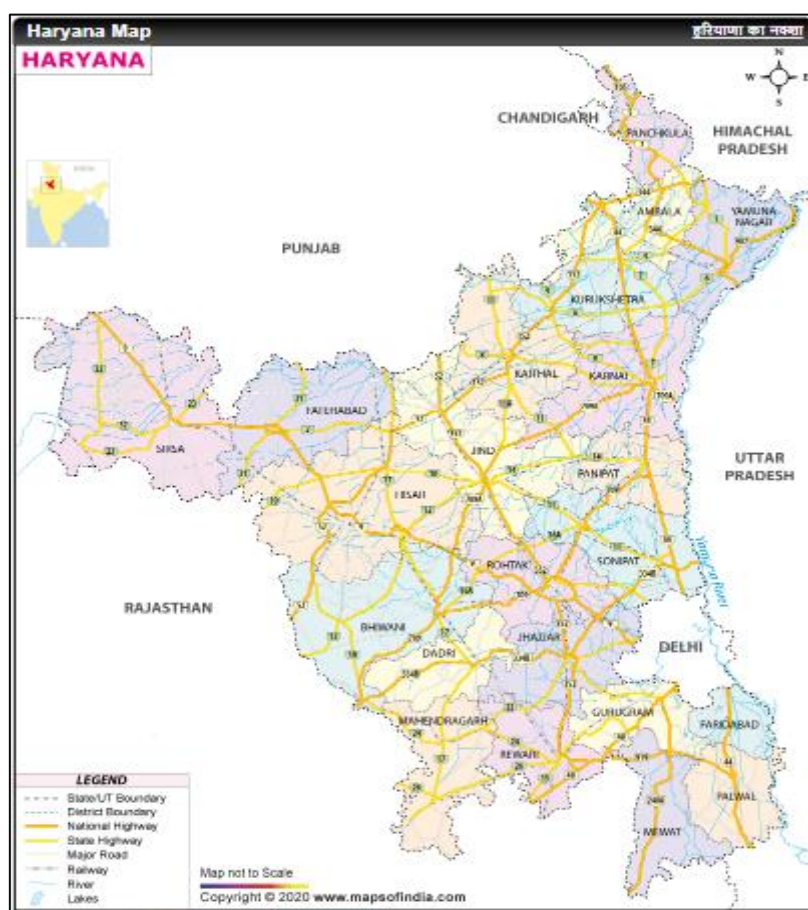


Figure 2.2: Map of Haryana [Source: <https://www.mapsofindia.com/maps/haryana/>]

2.1.2 DELHI

Delhi officially known as the National Capital Territory (NCT) of Delhi, is a city and a union territory of India containing New Delhi, the capital of India. It is bordered by the state of Haryana on three sides and by Uttar Pradesh to the east. The NCT covers an area of 1,484 square kilometers (573 sq mi).

Delhi's urban area is now considered to extend beyond the NCT boundaries, and include the neighboring satellite cities of Ghaziabad, Faridabad, Gurgaon and Noida in an area called the Central National Capital Region (CNCR) and had an estimated 2016 population of over 26 million people, making it the world's second-largest urban area according to the United Nations.

Delhi is one of the oldest cities in the world, and has been continuously inhabited since the 6th century BCE. Through most of its history, Delhi has served as a capital of various kingdoms and empires, most notably the Pandavas, the Delhi Sultanate and the Mughal Empire. The city has been captured, ransacked and rebuilt several times, particularly during the medieval period, and modern Delhi is a cluster of a number of cities spread across the metropolitan region. For many centuries Delhi has been a dominant trading and commercial Centre in northern India, and after 1990s it has emerged as an important node in the international corporate and financial network.

2.1.2.1 NEW DELHI

New Delhi is also the seat of all three branches of the government of India, hosting the Rashtrapati Bhavan, Parliament House, and the Supreme Court of India. Delhi itself is often considered as a hub for international trade. The foundation stone of New Delhi was laid by Emperor George V during the Delhi Durbar of 1911. It was designed by British architects Sir Edwin Lutyens and Sir Herbert Baker. The new capital was inaugurated on 13 February 1931, by Viceroy and Governor-General of India Lord Irwin.

Although colloquially Delhi and New Delhi are used interchangeably to refer to the National Capital Territory of Delhi (NCT), these are two distinct entities, with New Delhi forming a small part of the city of Delhi. The National Capital Region is a much larger entity comprising the entire NCT along with adjoining districts in neighboring states which includes but is not limited to Ghaziabad, Noida, and Faridabad.

After India gained independence in 1947, limited autonomy was conferred to New Delhi and was administered by a Chief Commissioner appointed by the Government of India. In 1966, Delhi was converted into a union territory and eventually the Chief Commissioner was replaced by a Lieutenant Governor. The Constitution (Sixty-ninth Amendment) Act, 1991 declared the Union Territory of Delhi to be formally known as National Capital Territory of Delhi. A system was introduced under which the elected government was given wide powers, excluding law and order which remained with the Central Government. The actual enforcement of the legislation came in 1993.

2.1.2.2 RELIGION

Hinduism is Delhi's predominant religious faith, with 81.68% of Delhi's population, followed by Islam (12.86%), Sikhism (3.40%), Jainism (0.99%), Christianity (0.87%), and Buddhism (0.11%). Other minority religions include Zoroastrianism, Baha'ism and Judaism.

2.1.2.3 GEOGRAPHY

Two prominent features of the geography of Delhi are the Yamuna flood plains and the Delhi ridge. The Yamuna river was the historical boundary between Punjab and UP, and its flood plains provide fertile alluvial soil suitable for agriculture but are prone to recurrent floods. The Yamuna, a sacred river in Hinduism, is the only major river flowing through Delhi. The Hindon River separates Ghaziabad from the eastern part of Delhi.

The Delhi ridge originates from the Aravalli Range in the south and encircles the west, north-east and north-west parts of the city. It reaches a height of 318 m (1,043 ft) and is a dominant feature of the region.

The National Capital Territory of Delhi covers an area of 1,484 km² (573 sq mi), of which 783 km² (302 sq mi) is designated rural, and 700 km² (270 sq mi) urban therefore making it the largest city in terms of area in the country. It has a length of 51.9 km (32 mi) and a width of 48.48 km (30 mi).

2.1.2.4 LANGUAGES

According to the 50th report of the commissioner for linguistic minorities in India, which was submitted in 2014, Hindi is Delhi's most spoken language, with 80.94% speakers, followed by Punjabi (7.14%), Urdu (6.31%) and Bengali (1.50%). 4.11% of the Delhiites speak other languages. Hindi is also the official language of Delhi while Urdu and Punjabi have been declared as additional official languages. Their First Language includes Hindi, Urdu and English.

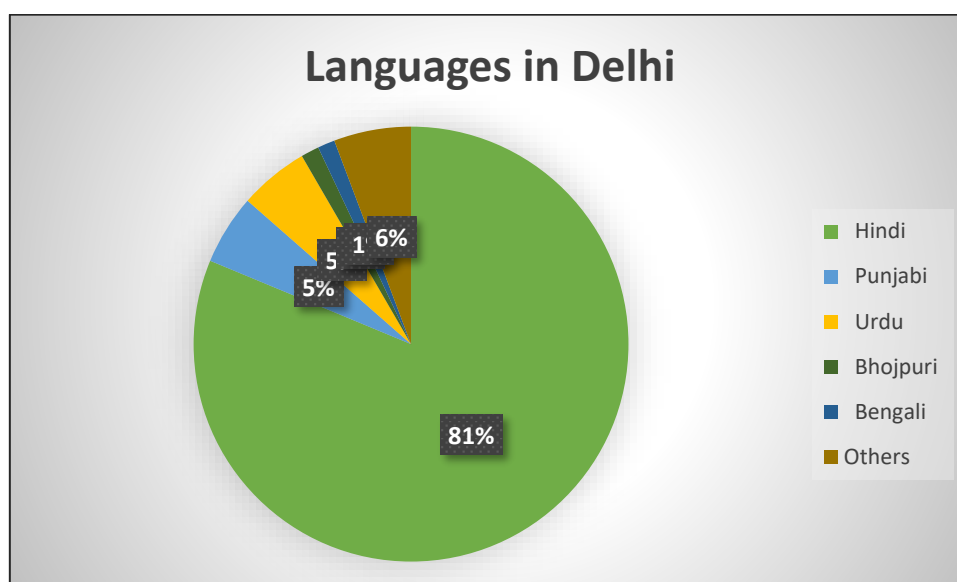


Figure 2.4: Languages in Delhi [Source: "Archived copy", Archived from the original on 15 August 2018. Retrieved 26 April 2019.]

2.1.2.5 CLIMATE

Delhi features a dry-winter humid subtropical climate (Köppen Cwa) bordering a hot semi-arid climate (Köppen BSh). The warm season lasts from 21 March to 15 June with an average daily high temperature above 39 °C (102 °F). The hottest day of the year is 22 May, with an average high of 40 °C (104 °F) and low of 28 °C (82 °F). The cold season lasts from 26 November to 9 February with an average daily high temperature below 20 °C (68 °F). Temperatures in Delhi usually range from 2 to 47 °C (35.6 to 116.6 °F), with the lowest and highest temperatures ever recorded being -2.2 and 48.4 °C (28.0 and 119.1 °F), respectively.

2.1.2.6 GEOGRAPHICAL MAP OF DELHI



Figure 2.5: Map of Delhi [Source: <https://www.mapsofindia.com/maps/delhi/>]

2.2 EDUCATION AND LITERACY SCENARIO OF THE STUDY REGION

2.2.1 HARYANA

Haryana has 48 universities and 1,038 colleges, including 115 government colleges, 88 govt-aided colleges and 96 self-finance colleges. Hisar has three universities: Chaudhary Charan Singh Haryana Agricultural University - Asia's largest agricultural university, Guru Jambheshwar University of Science and Technology, Lala Lajpat Rai University of Veterinary & Animal Sciences); several national agricultural and veterinary research centres.

2.2.1.1 LITERACY RATE IN HARYANA

It has been observed that literacy rate is an upward trend and is 76.64 per cent as per 2011 population census. In 2001, the literacy rate in Haryana stood at 67.91 per cent of which male and female were 78.49 per cent and 55.73 per cent literate respectively. As of 2013, Gurgaon city had the highest literacy rate in Haryana at 86.30% followed by Panchkula at 81.9 per cent and Ambala at 81.7 per cent. In terms of districts, as of 2012 Rewari had the highest literacy rate in Haryana at 74%, higher than the national average of 59.5%: male literacy was 79%, and female 67%.

Table 2.2 Demographic profile of Haryana

Description	As per 2011 Census
Area	44,212 Sq. Km
Actual Population	25,351,462
Population (Male)	13,494,734
Population (Female)	11,856,728
Sex Ratio	879
Literacy Rate	75.55%
Male Literacy Rate	85.38%
Female Literacy Rate	66.67%

Demographically, Haryana has 471,000 women and 457,000 men pursuing post-secondary school higher education. There are more 18,616 female teachers and 17,061 male teachers in higher education. Union Minister Ravi Shankar Prasad announced on 27 February 2016 that National Institute of Electronics and Information Technology (NIELIT) would be set up in Kurukshetra to provide computer training to youth and a Software Technology Park of India (STPI) would be set up in Panchkula's existing HSIIDC IT Park in Sector 23. Hindi and English are compulsory languages in schools whereas Punjabi, Sanskrit and Urdu are chosen as optional languages.

2.2.2 DELHI

Schools and higher educational institutions in Delhi are administered either by the Directorate of Education, the NCT government or private organisations. In 2006, Delhi had 165 colleges, five medical colleges and eight engineering colleges, seven major universities and nine deemed universities.

The premier management colleges of Delhi such as Faculty of Management Studies (Delhi) and Indian Institute of Foreign Trade rank the best in India. All India Institute of Medical Sciences Delhi is a premier medical school for treatment and research. National Law University, Delhi is a prominent law school and is affiliated to the Bar Council of India. The Indian Institute of Technology, Delhi situated in Hauz Khas is a premier engineering college of India and ranks as one of the top institutes in South Asia.

Delhi Technological University (formerly Delhi College of Engineering), Indira Gandhi Delhi Technical University for Women (formerly Indira Gandhi Institute of Technology), Indraprastha Institute of Information Technology, Netaji Subhas University of Technology (formerly Netaji Subhas Institute of Technology), Guru Gobind Singh Indraprastha University and National Law University, Delhi are the only state universities.[243][244] University of Delhi, Jawaharlal Nehru University and Jamia Millia Islamia are the central universities, and Indira Gandhi National Open University is for distance education.[245] As of 2008, about 16% of all Delhi residents possessed at least a college graduate degree.

2.2.2.1 LITERACY RATE IN DELHI

According to the 2011 census of India, the population of NCT of Delhi is 16,753,235. The corresponding population density was 11,297 persons per km² with a sex ratio of 866 women per 1000 men, and a literacy rate of 86.34%. In 2004, the birth rate, death rate and infant mortality rate per 1000 population were 20.03, 5.59 and 13.08, respectively. In 2001, the population of Delhi increased by 285,000 as a result of migration and by 215,000 as a result of natural population growth, which made Delhi one of the fastest growing cities in the world. Dwarka Sub City, Asia's largest planned residential area, is located within the National Capital Territory of Delhi.

Table 2.3 Demographic profile of Delhi

Description	As per 2011 Census
Area	44,212 Sq. Km
Actual Population	11,034,555
Population (Male)	5,882,117
Population (Female)	5,152,438
Sex Ratio	868
Literacy Rate	86.21%
Male Literacy Rate	90.94%
Female Literacy Rate	80.76%

2.3 SITUATION ON STEM IN THE STUDY REGION

STEM concept is growing worldwide as it aims to lessen the gap between contextual and rote based learning. The objective is replacing it with a practical approach, which will equip children with the skills and knowledge needed to get lucrative opportunities in their field of interest. It aims to clear the fundamental concepts of STEM disciplines, so that the learners can opt for their higher studies and beyond.

2.3.1 HARYANA

STEM Learning supports Haryana government in its endeavour to increase the literacy rate. Literacy rate in Haryana has seen an upward trend and is 76.64 per cent as per 2011 population census. Male literacy stands at 85.38 per cent, while female literacy is at 66.67 per cent. In 2001, the literacy rate in Haryana stood at 67.91 per cent of which male and female were 78.49 per cent and 55.73 per cent literate respectively. As of 2013, Gurgaon city had the highest literacy rate in Haryana at 86.30% followed by Panchkula at 81.9 per cent and Ambala at 81.7 percent. In terms of districts, as of 2012 Rewari had the highest literacy rate in Haryana at 74%, higher than the national average of 59.5%: male literacy was 79%, and female 67%.

Through this Corporate Social Responsibility initiative, 9200 students have learnt STEM subjects through the interactive science and math exhibits. 92 teachers have been trained through the 'Teacher Training Programs.'

During the STEM Awards held in February 2020, immense talent of the students was seen as they participated in various Quiz Competitions, Tinkering and Model Making Competitions. 5 schools from Haryana have participated in the National STEM Awards (NSA) 2020 held in Bengaluru. Young champs from GGSS School NIT 2, Faridabad (Haryana) displayed amazing STEM knowledge and came first in the Engineering Tinkering Category during the finale in Bengaluru and were awarded a cash prize of Rs 50,000/- for its exemplary STEM performance. The same school claimed the first runner up award in science & mathematics Model Competition and won Rs 25,000 cash prize.

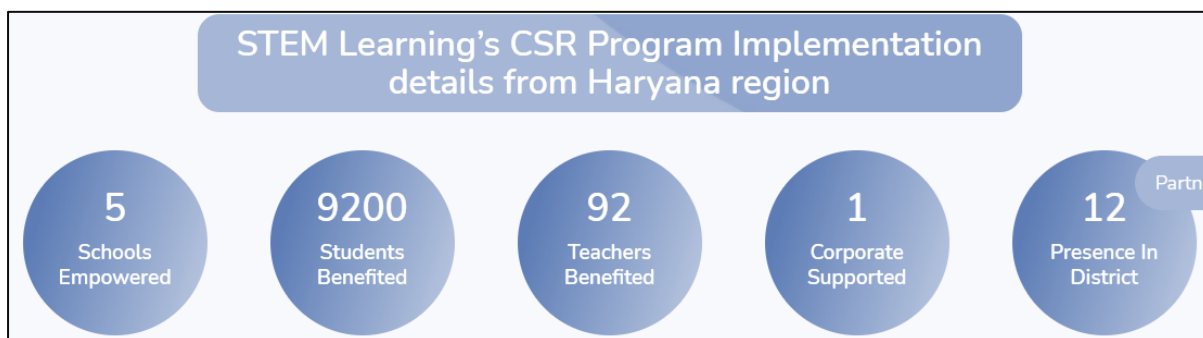


Figure 2.6: STEM in Haryana [Source: <https://stemlearning.in/north/haryana/>]

2.3.2 DELHI

STEM Learning has partnered with Technip FMC to bring about a change through the CSR initiatives in the city of New Delhi. The capital city of India has experienced a practical learning reformation in 3 government schools post the installation of Mini Science Centres (MSCs).

According to the 2011 census of India, the population of NCT of Delhi is 16,753,235. The corresponding population density was 11,297 persons per km² with a sex ratio of 866 women per 1000 men, and a literacy rate of 86.34%. In 2004, the birth rate, death rate and infant mortality rate per 1000 population were 20.03, 5.59 and 13.08, respectively.[188] In 2001, the population of Delhi increased by 285,000 as a result of migration and by 215,000 as a result of natural population growth, which made Delhi one of the fastest growing cities in the world. Dwarka Sub City, Asia's largest planned residential area, is located within the National Capital Territory of Delhi. According to the UN this makes Delhi urban area the world's second-largest, after Tokyo, although Demographia declares the Jakarta urban area to be the second-largest.

With 1200 students trained with the help of plug & play table top exhibits and 12 teachers up skilled through continuous teacher training and retraining programs, the children from these schools are benefitting with the modern-day pedagogy approach.



Figure 2.7: STEM in Delhi [Source: <https://stemlearning.in/north/delhi/>]

2.4 BENEFITS FOR THIS STUDY TO THE STUDY REGION

The present study intends to assess the success of various women empowering schemes in Haryana and Delhi regions of North India on the basis of data collected from women beneficiaries. This study gauged the overall effectiveness of the schemes by analysing trends or patterns of various indicators of professional development. This study is helpful in evaluating problems and limitation of women beneficiaries with respect to the local problems of the area. Such studies enhance the scope of government's initiative to bring more women scientist

in the mainstream.

SUMMARY

This chapter covers detailed study of the states that is Haryana and Delhi. As we can see the literacy rate in Haryana is 85.38% of male whereas in female it is 66.67%, whereas in Delhi the male literacy rate is 90.94% while female literacy rate is 80.76%. Here we can conclude that this study is helpful in evaluating problems and limitation of women beneficiaries with respect to the local problems of the area. Such studies enhance the scope of government's initiative to bring more women scientist in the mainstream.

CHAPTER 3: SURVEY AND DATA COLLECTION

INTRODUCTION

In social science, research may be defined as “methodical and systematic study of a subject with the aim to generate new information, verify the existing knowledge in the subject, and reach a new understanding” (Srivastava,2004). In the present study online questionnaire were e-mailed to all the women scientists who were granted research projects from early 2003 to 2018 in various women centric schemes of DST to get detailed information of various indicators for evaluating the impact of these initiatives.

3.1 SURVEY QUESTIONNAIRE AND METHODOLOGY FOR GETTING RESPONSES

The present cross-sectional study is an attempt to assess the overall effectiveness of different women centric schemes of Government of India (2003-2018) by tracking individual women scientist's progress over time from Haryana and Delhi states of North India.

In the present multicentric study, the entire country was divided in six zones (Figure 3.1) and thirteen regions. Each region was assigned to one regional Principal investigator and overall research work was coordinated by the national coordinator. The following table 3.1 shows different Principal investigators working in the thirteen regions of India. The present report involves the information about Haryana and Delhi areas of North India.

Inclusion criteria: All the women scientist sanctioned any project from 2003 to 2018 in women empowering schemes i.e., WOSA, WOSB, WOSC, BioCare or UGCPDF were included in the study.

Table 3.1: Regions assigned to various Principal Investigators

Name of PI	Institution Address	Zone	States
Dr. Anjana Vyas	Center for Applied Genomics, CRDF, CEPT University, Ahmedabad, Gujarat-380015	Western Zone	Gujarat, Maharashtra
Dr. Ekta Manghani	JECRC University, Plot no. IS-2038 to IS-2039, Ranichandrapura Industrial Area Jaipur, Sitapura, Vidhani, Rajasthan-303905	Western Zone	Rajasthan, Madhya Pradesh
Dr. Maninder Kaur	Department of Anthropology, Punjab University, Sector 14, Chandigarh-160014	North Zone	J&K, Chandigarh, Punjab
Dr. Brajeshwar Chandella	TIFAC, W Wing, Vishwakarma Bhawan, Shaheed Jeeb Singh Marg, New Delhi, Delhi-110018	North Zone	Himachal Pradesh, Uttara Khand, Uttar Pradesh
Dr. Vinay Mathota	Dronacharya College of Engineering, Plot no. 76 P, Part - III, Sector - 5, Gurgaon, Haryana-122001	North Zone	Haryana, Delhi
Dr. S. Jyotsna	Krish Vidyaa Kendra, Hengbari, P.O. Kangpokoi, Bimalpat District, Manipur-796129	North East Zone	Assam, Manipur, Arunachal Pradesh, Nagaland, Meghalaya, Mizoram, Tripura, Sikkim
Dr. Tanuja Singh	PG Dept of Botany, T.P.S College, Patliputra University, Chiragupura Nagar Rd, Munna Chak, Kankarbagh, Banimian Colony, Patna, Bihar-800020	Eastern Zone	Bihar, Jharkhand, Chhattisgarh
Dr. H. M. Padhy	Sophitorium Institute of Technology & Lifeskills, College Road, Jatni, Khurda, Odisha-752050	Eastern Zone	West Bengal, Odisha
Dr. S. Sophia	Department of ECE, Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu-641008	South East Zone	Tamilnadu, Pondichery
Dr. P. Sathesh	Institute of Bioinformatics and Computational Biology (IBCB) Visakhapatnam, Andhra Pradesh- 530617	South East Zone	Andhra Pradesh
Dr. Anshana Reddy	SR Engineering College Ananthapur, Hazanparthy (M), Warangal Urban, Telangana-506371	South East Zone	Telangana
Dr. Geetha B. S.	Kerala State Council For Science, Technology and Environment (KSCSE), Thiruvananthapuram, Kerala-695004	South West Zone	Kerala, Goa
Dr. Bharathi Salimath	Department of Biotechnology, Manasa Gangotri, Mysore-570006	South West Zone	Karnataka

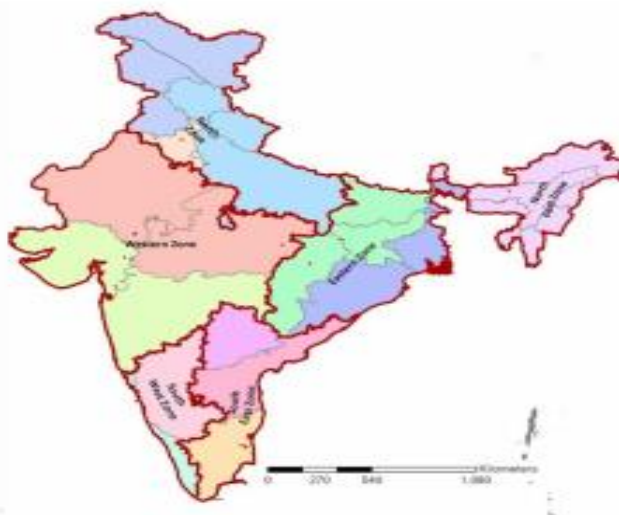


Figure 3.1 Map showing various zones of the study

3.1.1 QUESTIONNAIRE FOR THE STUDY

A questionnaire was prepared by all the regional and national PI to get detailed information on the topic. Before proceeding to the field, the feasibility of online form was checked with selected women scientists and university professors from Haryana and Delhi (Attached in MS EXCEL format, to be shared separately). A pilot study was performed to understand the impediments that may come across while performing the data collection.

A questionnaire with total 68 questions including sub categories was finalized. It had both close ended as well as open ended questions and the process of data collection was initiated.

The information about women scientist's name, date of birth, residential address, email id, marital status, category, educational qualification at present, information about currently affiliated institution was recorded in well prescribed questionnaire.

Questionnaire also consisted information regarding the source of information of the scheme, break in career, duration and reasons for break in career, any eligibility test cleared by the PI's, family support received for research, year wise number of projects sanctioned, broad subject area, area of specialization, project id, date of sanction and completion of the project, duration and status of the project, request and reasons for extension, name and address of the host institution, information about mentor, mentor's and institutional support received during the project, whether the project was transferred to another institution or not, any reason for the transfer, name and address of the institution where the project transferred and completed, information about new mentor, new mentor and new institutional support, educational background of the PI's at the time of the grant of the project and after the completion of project, awards and honors received during the project period, number of publications from the project awarded, h index, number of workshops or seminars attended during the project at national and international level, no of paper presented in workshops or seminars during the project at national and international level.

Additional information on women scientist's involvement and organizing extension activities, special achievements, innovations and number of patents from the project, societal technology, status of any skill development, status, duration, nature of employment before and after the project, current employment status of women scientists and their satisfaction level with current job, rating to the programme/ scheme, satisfaction level with the programme/ scheme, problems related to receiving and spending grants of women scientist, what motivated women scientist to undertake programme or project and overall remarks/experience of women

scientists was also gathered to get in-depth information about each participant. Field work was carried out from April 2019 to October 2020 on women scientist, who have received any project under women centric scheme.

3.2 METHODS ADOPTED TO APPROACH WOMEN SCIENTISTS

Online questionnaire was emailed to all the women scientists of the area under study. Many women scientist responded positively and filled the questionnaires with full enthusiasm. A key challenge was to locate the women scientist who had completed the research projects long ago and their contact information were not available with either DST or their host institute. Hence the following different approaches were adopted to contact them:

- **By approaching their Head of Department and Mentors:** The Mentors/HOD of the women scientists were contacted to get information about the women beneficiary, who had worked under their supervision.
- **By visiting their Universities/Colleges:** Some women scientists were apprehensive about sharing their details. Regional PI Plan project fellows visited to different departments of various universities of Haryana and Delhi to get the information of women scientist. For personal visits in different universities, internal meetings at college level were also held. Following are the institutes visited by regional PI and her team to approach women scientist:
 - ❖ Guru Jambheshwar University of Science and Technology, Hisar
 - ❖ National Brain Research Centre, Manesar,
 - ❖ The Indian Institute of Technology, Delhi,
 - ❖ The NorthCap University, Gurugram,
 - ❖ Maharishi Markandeshwar University, Mullana,
 - ❖ Chaudhary Charan Singh Haryana Agricultural University, Rohtak,
 - ❖ Kurukshetra University, Kurukshetra,
 - ❖ Indira Gandhi Delhi Technical University for Women, Delhi,
 - ❖ Jawaharlal Nehru University, Delhi,
 - ❖ All India Institute of Medical Sciences, New Delhi,
- **By personal visits at their residence:** Some women scientists had completed their research projects and their departments had no information about them. Some women beneficiaries had not responded to the repeated e-mails, so the project fellows personally visited their residence to establish rapport with them and get information about them. Many women scientists also questioned about the purpose for collecting this information. It was only after they were convinced and then willingly came forward to cooperate.
- **Through Research publications:** For some women scientists information regarding their present residence or any contact number was not available. Email ids of some women scientist were not functioning; we tried to search them from their research publications on research gate, Linked in and other social media etc.
- **Through their Head of the Department:** Women Scientists who were reluctant to fill the questionnaires for various reasons, their head of the departments were also approached to request them to fill the online form.

- **By contacting and searching on Social Media:** For some women scientists, we had searched them on Facebook, LinkedIn, Twitter, GMAIL, etc. and through their college website is also included.

The following success stories of the women scientists were covered:

From Haryana

- ❖ Dr. Deepika Chaudhary
- ❖ Dr. Chhavi Sharma
- ❖ Dr. Maninder Kaur

From Delhi

- ❖ Dr. Rachna Raj
- ❖ Dr Itu Singh
- ❖ Dr Sunita Bhagat
- ❖ Dr Smriti Rekha
- ❖ Dr. Vinita Krishna
- ❖ Ms. Shruti Kaushik

ETHICAL CONSIDERATION: Addressing ethical commitment is a priority of every research. In this study, non-disclosure agreement was also signed by regional Principal Investigator to maintain the privacy and confidentiality of all the data. Various local Programme Advisory Committee (LPAC) meetings were attended at different regions of the country.

- **1st LPAC meeting:** First meeting of multicentric project entitled “Assessment of Government of India's Gender Mainstreaming Programs for Women in Science” was held on 1st February 2019 at CEPT University, Ahmedabad. In this meeting online form was finalized. It was decided that the finalized form will be tested with selected women scientists and the university professors. On the basis of their response and comments online form will be improved and the same will be circulated to all regional PI's until 8th April, 2019 to initiate the data collection.
- **2nd LPAC meeting:** 2nd review meeting of Network Mode Project was held on 20th June 2019 at Parwanoo, Himachal Pradesh. In this meeting all the regional PI's explained the status of their data collection. They also discussed the different methods used to approach the women scientist and also gave their suggestions to expedite the data collection for better program management. It was also decided that all the members of the multicentric project will be authorised by the Department of Science and Technology, Government of India to collect the information. Non-disclosure agreement was also signed by all the regional PI's as well as national PI to maintain the privacy and confidentiality of all data. The confidential or personal data or information of the women beneficiaries will not be disclosed to anyone other than DST, New Delhi.
- **3rd LPAC meeting:** 3rd review meeting of Network Mode Project was held on November 8th, 2019 at International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) Hyderabad. In this meeting scheme-wise progress review statistics including number of database received from national PI and number of women scientists approached, methods adopted to approach women scientist,

Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

challenges/ problems/ issues faced by the regional PIs, and problems-wise solutions/ action taken were thoroughly discussed. Discussion about the observation on data discrepancy and statistical analysis of information received so far were also carried out. Analysis of data (received till 8th November) was also performed by the regional PIs with reference to projects-wise percentage of women scientist, schemes-wise distribution of women scientist, continuation versus gap as well as pre – post situation placement of women scientist in Haryana and Delhi.

- **4th LPAC Meeting:** The 4th meeting with all the stakeholders from the Central Government Ministries, Departments and Regional PIs of the project entitled “Assessment of Government of India’s Gender Mainstreaming Programs for Women in Science’ was held on 20th February 2020 at Administrative Staff College of India, New Delhi. This meeting was more inclusive and comprehensive due to the participation of both stakeholders and Regional PIs. National coordinator gave a detailed presentation about the multicentric project and work undertaken by regional Principal Investigators. Dr.Indu Puri, Scientist-F, DST, New Delhi talked a similar project on the aspects of women empowerment not only in science but on societal components. She informed that the project involved the development of National Thematic Atlas to capture the complete life cycle of women. Dr. Suraksha Diwan, Scientist-E, DBT, New Delhi discussed about the workshops and conclave organized to encourage women scientists and showcase their work. She advised that it should be mentioned in the e-mail to the beneficiaries that they will get a platform to present their work through the booklet for success stories with their photos init. Dr. Sangeeta Nagar, Scientist-E, TIFAC, New Delhi suggested developing a Google Form and voluntarily proposed to help in collecting the responses, since she is directly connected to the women beneficiaries of WOS C. Dr. Namita Gupta, Scientist-G,DST, New Delhi informed about the awareness training workshop conducted by her department related to the filling of forms and documents for the official purpose, the training conducted for the women scientist (PIs), to whom the sanctioned order is issued.

- **5th Online Meeting:** Due to pandemic of COVID 19, the 5th meeting with all the Regional PIs of the project was held online on 6th May2020.An online Google sheet was circulated among all the RPI's, prior to this meeting, to fill respective state statistics on the responses received. An excel sheet was prepared at national level, including zone-wise and state-wise on the total number of the women beneficiaries, all at project-wise on the responses received till date. A discussion revealed that some states have performed better during the time of lock down. The monitoring tracks scheme-wise statistics and provides a relative understanding of pending responses to the total data available of the women beneficiaries from GOI. It supports to understand the overall progress of the project, day today state performance and accordingly provides assistance to make the decision.
It was decided that all Regional PIs may submit the Annual Progress Report and the provisional/ tentative utilization certificate. For the best practices report, it was recommended to capture 10 success stories from each zone, a size of the report will be of 100-120 pages. For the selection process of the success story, the criteria were circulated, that may be considered while selecting a ‘Best Suitable Candidate’ for compiling best practice story, both in audio and in video form. The total time recommended for the video recording is about 20-25 minutes. Hence, maximum 2 minutes per women scientist can be allocated. The format of the ‘Project Completion Report’ was circulated to all the Regional Principal Investigators.

- **6th Online Meeting:** The 6th online meeting with all the Regional PIs was held on 12th Sept 2020.The meeting began with a discussion on the state-wise progress of the project, about the number of responses received and responses yet to be received. An online Google sheet was circulated among all the RPI's, after the meeting, to fill respective state statistics on the responses received as on date. It was suggested to compiling the strategies adopted and, share the experiences/issues faced during the journey of receiving responses in the report. This will help the government to understand and evaluate the performance of the women beneficiaries and suggest recommendations for decision making as to

the best course of action. As the discussion proceeded, few of the RPI's shared their innovative methods and experiences towards the data collection. Many RPIs have suggested to freeze the process of data collection as it is difficult to reach the beneficiaries due to severe COVID conditions across the country. The meeting moved to the next phase of discussion on the compilation of the information and its statistical analysis. It was suggested to go for multivariable analysis with the use of appropriate statistical analysis tools for the development of three pillars of growth in terms of professional, economic and societal recognition. The significance of cross-tabulation to come up with the multivariable analysis. The third phase of meeting continued with a deliberation on the documentation of the Best Practices in the form of video as well as interview booklet format. This documentation can be proposed later to upload on the DST website. This may help the young researchers as a motivation and understand the regional scenarios. They may get a guideline on the thematic areas for writing the proposals. In regard to the book format various templates of the publishers including Taylor and Francis, Springer and Elsevier were reviewed. An interview Booklet template was shared with details of the cover page, word limitation, font style, etc. It was decided to keep the maximum page limit as 2 for each women scientist. The format of the video interview with background image and time limit for each woman's best practices was shared.

3.3 METHODOLOGY FOR COLLECTING OTHER (SECONDARY) DATA

The secondary data in this study was collected from journals, books, census and governmental web portals and Wikipedia. To obtain a detailed account of educational as well as literacy picture of Haryana and Delhi, Census report 2011 was consulted. Literature was resourced from the web site of Department of Science and Technology, New Delhi to get a holistic perspective about various women empowering schemes.

3.4 PROBLEMS AND CHALLENGES

Many problems/challenges were faced by the regional PI and her team during data collection. Some women scientist who had completed their research projects long ago and their contact numbers were not available with either DST or their host institute. Some women scientist had not responded to the repeated e-mails. Email ids of some women scientist were not functioning.

Due to Farmer protest in Haryana, mobile as well as internet services have been suspended in parts of the state, so it is difficult to contact women scientist. Also due to in Citizenship act Delhi some services have been suspended. But still regional investigator and her team tried to approach women Scientist by snowball sampling method. Due to limited internet services, they are not able to fill the online form, so the forms are being filled through telephonic conversations.

Sudden lock down due to pandemic of Covid19, personal visit to various universities of the region under consideration was not possible, so repeated requests were sent to the women scientist to fill the online form, but some women scientist didn't agree to provide their details.

Despite all these challenges we tried to extract maximum data from the Haryana and Delhi.

STATISTICAL ANALYSIS: The analysis of collected data was carried out using Quick Heal Scanner version 11.4. The level of significance for all analyses was assumed confidence interval of 95% were taken for all statistical analyses. The statistical significance of the different categories of a variable was estimated by chi square test and the difference in the paired variables was estimated by chi-square test.

CHAPTER 4: ANALYSIS

INTRODUCTION

Analysis section of the present report has an analytical description of all the variables in the form of tables and bar diagrams to gauge the trends and patterns based on various indicators.

4.1 WOMEN SCIENTISTS RESPONSES

Table 4.1 depicts the overall statistics of data received from DST and online forms filled by women beneficiaries under various schemes from Haryana and Delhi. It is evident from the table that in Punjab, total 110 research projects were sanctioned under different schemes and 23 women scientists filled the online forms along with 7 women scientist as extra data. Also, it has been noticed that 11 women scientist email id were provided wrong, whom we contact later but not result in good response. Further, 8 women scientist data of any kind is not available, except their names and scheme in which they had enrolled.

Table 4.1 Overall statistics of data collected from Haryana and Delhi

Scheme	Status	Haryana	Delhi
WOS-A	Data Received	48	200
	Forms Filled	15	58
	Extra Data	2	6
	Wrong Email	8	23
	No data available	7	27
	Total	32(66%)/ (52%)	86 (43%)/ (32%)
WOS-B	Data Received	1	5
	Forms Filled	1	2
	Extra Data	0	0
	Wrong Email	0	0
	No data available	0	0
	Total	1(100%)	2(40%)
WOS-C	Data Received	36	79
	Forms Filled	5	8
	Extra Data	5	13
	Wrong Email	5	20
	No data available	1	2
	Total	16(56%)/ (28%)	43(46%)/ (27%)
Bio Care	Data Received	10	52
	Forms Filled	3	9
	Extra Data	1	0
	Wrong Email	0	5
	No data available	1	0
	Total	5(50%)/ (30%)	14(27%)/ (17%)
UGC-PDF	Data Received	15	32
	Forms Filled	1	4
	Extra Data	0	6
	Wrong Email	0	0
	No data available	0	1
	Total	1(7%)	11(31%)/ (13%)
TOTAL	Data Received	110	368
	Forms Filled	25	81
	Total	50%/ 23%	42%/ 22%

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Out of the total 368 research projects, 73 online forms were received from women scientists in Delhi region, whereas 15 in the form of extra data is received from women scientist. Also we can clearly see, 45 email-id were wrongly received from DST, further 29 women scientist are there whose any information is not available to DST.

It was also found that under WOS A and WOS B schemes maximum response was received in Haryana and it was near 65% and 100% respectively. Only one confirmation was received from Haryana under the UGC-PDF scheme. In Delhi, 43% response was received under WOS-A. Under PDFWM and bio care schemes only 27% and 10% response rate were observed in Delhi. So, response rate was maximum in Haryana (45%) followed by Delhi (36%).

Number of projects sanctioned under various women centric schemes from year 2003 to 2019 in Haryana and Delhi are portrayed in figure 4.1(a) and 4.1 (b). In all the two states, number of projects sanctioned from 2003 to 2019 exhibited a fluctuating trend, although number of projects sanctioned in recent years was more than the earlier years.

Figure 4.1 a): Number of projects sanctioned each year in Haryana

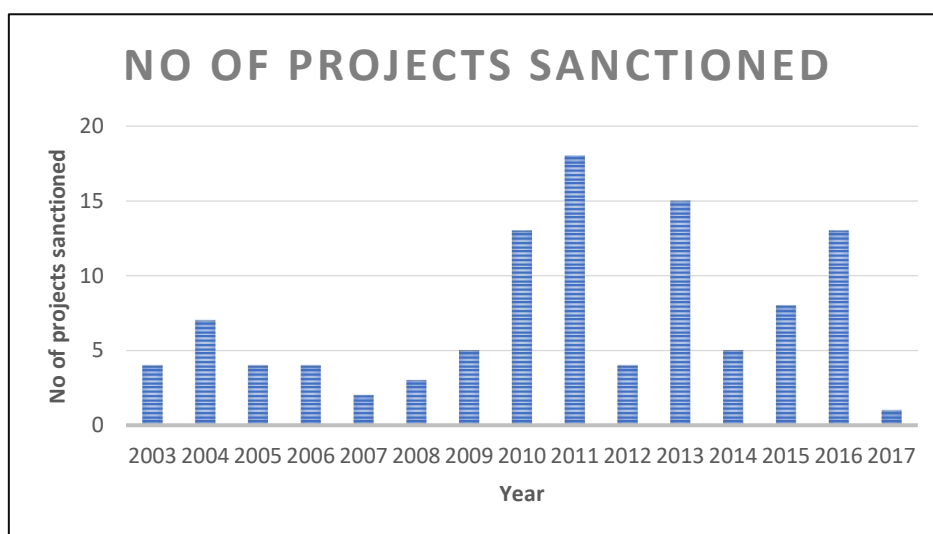
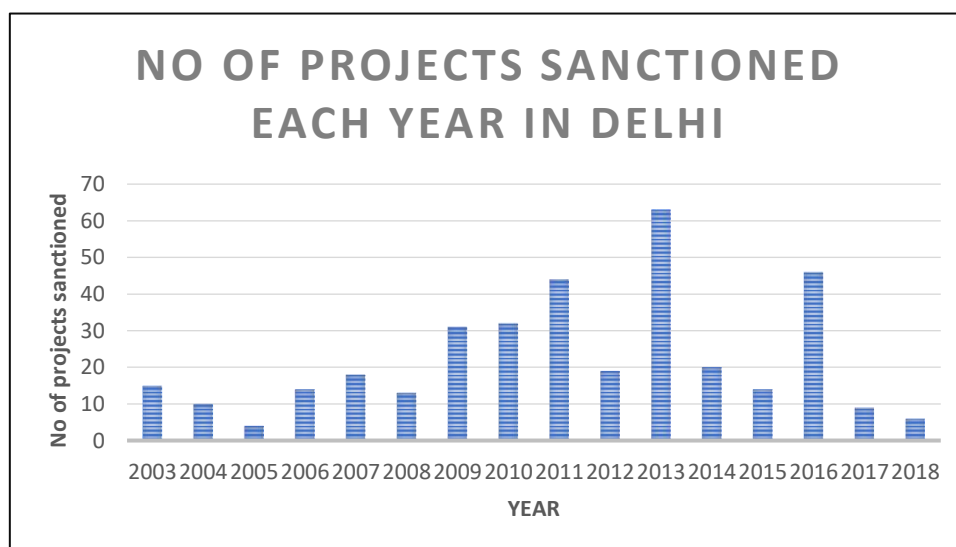


Figure 4.1(a) illustrates the status of the sanctioned research project in Haryana and Delhi. It was observed that in Haryana out of the total projects sanctioned in Haryana from year 2003 to 2018, 20% were still on going, while 68% of the projects were already completed and 0% were left in between.

Figure 4.1 b): Number of Projects sanctioned each year in Delhi



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Similar trend was observed in Delhi region where the percentage of projects still under progress was 22%, while 69% were completed and 2% were left in between.

The chi-square test analysis depicted statistically significant differences among the three categories in all the two regions under consideration i.e., Haryana (35%) and Delhi (49%).

Table 4.2: Status of the projects sanctioned in Haryana and Delhi

Status of the project	Haryana	Delhi
Ongoing	5(20%)	18(22%)
Completed	17(68%)	56(69%)
Left in between	0	2(2%)
p-value	3.01 (E)**	6.47 (E)**
Chi Square Test	0.735	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.2(a): Status of the projects granted in Haryana

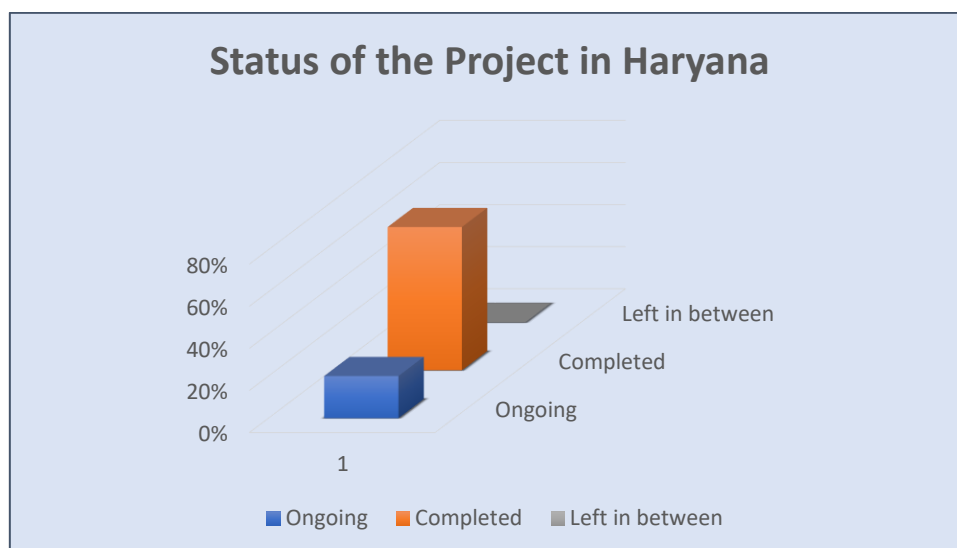
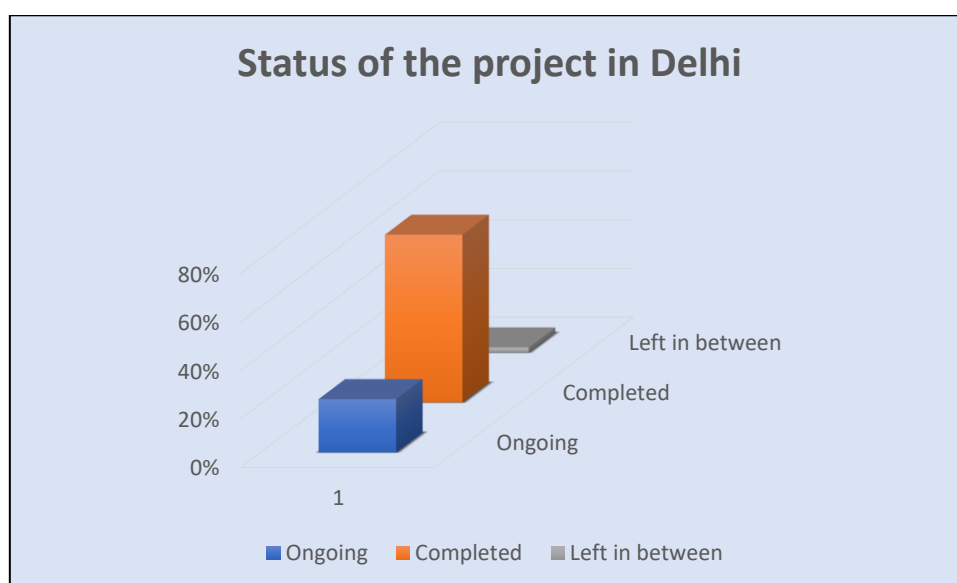


Figure 4.2(b): Status of the projects granted in Delhi



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The career profile of women scientist with or without break from Haryana and Delhi is presented in Table 4.3. It is clear from the table that majority of the Principal Investigators in Haryana (68% vs 16%), and Delhi (74% vs 17%) had an interruption in their career, while lesser percentage of Principal investigators had not faced such phase in their academic journey (Figure 4.3).

Results of Chi-square test revealed statistically significant difference in both the phase in Haryana (9.1) whereas Delhi (7.9) exhibited non-significant differences.

Table 4.3: Break in career among women scientists from Haryana

Break in Career	Haryana	Delhi
Yes	17(68%)	60(74%)
No	4(16%)	14(17%)
p-Value	0.0045*	8.92 (E)*
Chi Square test	0.989	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.3(a): Break in career among women scientists from Haryana

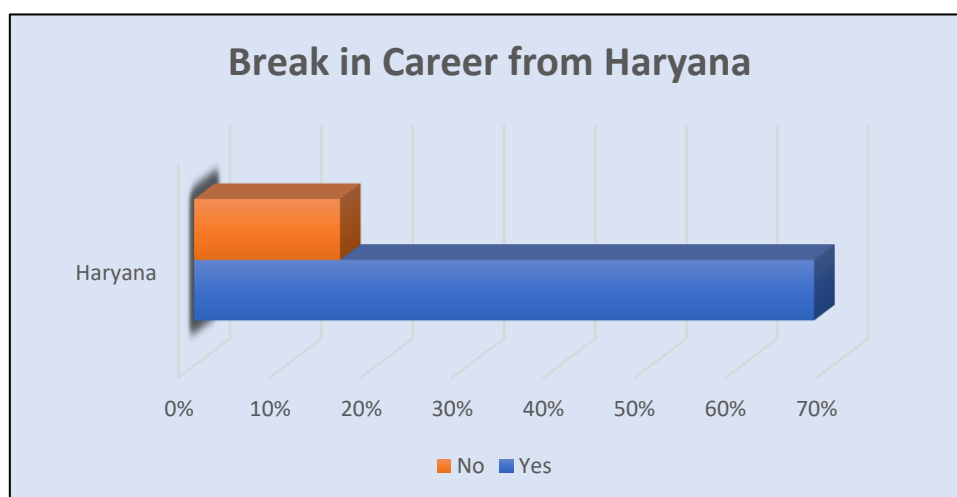
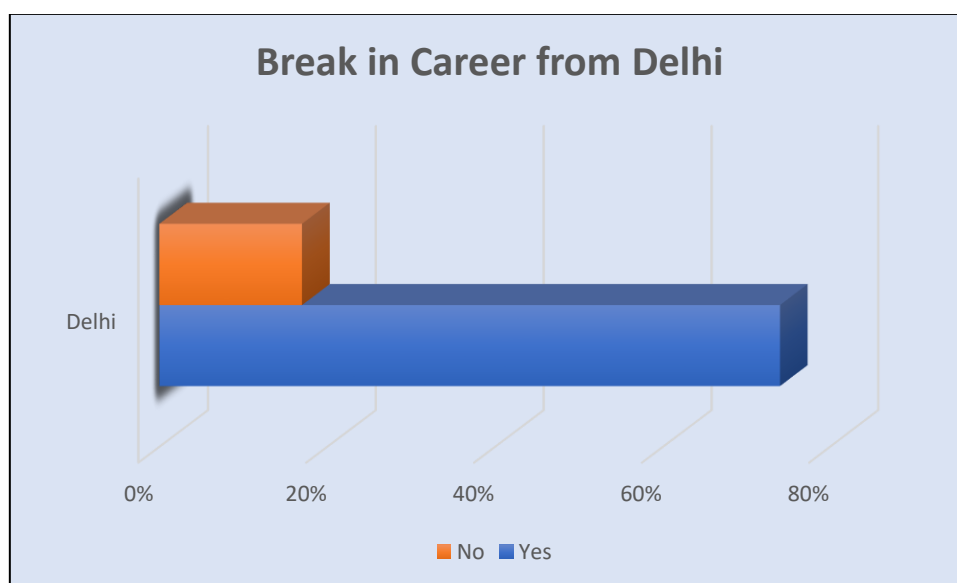


Figure 4.3(b): Break in career among women scientists from Delhi



Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

Table 4.4 demonstrate the duration of break in career of various women scientists from Haryana and Delhi. It is evident from the table that in state Haryana 53% of women scientists had duration of break between 13 to 24 Months followed by 24% which had break in more than or equal to 49 months. Also, 18% of women scientists had taken break in their career within range from 1 to 12 months. There were 0% of women scientists whose break was ranged from 25 to 36 months as well as 37 to 48 months.

In Delhi region, majority (37%) of women scientists had taken break from 1 to 12 months in their academic career. Rest 27% had taken break in their career ranged from 13 to 24 months. It has been observed only 8% of women scientist had taken break in their career in more than or equal to 49 months.

Table 4.4: Demonstrate the duration of break in career of various women scientists from Haryana and Delhi

Duration of Break	Haryana	Delhi
1 to 12 months	3(18%)	22(37%)
13 to 24 months	9(53%)	16(27%)
25 to 36 months	0%	11(18%)
37 to 48 months	0%	6(10%)
More than or equal to 49 months	4(24%)	5(8%)
p-Value	0.0018**	0.0020**
Chi square test	0.0166	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.4(a): Duration of break in career of women scientists in Haryana

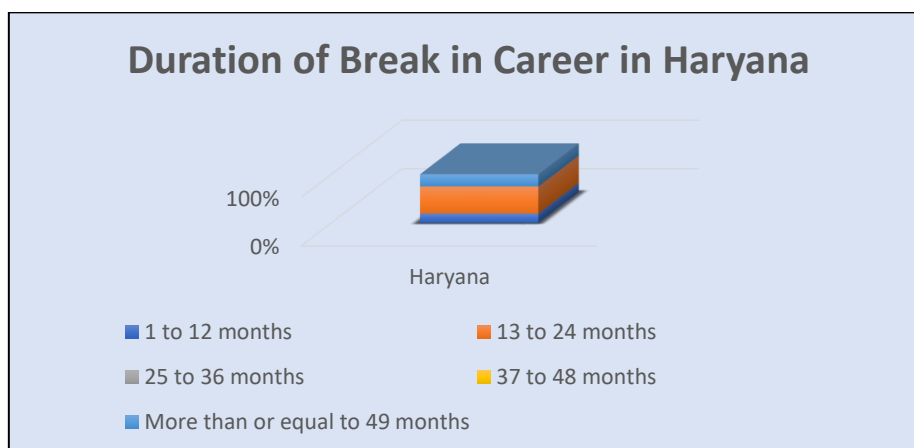
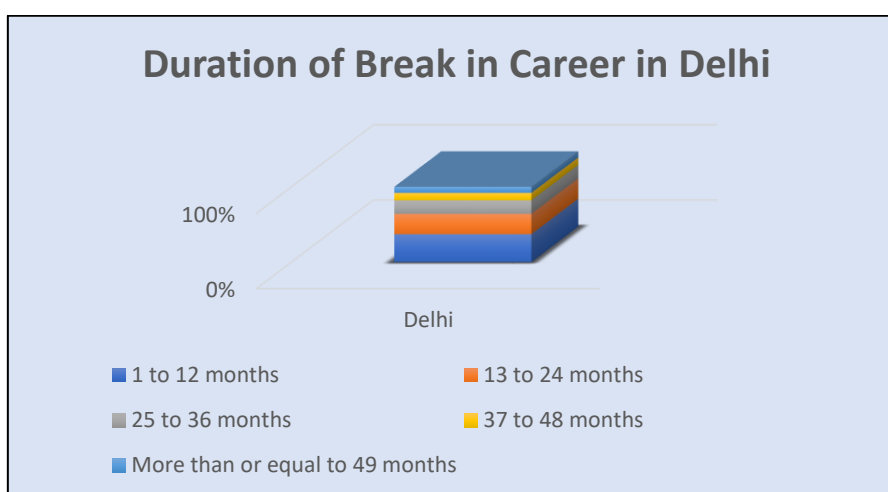


Figure 4.4(b): Duration of break in career of women scientists in Delhi



Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

The various reasons for break in career among women scientist from Haryana and Delhi are displayed in Table 4.5. It was clearly observed that family responsibility was the primary reason for the interruption in career among women scientists of Haryana (50%), and Delhi (48%).

In Haryana, family responsibility followed by maternity issues (25%), personal problem (12%), marriage (5%) and lack of job opportunity (2%) were documented as the frequently occurring reasons of career gap. Whereas no women researchers reported health issues as well as migration as the cause of their break in career figure 4.5(a).

In Delhi, Maternity and child care is the main issue for break in career with (48%), apart from this family problem (20%) and personal problems which falls in others category is (22%). Also, it has been observed that financial problem in Delhi is (6%), along with preparation of competitive exams is (6%). Whereas no women fall in migration category as shown in figure 4.5(b).

Table 4.5: Reasons for break in career among women scientists from Haryana and Delhi

Reason for break in career	Haryana	Delhi
Family responsibilities	6	11
Lack of job opportunity	1	5
Migration	---	----
Health issues	---	3
Financial Problem	---	1
Maternity and Child care	4	22
Preparation for Competitive exams	1	1
Marriage	2	9
Others	1	10
p-Value	0.05*	3.37(E)**
Chi square test	0.7399	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.5 (a): Reasons of break in career among women scientists from Haryana region

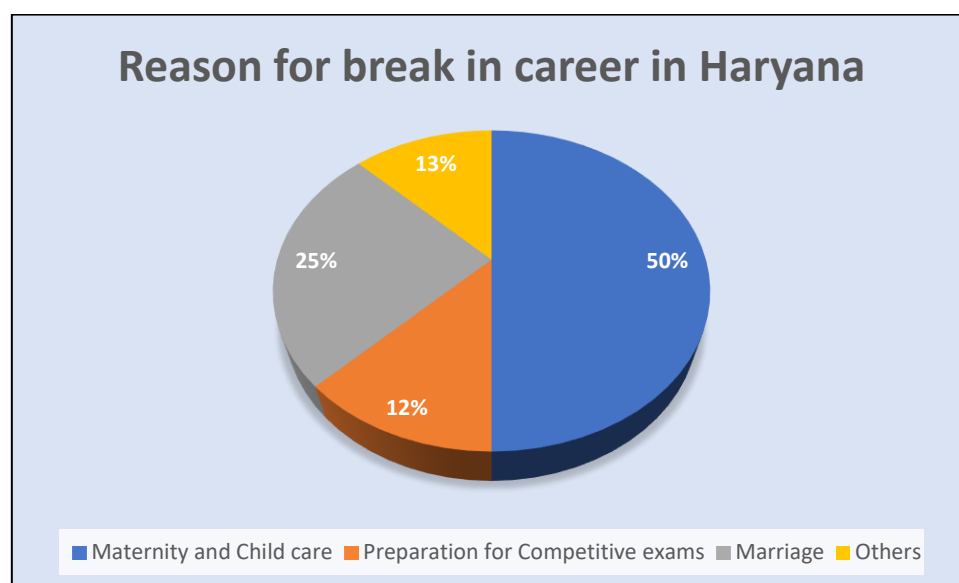


Figure 4.5 (b): Reasons of break in career among women scientists from Delhi region

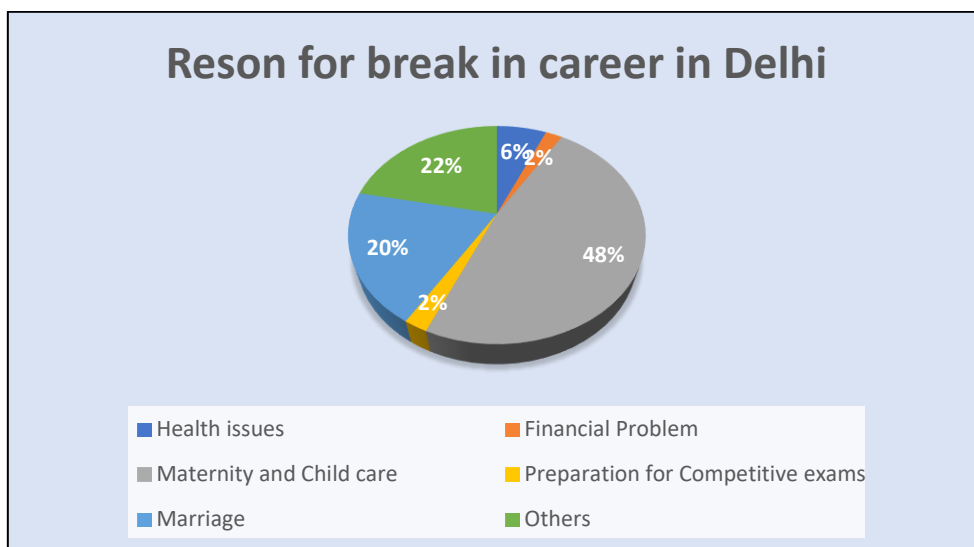


Table 4.6 presents the marital status of Principal investigators from Haryana and Delhi. It can be clearly observed from figure 4.6 that out of the total respondents of Haryana majority (96%) were married, while only 4% of them were unmarried or single. No women scientist lies in other category in Haryana.

Similar observations were noticed in Delhi (89%), where the frequency of married women scientists was higher than unmarried (6%) respectively. It has been observed that few (5%) women scientists fall in other category.

A statistically significant p value was noted in three categories of marital status in Haryana (96.66), and Delhi (81.33)

Table 4.6: Marital status of the Principal investigators from Haryana and Delhi

Marital Status	Haryana	Delhi
Married	24(96%)	72(89%)
Single	1(4%)	5(6%)
Other	---	4(5%)
p-Value	2.47(E)**	3.68(E)**
Chi square test	0.4722	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Table 4.6(a): Marital status of the Principal investigators from Haryana

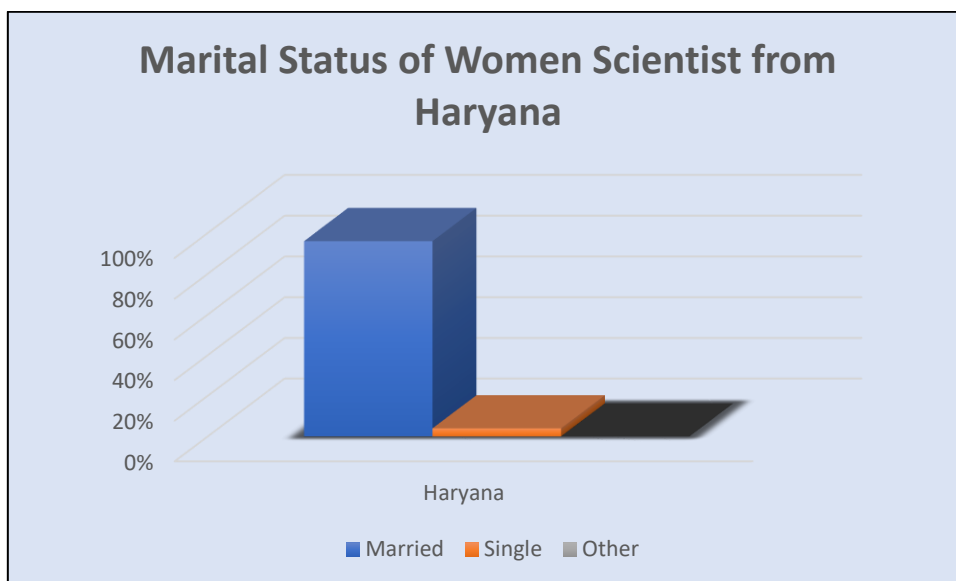


Table 4.6(b): Marital status of the Principal investigators from Delhi

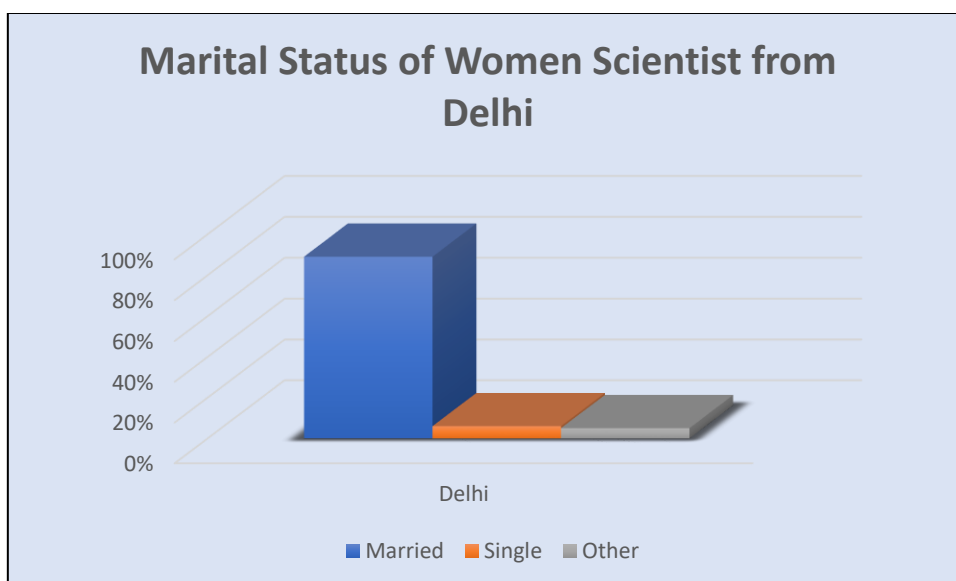


Table 4.7 depicts the field of specialization of women scientists from Haryana and Delhi. It can be seen from the table that in Haryana, maximum number (36%) of women scientists belonged to life sciences followed by physical sciences (16%), Chemical Sciences (16%), Engineering Sciences (16%) and Engineering and technology development (4%). Women scientists in health food and nutrition (0%) and earth sciences (1.49%) and agriculture and allied sciences (0%) received very less support.

In Delhi also, women scientists from life sciences (54%) were the main recipients of projects followed by chemical sciences (10%) and physical sciences (10%). Few woman scientists are having specialisation in Engineering Sciences (2%), followed by mathematical sciences (6%) and agriculture and allied sciences (5%). Whereas other category involves women of UGC-PDF which had not shown any field of specialisation while filling the data.

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Table 4.7: Field of specialisation of women scientists from Haryana and Delhi

Field of specialisation	Haryana	Delhi
Life sciences	9 (36%)	44(54%)
Physical sciences	4 (16%)	8(10%)
Chemical Sciences	4 (16%)	8(10%)
Engineering Sciences	4 (16%)	2(2%)
Mathematical Sciences	1 (4%)	5(6%)
Agriculture and allied sciences	---	4(5%)
Engineering and technology development	1 (4%)	7(9%)
Health food and Nutrition	---	---
Earth Sciences	---	---
Others	2 (8%)	3(4%)
p-Value	0.0006**	2.18 (E)**
Chi square test	0.3137	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.7 a): Field of specialisation of women scientists from Haryana

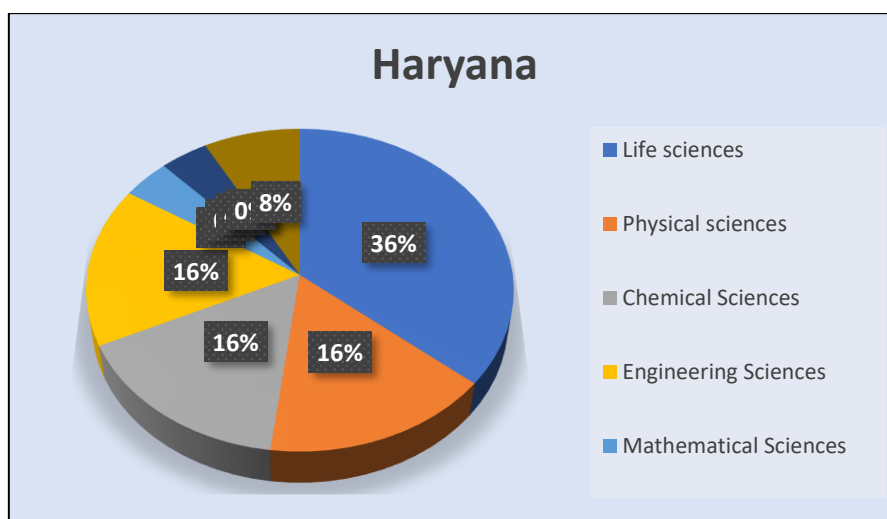
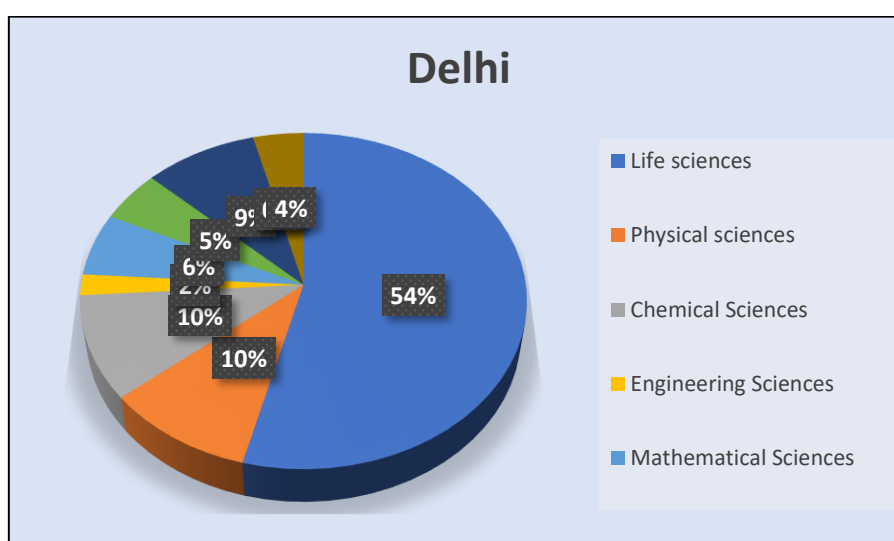


Figure 4.7 b): Field of specialisation of women scientists from Delhi



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Table 4.8 demonstrates the level of support Principal investigators have from their Mentors from Haryana and Delhi. It was clearly presented in the Table that out of the total responses received from Haryana, majority of women scientist were extremely satisfied (24%), followed by very satisfied (24%), moderately satisfied (0%) and a very few (16% and 12%) of them were discontented with their mentor's support and guidance as shown in Figure 4.8(a).

In Delhi region 56% of the female respondents were immensely satisfied with their mentor's support, 16% were very satisfied, while 7% of investigators exhibited lower level of satisfaction as portrayed in Figure 4.8(b).

Table 4.8: Mentor's Support to Principal investigators from Haryana and Delhi

Mentor's support	Haryana	Delhi
Extremely satisfied	6(24%)	45(56%)
Very satisfied	6(24%)	13(16%)
Moderately satisfied	---	6(7%)
Slightly satisfied	4(16%)	3(4%)
Not satisfied	3(12%)	1(1%)
p-Value	0.6046	4.49 (E)**
Chi square test	0.0027	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.8 (a): Mentor's Support to Principal investigators from Haryana

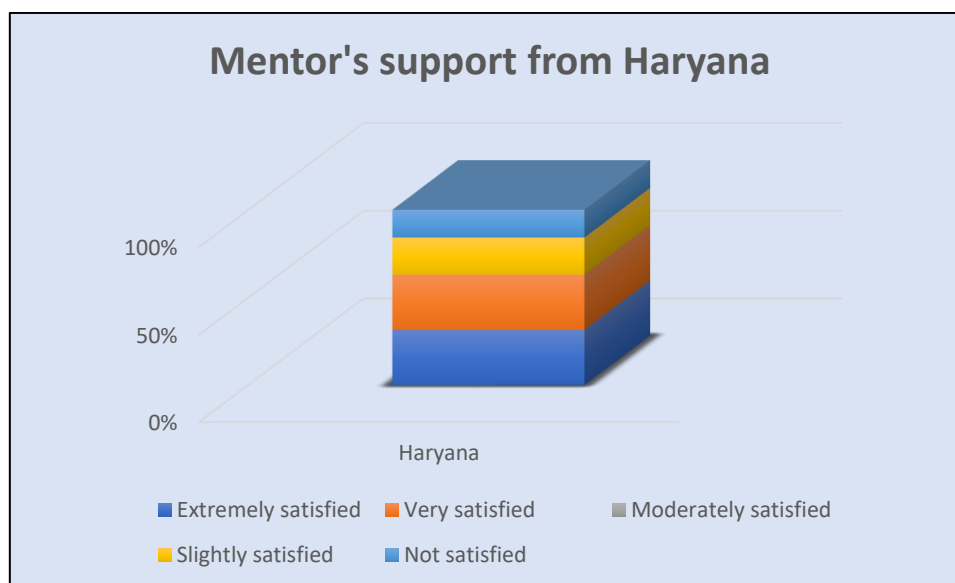
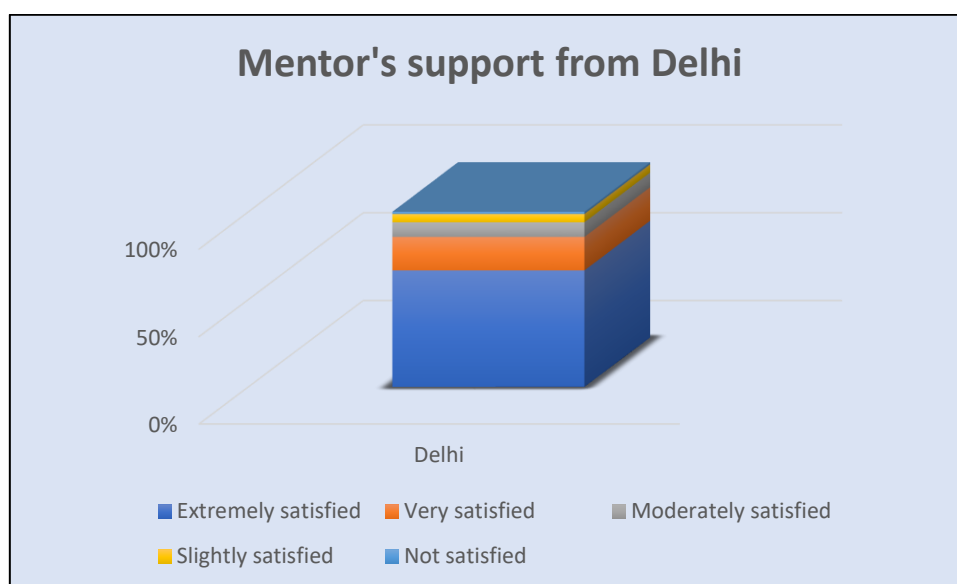


Figure 4.8 (b): Mentor's Support to Principal investigators from Delhi



An analysis of host institute's support to their women scientist for research in Haryana and Delhi is illustrated in Table 4.9. The results showed that 40% of women scientists in Haryana, 42% in Delhi were very satisfied and extremely satisfied with the support of their host institute. Figure 4.9(a) depicts that 24% women scientist were extremely satisfied and 8% were moderately satisfied from the support of their host institute.

In Delhi, by seeing from the Figure 4.9(b), 32% women scientist were very satisfied, 14% were moderately satisfied, while 5% and 1% women scientists were slightly and not satisfied with the support provided by their institute.

Table 4.9: Institutional Support to Principal Investigators from Punjab, Chandigarh

Institutional support	Haryana	Delhi
Extremely satisfied	6(24%)	34(42%)
Very satisfied	10(40%)	26(32%)
Moderately satisfied	2(8%)	11(14%)
Slightly satisfied	1(4%)	4(5%)
Not satisfied	---	1(1%)
p-Value	0.0063**	6.36 (E)**
Chi square test	0.6973	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.9(a): Institutional Support to Principal investigators from Haryana

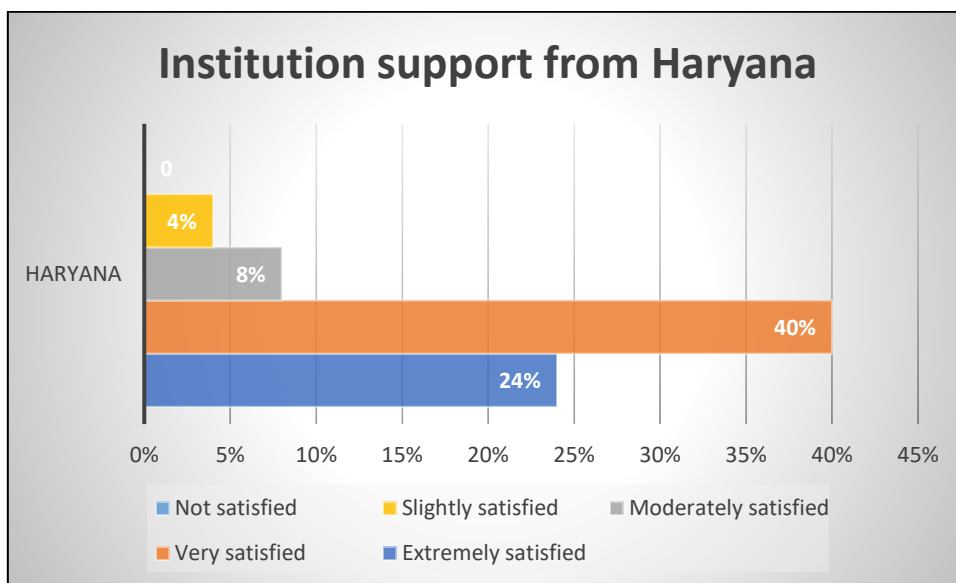


Figure 4.9(b): Institutional Support to Principal investigators from Delhi

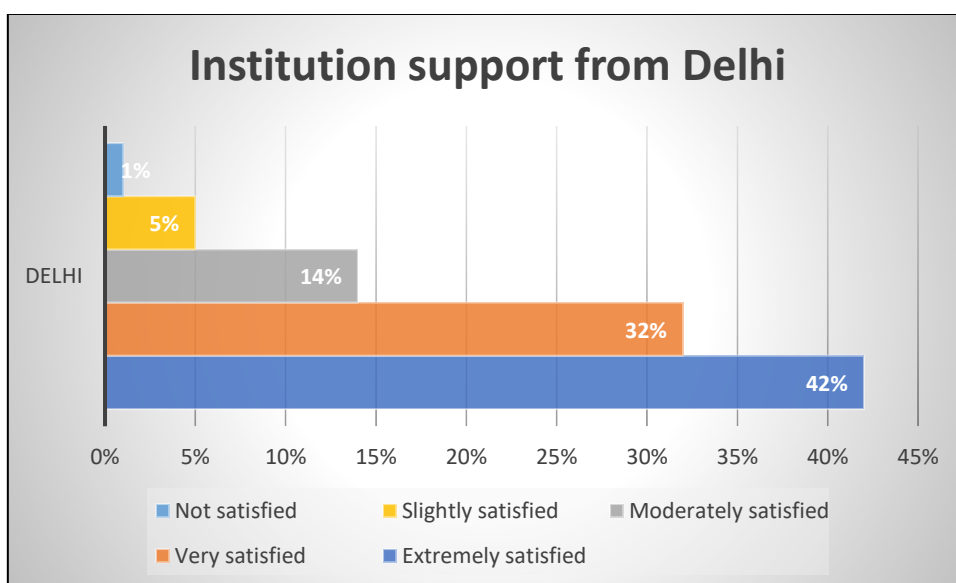


Table 4.10 depicts the number of projects availed by women scientists under the Government of India's Gender Mainstreaming Programme in all the three regions under consideration. It was clearly evident from the table that in Haryana 56% of women scientist have been granted only one project, 8% women scientist availed two projects and 4% of women scientist received three research projects under these women centric schemes. No more than three projects were sanctioned in Haryana region.

Similarly, in Delhi women scientists availed one research project under Government of India's Gender Mainstreaming Programme is (65%). Followed by two and three research projects ration (14%) and (1%).

Statistically significant difference was noticed in different categories in Haryana (101.8) and Delhi (89.12**).

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Table 4.10: Number of projects availed by women scientists from Haryana and Delhi

No. of Projects Availed	Haryana	Delhi
One	14(56%)	53(65%)
Two	2(8%)	11(14%)
Three	1(4%)	1(1%)
More than three	---	---
p-Value	9.33 (E)**	2.40 (E)**
Chi square test	0.7363	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.10(a): Number of projects availed by women scientists in Haryana

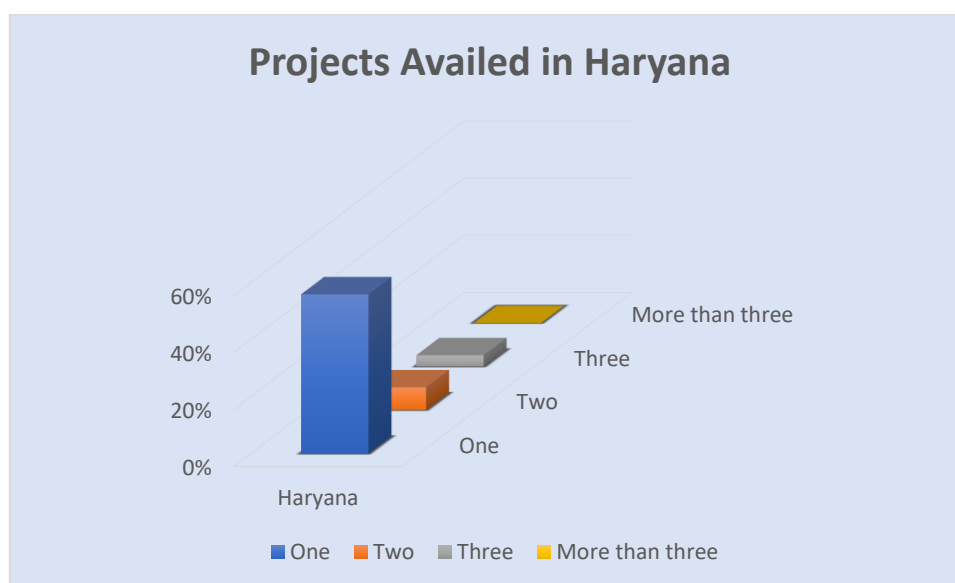
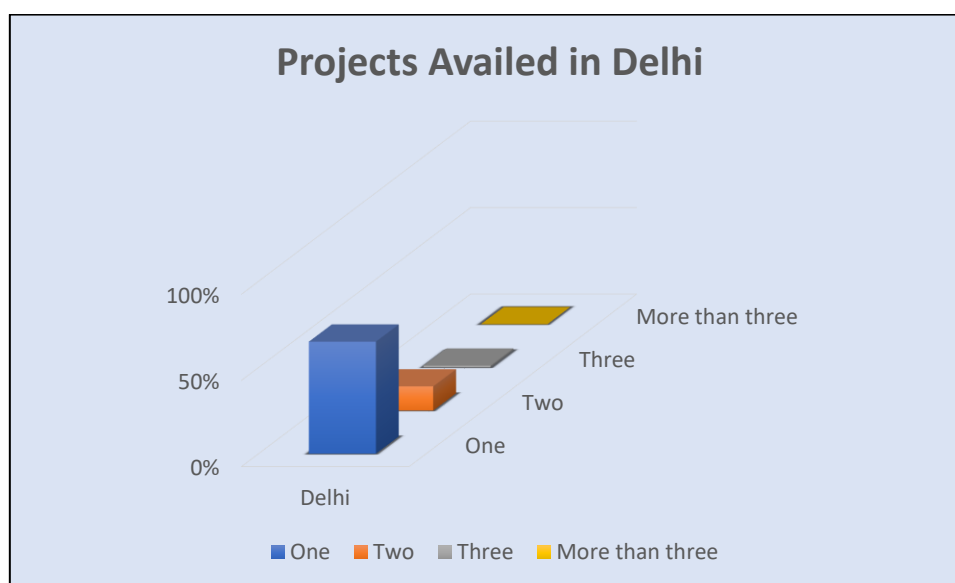


Figure 4.10(b): Number of projects availed by women scientists in Delhi



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The eligibility test cleared by women scientists before the grant of the project is demonstrated in Table 4.11, Figure 4.11(a) in Haryana and Figure 4.11 (b) Delhi. It is evident from the Table 4.11 that in Haryana about 16% women beneficiaries cleared UGC-NET eligibility test, while 12% cleared CSIR-NET, none of them cleared ICAR and 36% qualified other eligibility examination.

In Delhi 9% women scientists qualified UGC-NET, 14% CSRI-NET, 5% ICAR, 1% ICMR and 46% other examination. Also 1% has cleared SLET eligibility exam.

Statistically significant difference was noticed by applying chi-square test in different categories of eligibility test from Punjab (21.2) and Delhi (14.7).

Table 4.11: Eligibility test cleared by principal investigators from Haryana and Delhi

Eligibility Test	Haryana	Delhi
UGC-NET	4(16%)	8(9%)
CSIR-NET	3(12%)	11(14%)
ICAR000	---	4(5%)
ICMR	1(4%)	1(1%)
SLET	---	1(1%)
Others	9(36%)	37(46%)
p-Value	0.0099**	6.31 (E)**
Chi square test	0.7986	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.11 a): Eligibility test cleared by principal investigators from Haryana

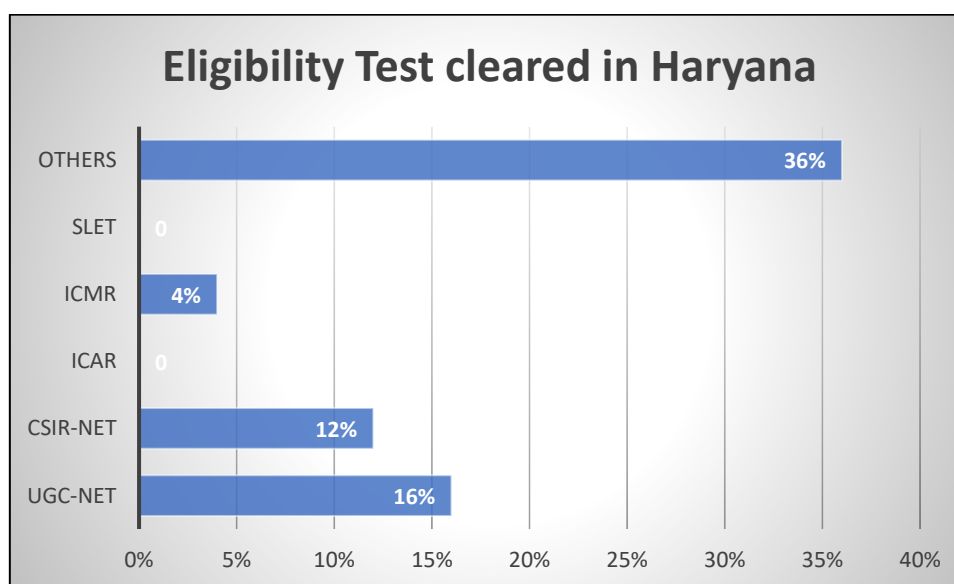


Figure 4.11 b): Eligibility test cleared by principal investigators from Delhi

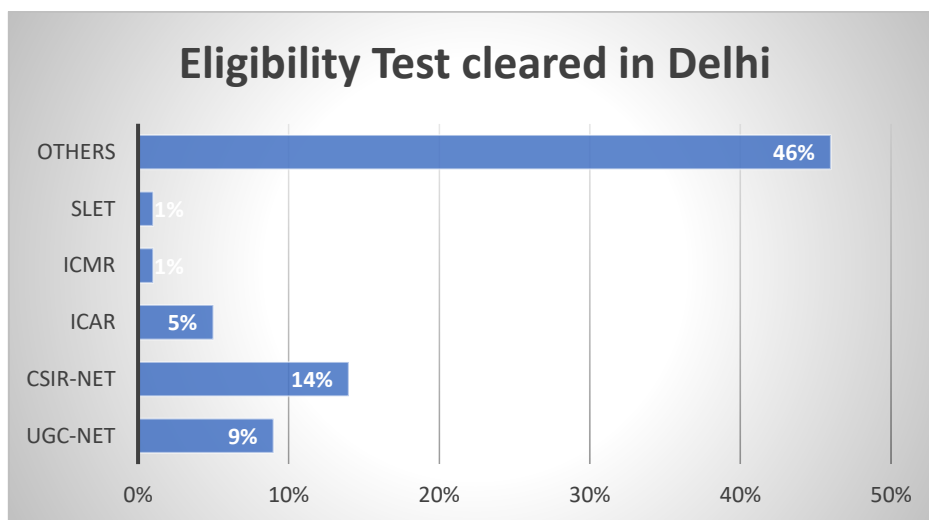
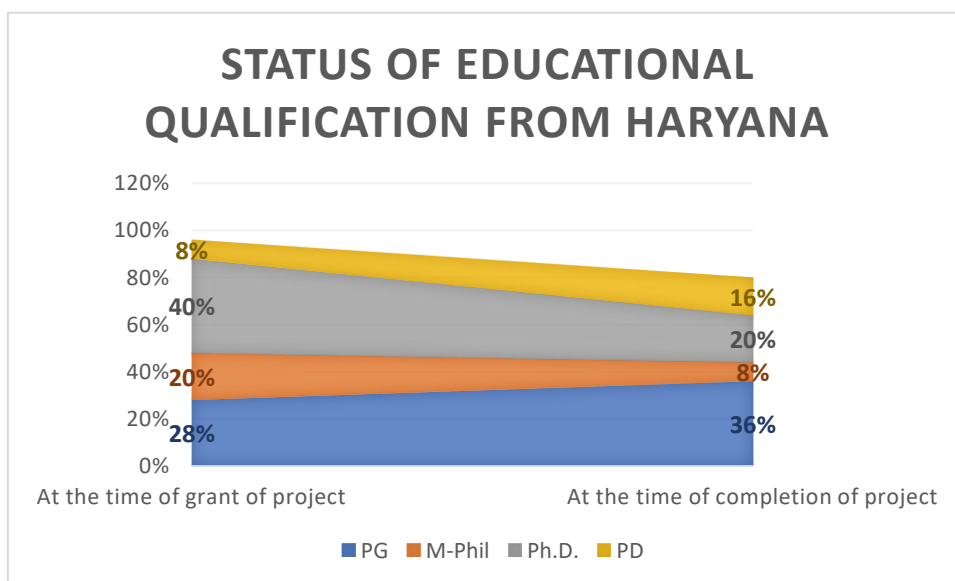


Table 4.12 (a) demonstrated the educational status (before and after receiving the project) of women scientists of Haryana. Prior to taking the research project 40% women scientist had already completed their Ph.D. 20% were postgraduates, 20% and 8% were post doctorate and M. Phil respectively.

Table 4.12 (a): Educational status (before and after project) of women scientists of Haryana

HARYANA		
Educational Qualification	At the time of grant of project	At the time of completion of project
PG	7(28%)	9(36%)
M-Phil	5(20%)	2(8%)
Ph.D.	10(40%)	5(20%)
PD	2(8%)	4(16%)

Figure 4.12 (a): Educational status (before and after project) of women scientists of Haryana



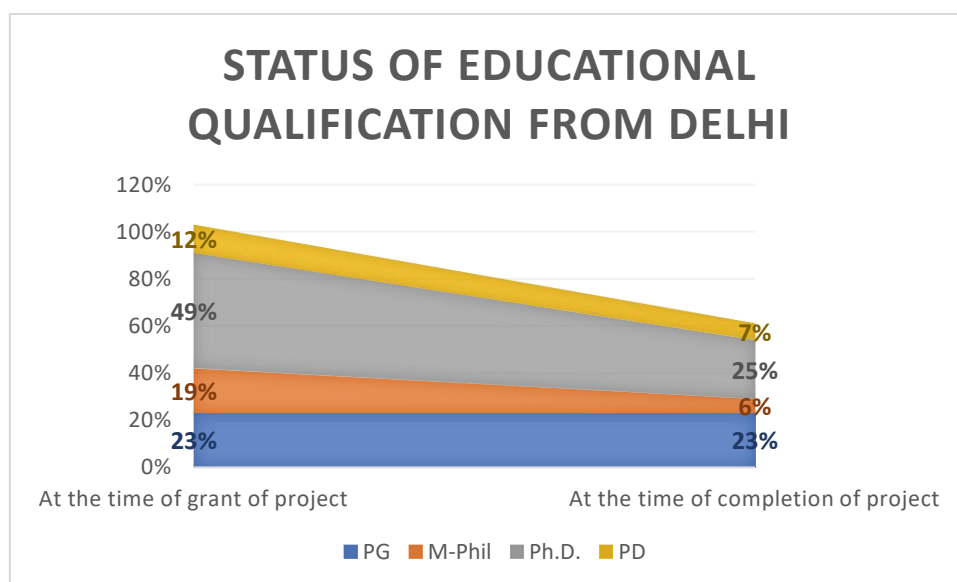
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Table 4.12 (b) demonstrated the educational status (before and after receiving the project) of women scientist of Delhi. Prior to taking the research project 49% women scientist had already completed their Ph.D. 23% were postgraduates, 12% and 19% were post doctorate and M. Phil respectively.

Table 4.12 (b): Educational status (before and after project) of women scientists of Delhi

DELHI		
Educational Qualification	At the time of grant of project	At the time of completion of project
PG	19(23%)	19(23%)
M-Phil	15(19%)	5(6%)
Ph.D.	40(49%)	20(25%)
PD	10(12%)	6(7%)

Figure 4.12 (b): Educational status (before and after project) of women scientists of Delhi



Family support received by women scientists for research from Haryana and Delhi is presented in Table 4.13. It is evident from the table that maximum number (56%) of women scientists in Haryana received motivational support from their families, while 12% had moderate and no women scientists were not satisfied with their family support wrt to Figure 4.13(a).

Similarly, In Delhi a substantial percentage of women scientists (52%) got motivational backing of their families, whereas 21% women received moderate and 6% received neutral support from their families which is shown in Figure 4.13(b).

Table 4.13: Family support received by women scientist for research from Haryana and Delhi

Family support received for Research	Haryana	Delhi
Motivational	14(56%)	42(52%)
Moderate	3(12%)	17(21%)
Neutral	---	5(6%)
Not satisfied	---	---
p-Value	4.58 (E)**	8.49 (E)**
Chi square test	0.7398	

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Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.13 (a): Family support received by women scientists for research in Haryana

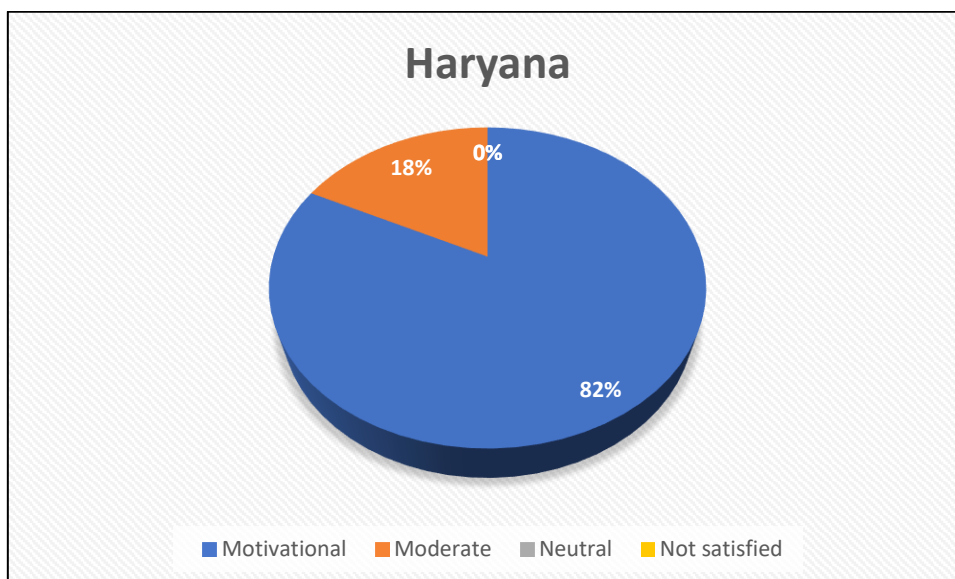


Figure 4.13 (b): Family support received by women scientists for research in Delhi

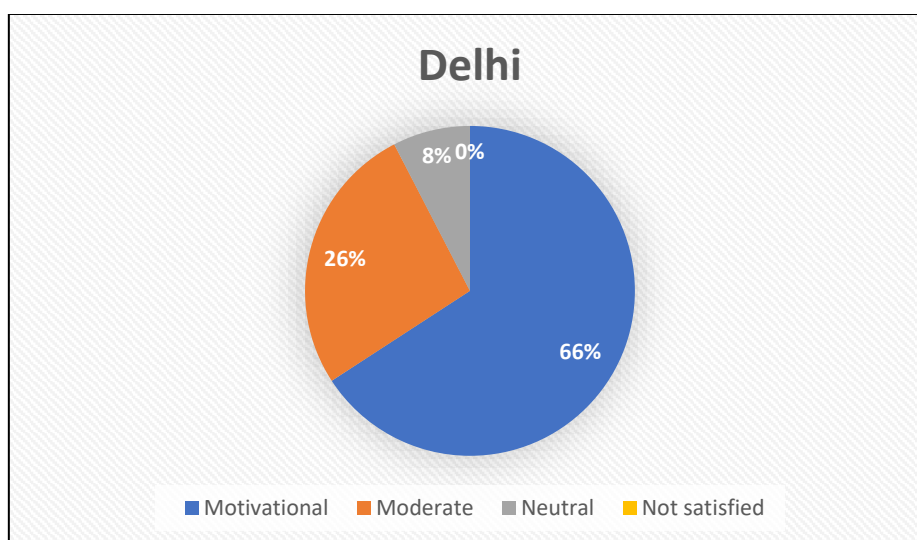


Table 4.14 presents the number of publications Principal investigators have out of their sanctioned projects in all the three states under consideration. It is clearly noticeable from the table that out of the total respondents, a considerable percentage of the women scientist (28%) in Haryana and Delhi (30%) has published three to four research paper from the projects awarded to them.

In Haryana 12% women scientists published one to two research papers, while 16% has published more than or equal to five research papers respectively. Also 12% women scientists have not published even a single research paper from the projects awarded to them.

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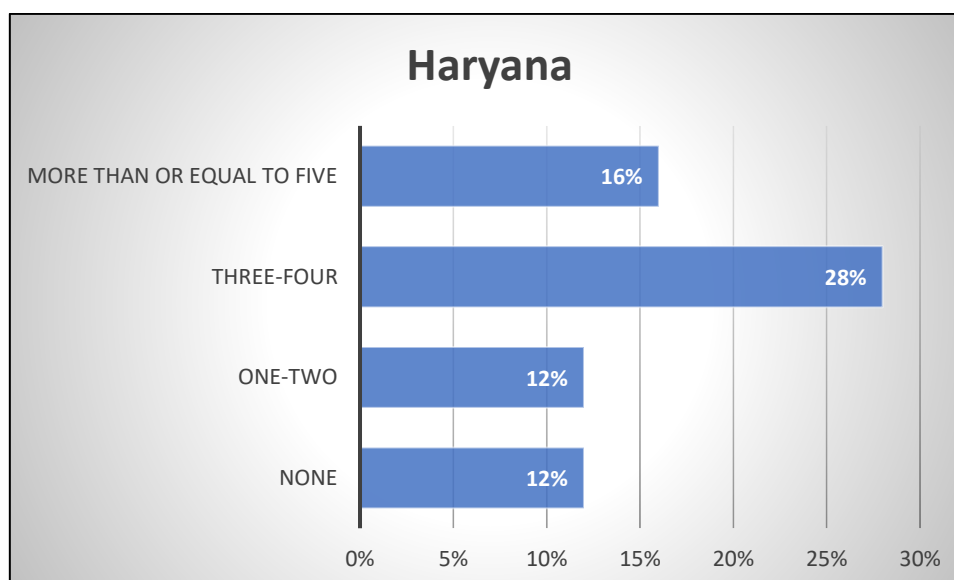
In Delhi as clearly seen in Figure 4.14(b) only 21% have published one to two research papers, whereas 14% have published more than or equal to five research papers respectively. It has been observed 15% women scientist have not published a single research paper from the projects awarded to them.

Table 4.14: Number of publications out of the project awarded to women scientists in Haryana and Delhi

No of publications	Haryana	Delhi
None	3(12%)	12(15%)
One-Two	3(12%)	17(21%)
Three-Four	7(28%)	24(30%)
More than or equal to Five	4(16%)	11(14%)
p-Value	0.4699	0.0848*
Chi square test	0.8541	

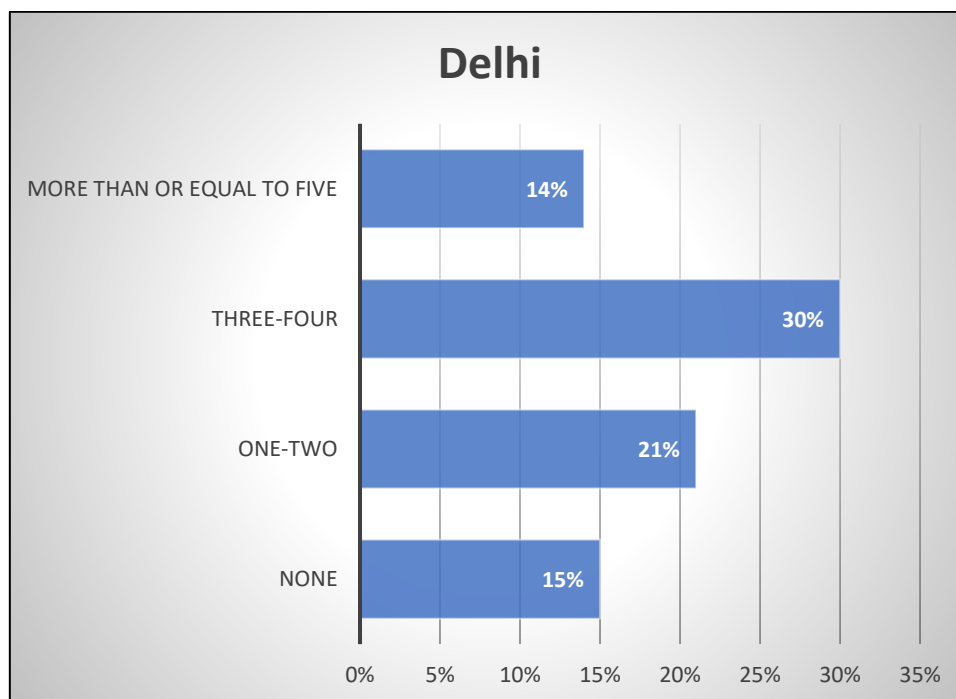
Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.14(a): Number of publications out of the project awarded to women scientists from Haryana



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Figure 4.14(b): Number of publications out of the project awarded to women scientists from Delhi



The employment status of women scientist before and after sanction of the project in Haryana is depicted in Table 4.15 (a). Most of the women scientist (40%) of Haryana was engaged in teaching profession (mainly contractual basis) prior to the sanctioning of the project. It was also observed that only 8.96% of principal investigators reported being working as Research Associate before the grant of the recent project. It has been observed from the table that 36% women scientist are still unemployed due to family reason or others.

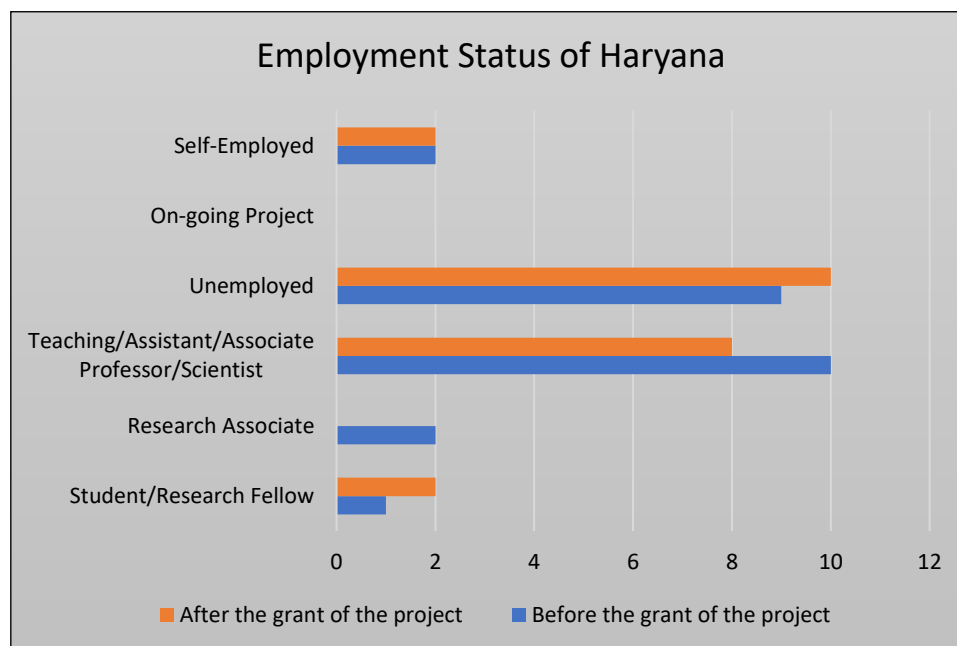
Table 4.15(a): Employment status (before and after project) of women scientists of Haryana

Employment Status	Haryana	
	Before the grant of the project	After the grant of the project
Student/Research Fellow	1(4%)	2(8%)
Research Associate	2(8%)	---
Teaching/Assistant/Associate Professor/Scientist	10(40%)	8(32%)
Unemployed	9(36%)	10(40%)
On-going Project	---	---
Self-Employed	2(8%)	2(8%)
Chi square test	0.9904	

Level of significance p-Value < 0.05*, p-Value < 0.01**

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Figure 4.15(a): Employment status (before and after project) of women scientists of Haryana

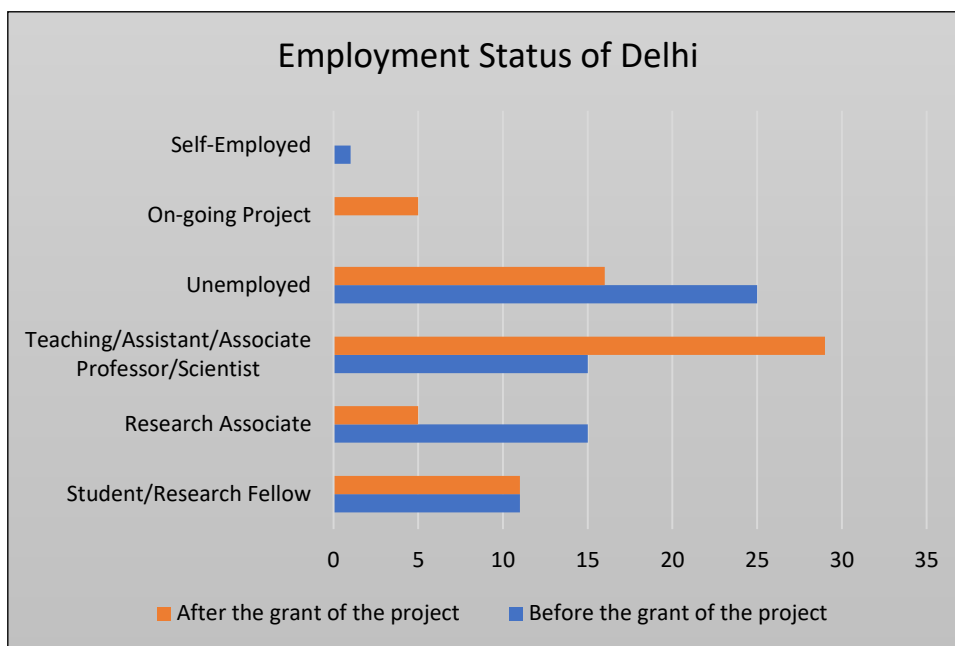


The employment status of women scientist before and after sanction of the project in Delhi is depicted in Table 4.15 (b). Most of the women scientist (36%) of Delhi was engaged in teaching profession (mainly on regular basis) prior to the sanctioning of the project. It was also observed that only 6% of principal investigators reported being working as Research Associate before the grant of the recent project. It has been observed from the table that 20% women scientist are still unemployed due to family reason or others after their completion of project and 6% women project scientist are still on-going.

Table 4.15(b): Employment status (before and after project) of women scientists of Delhi

Employment Status	Delhi	
	Before the grant of the project	After the grant of the project
Student/Research Fellow	11(14%)	11(14%)
Research Associate	15(19%)	5(6%)
Teaching/Assistant/Associate Professor/Scientist	15(19%)	29(36%)
Unemployed	25(31%)	16(20%)
On-going Project	---	5(6%)
Self-Employed	1(1%)	---
Chi square test	0.0655	

Figure 4.15(b): Employment status (before and after project) of women scientists of Delhi



An analysis of the request of extension of the sanctioned project submitted by women scientists from Haryana and Delhi demonstrated in table 4.16(a) as well as table 4.16(b). It is clearly evident from the table that 24% Principal investigators from Haryana and 25% women scientists from Delhi submitted the request for extension, whereas most of the women scientists from Haryana (44%) and Delhi (54%) completed their work within stipulated period.

Table 4.16 (a): Request for extension of duration of the sanctioned project (Haryana and Delhi)

Request for Extension	Haryana	Delhi
Yes	6(24%)	20(25%)
No	11(44%)	44(54%)
p-Value	0.2252	0.0027**
Chi square test	0.7508	

Table 4.16 (b): Request for extension granted or not in Haryana and Delhi

Request for Extension Granted/Not Granted	Haryana	Delhi
Granted	5(83%)	12(60%)
Not Granted	1(17%)	8(40%)

Further analysis of the request for extension of research project whether the extension granted or not granted by Department of Science and Technology is presented in Table 4.16 (b). It is clearly visible from the table that out of total extension requests (N=6) in Haryana region majority of extension solicitation (83%) were permitted. In Delhi 60% of the extension applications were allowed, while 40% of the requests were not conceded.

Further it was discerned in Table 4.16 (c) that out of the total permitted extension requests in Haryana (N=6) 17% of the women scientist were given the extension of 6 months period to complete their research work, followed by 50% who required from 10 to 24 months respectively.

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Figure 4.16 shows that in Delhi 45% of the women scientists were given the extension period of 6 months.

Table 4.16 (c): Duration of the extension granted in Haryana and Delhi

Duration of the extension	Haryana (N=6)	Delhi (N=20)
3 months	---	1(5%)
6 months	1(17%)	9(45%)
7 months	---	1(5%)
12 months	3(50%)	1(5%)
24 months	---	---

Figure 4.16(a): Request for extension of duration of the sanctioned project (Haryana)

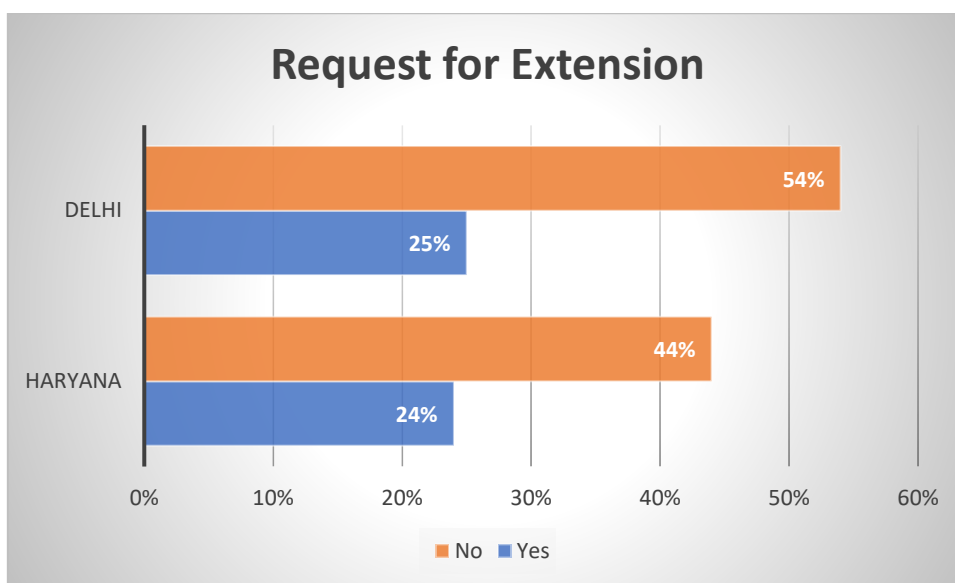


Figure 4.16(b): Request for extension granted or not of the sanctioned project (Delhi)

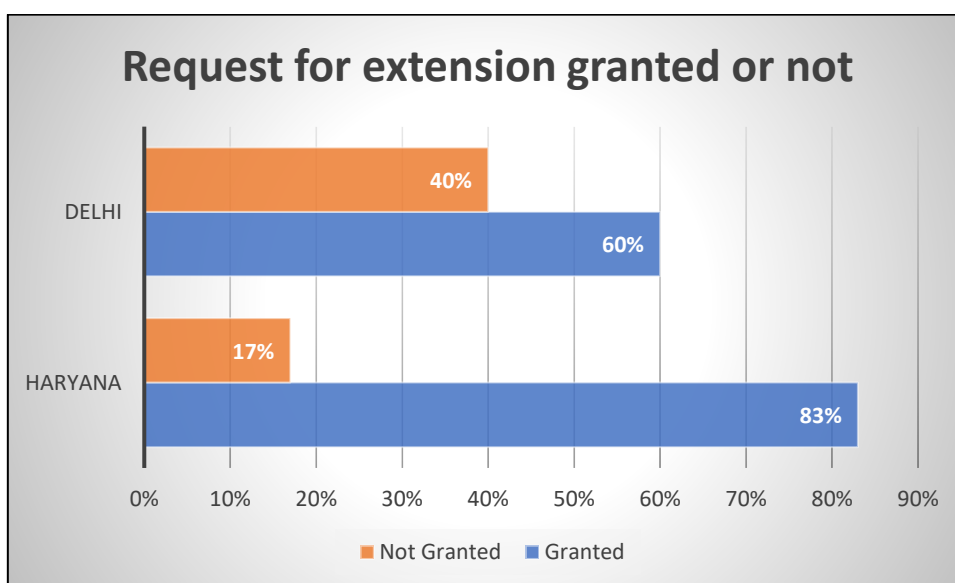
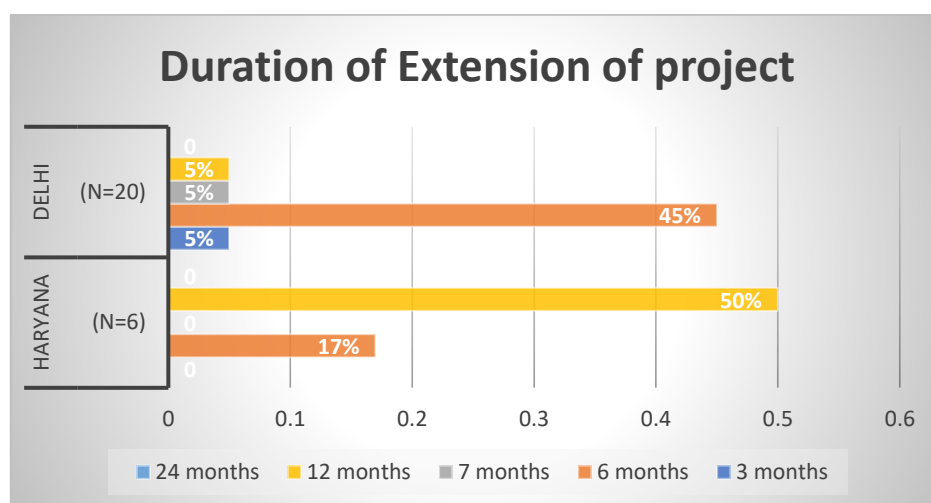


Figure 4.16(c): Request for duration of extension (months) of the sanctioned project (Haryana and Delhi)



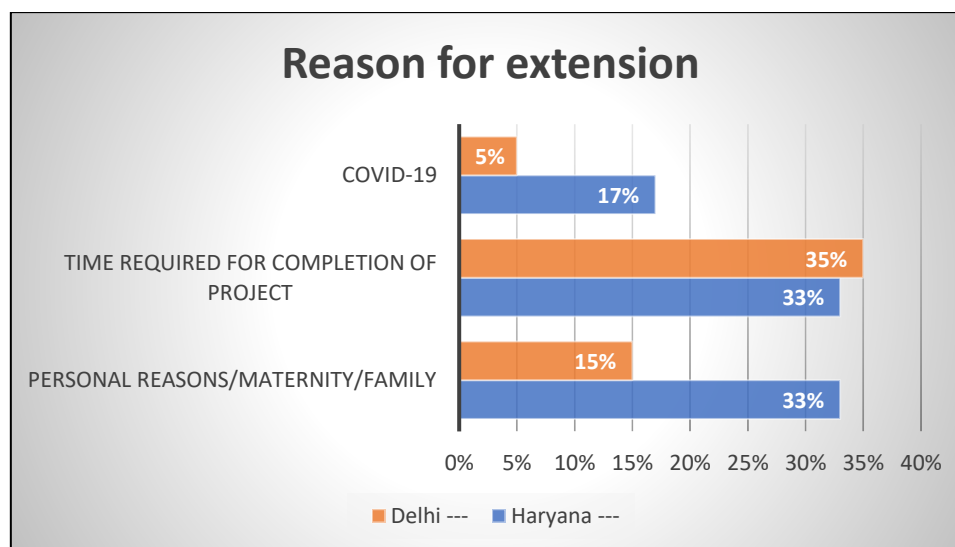
An analysis of reasons for extension to complete the research work is presented in the table 4.17. It can be seen from the table that in Haryana, 33% of women scientists stated that they need more time to complete their research projects as well as personal reasons was the main reason for delay in the research project. Only 1% faced COVID-19 problem in extension of the project from Haryana as well as from Delhi.

In Delhi, majority (35%) of the women scientists require more time to complete their research proposal followed by 15% women scientist had family/personal reasons for request for extension of project.

Table 4.17: Reasons of extension among women scientists from Haryana and Delhi

Reason for extension	Haryana	Delhi
Funds shortage	---	---
Personal Reasons/Maternity/Family	2(33%)	3(15%)
Time required for completion of project	2(33%)	7(35%)
COVID-19	1(17%)	1(5%)

Figure 4.17: Reasons of extension among women scientists from Haryana and Delhi



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Table 4.18 demonstrated the category wise distribution of women scientists in three states of North India under consideration. In state Haryana, most of the women scientist (94.02%) was from general category, while OBC (4.48%) and SC/ST (1.49%) categories exhibited little representation as is clear from the figure 4.18. Similarly, maximum percentage of principal investigators in Delhi belonged to general category ((94.26%), whereas as OBC (2.86%) and ST/SC (2.86%) had meagre participation.

Table 4.18: Category wise distribution of women scientists in Haryana and Delhi

Category	Haryana	Delhi
General	23(92%)	70(85%)
OBC	1(4%)	3(4%)
ST/SC	---	1(1%)
Others	1(4%)	7(9%)
p-Value	1.29 (E)**	2.65 (E)**
Chi square test	0.8754	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.18(a): Category wise distribution of women scientists in Haryana

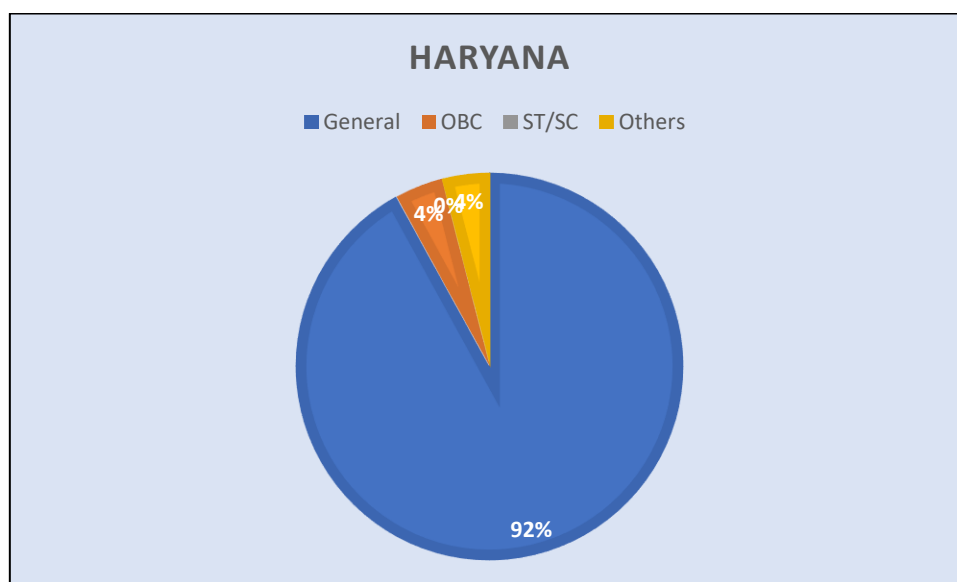
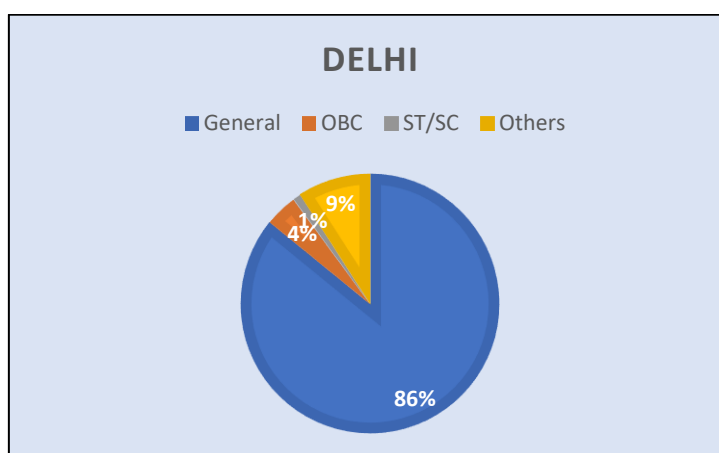


Figure 4.18(b): Category wise distribution of women scientists in Delhi



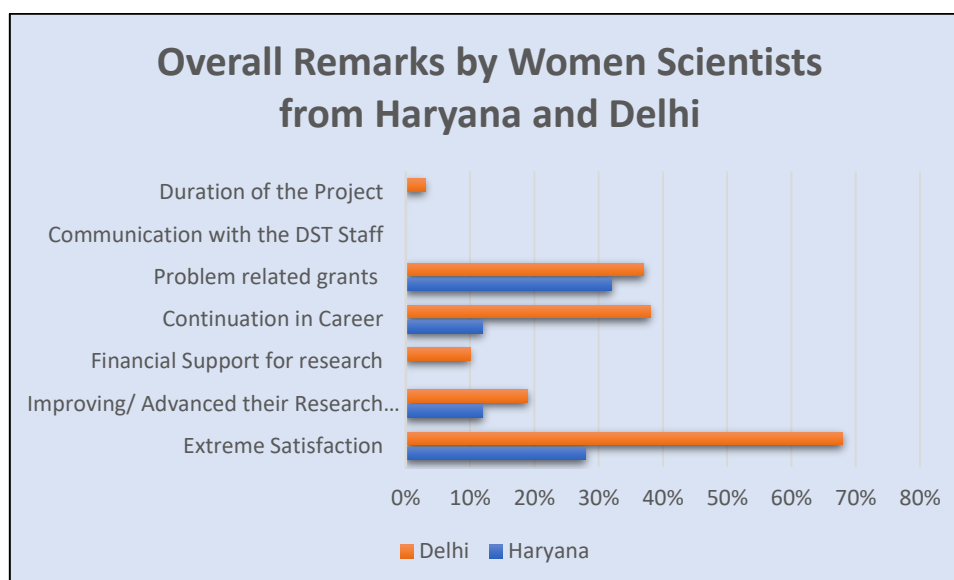
Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

The overall experience of women scientists for women centric schemes from Haryana and Delhi is depicted in Table & Figure 4.19. It may be seen from the table that the majority of the women were satisfied with the research schemes initiated by Department of Science and Technology. The substantial percentage of principal investigators from Delhi (68%) were extremely satisfied with the scheme due to the good experience they gained during their research projects. But in Haryana women scientist faced problem regarding grants 32% and 28% are satisfied with the funding body.

Table 4.19: Overall remarks / experience of women scientists for women centric from Haryana and Delhi

Overall Remarks/ Experience		Haryana	Delhi
Satisfied	Extreme Satisfaction	7(28%)	55(68%)
	Improving/ Advanced their Research Experience	3(12%)	15(19%)
	Financial Support for research	---	8(10%)
	Continuation in Career	3(12%)	31(38%)
Not Satisfied	Problem related grants	8(32%)	30(37%)
	Communication with the DST Staff	---	--
	Duration of the Project	---	3(3%)

Figure 4.19: Overall remarks / experience of women scientists for women centric from Haryana and Delhi



In Haryana, 12% women scientist mentioned that his funding helped them to enhance their research activities and 0% of them were also satisfied with the financial assistance and 12% got a chance to reshape their career in research. It can also be seen from the table that 38% and 19% of women scientists of Delhi respectively were of the view that these programmes helped in enhancing their research qualities and their gap in career and 10% of them received financial support for research.

Further analysis revealed that in Haryana, about 32% women did not get fund so mentioned about delay in funding. Grant related problems were also experienced by 37% of principal investigators in Delhi followed by 3% problem related to duration of the project.

Table 4.20 demonstrated the ratings given by women scientists to the programme in Haryana and Delhi. In Haryana State 32%, 28% and 24% Principal Investigator graded excellent, very good, and good ratings respectively to the schemes under which projects were sanctioned to them.

Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

In Delhi majority (53%) of the Principal investigators appraised their scheme with excellent to good ratings, whereas only 2% of them rated the women centric schemes as average.

Also women scientist was satisfied with the programme/scheme and gives 0% rating in both the regions.

Table4.20: Rating to the programme/Scheme in Haryana and Delhi

Rating to the programme	Haryana	Delhi
Excellent	8(32%)	43(53%)
Very Good	7(28%)	21(26%)
Good	6(24%)	8(9%)
Average	---	2(2%)
Not satisfied	---	---
p-Value	0.1935	1.75 (E)**
Chi square test	0.2889	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.20(a): Rating to the programme/Scheme in Haryana

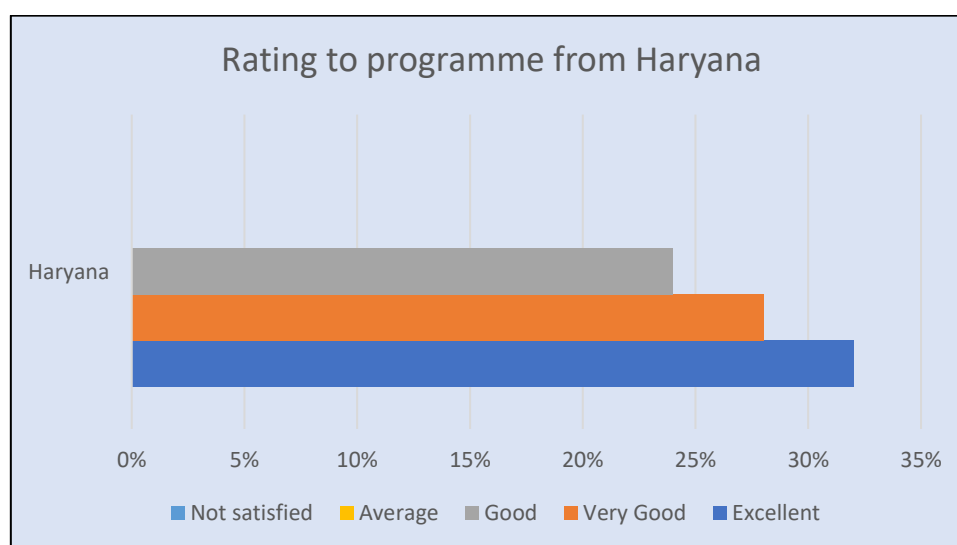
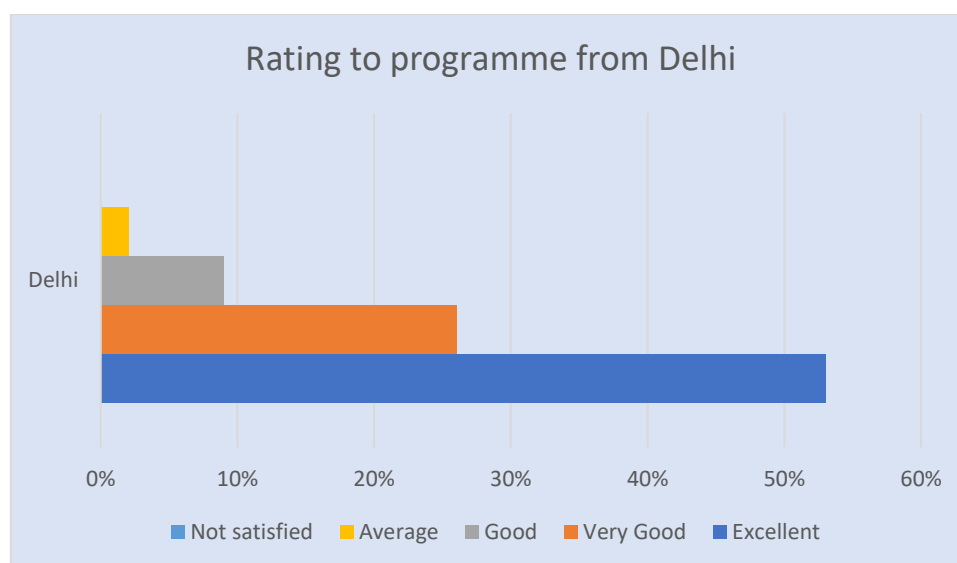


Figure 4.20(b): Rating to the programme/Scheme in Delhi



Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

Table 4.21 displays the overall satisfaction level with the scheme/program as reported by various women scientists of different regions of North India. It was clearly observed that majority of respondents in Haryana (24%) and Delhi (44%) were extremely satisfied with the scheme under which project was sanctioned to them.

Whereas in Haryana state maximum number of women researcher's delineated very good (32%) and good (24%) gratification with the programme. The analysis of data also indicated that very few principal investigators in Haryana (4%) and Delhi (5%) were average with the programme as seen in Figure 4.21 (a) & (b). On the contrary, no women beneficiary who were not satisfied with scheme.

Table 4.21: Satisfaction level with the programme/scheme in Haryana and Delhi

Satisfaction level with the programme	Haryana	Delhi
Extremely Good	6(24%)	36(44%)
Very Good	8(32%)	24(30%)
Good	6(24%)	10(12%)
Average	1(4%)	4(5%)
Not satisfied	---	---
p-Value	0.1153	3.09 (E)**
Chi square test	0.4249	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.21(a): Satisfaction level with the programme/Scheme in Haryana

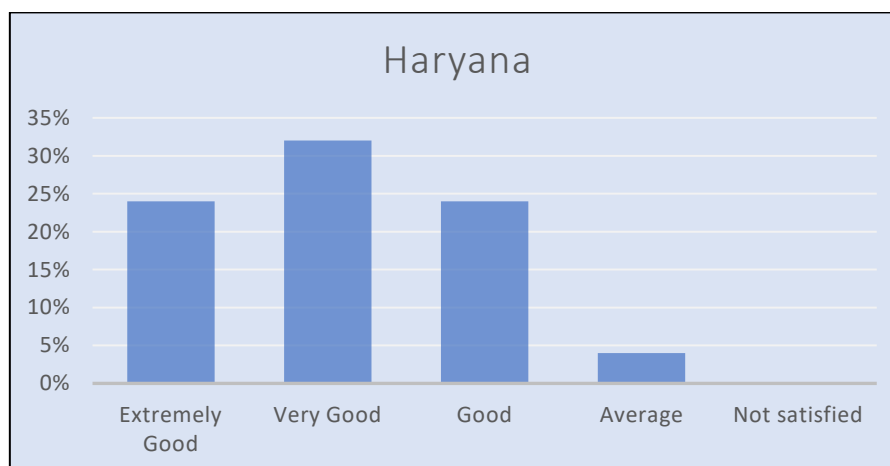
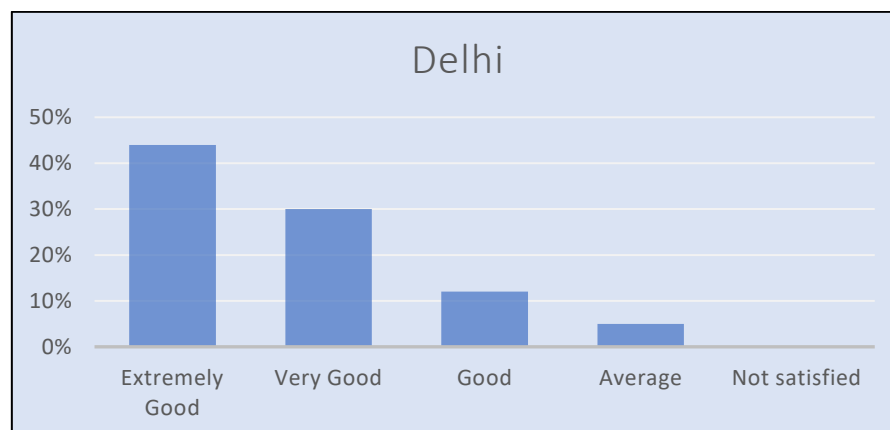


Figure 4.21(b): Satisfaction level with the programme/Scheme in Delhi



Assessment of Government of India's Gender Mainstreaming Programs for Women in Science

To ensure growth of women scientist in science, an attempt was made to analyse the problems faced by women scientists in receiving and spending grants in Haryana (36%) and Delhi (56%) and the results are depicted in Table 4.22. In Haryana it is 50-50 that women scientist faces or did not face any problem in receiving (36%) and not receiving grant, but on the other side we observe that in spending (2%) grants face problem only and 60% spends smoothly. Also, we can see 12% women face problem due to other reasons, such as transfer, or delay, or left in between of the project, or shortage of funds, etc.

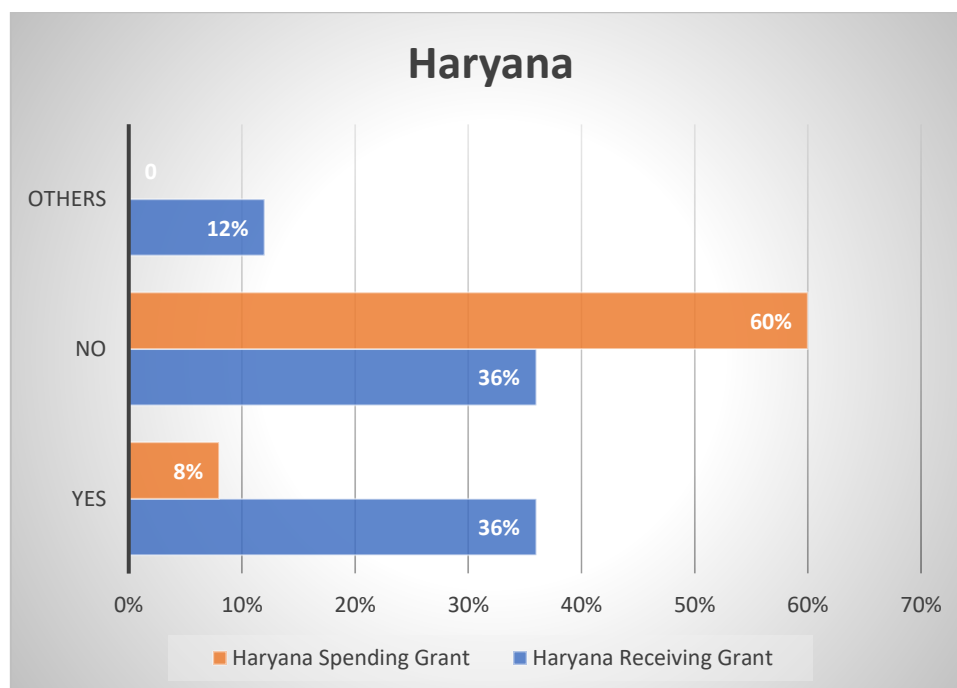
In Delhi, it was noted that 27% women scientists had issues in receiving grants and 3% in spending grants whereas 56% women are satisfied with grant and 65% smoothly utilizes the grant. Only 9% and 6% women face problem with these reasons such as transfer, or delay, or left in between of the project, or shortage of funds, etc.

Table 4.22: Problems faced by women scientists during project in Haryana and Delhi

Problem faced related to Grant	Haryana		Delhi	
	Receiving Grant	Spending Grant	Receiving Grant	Spending Grant
Yes	9(36%)	2(8%)	22(27%)	3(3%)
No	9(36%)	15(60%)	45(56%)	53(65%)
Others	3(12%)	--	7(9%)	5(6%)
p-Value	0.0180092*	8.24 (E)**	3.54 (E)**	7.665 (E)**
Chi square test	0.071069		0.006376	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.22(a): Problems faced by women scientists during project in Haryana



Assessment of Government of India’s Gender Mainstreaming Programs for Women in Science

Figure 4.22(b): Problems faced by women scientists during project in Delhi

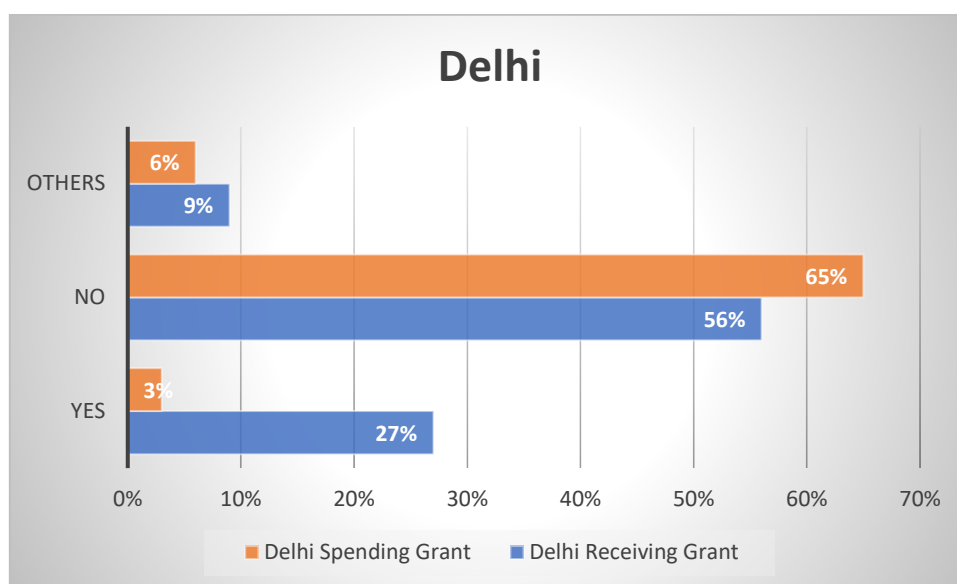


Table 4.23 demonstrate the status of skill development among women scientists from Haryana and Delhi. It may be seen from the table that in Haryana state approximately more than half of the respondents (60%) gained some sort of skill development during the course of their research project, whereas 32% respondents did not develop any kind of skill.

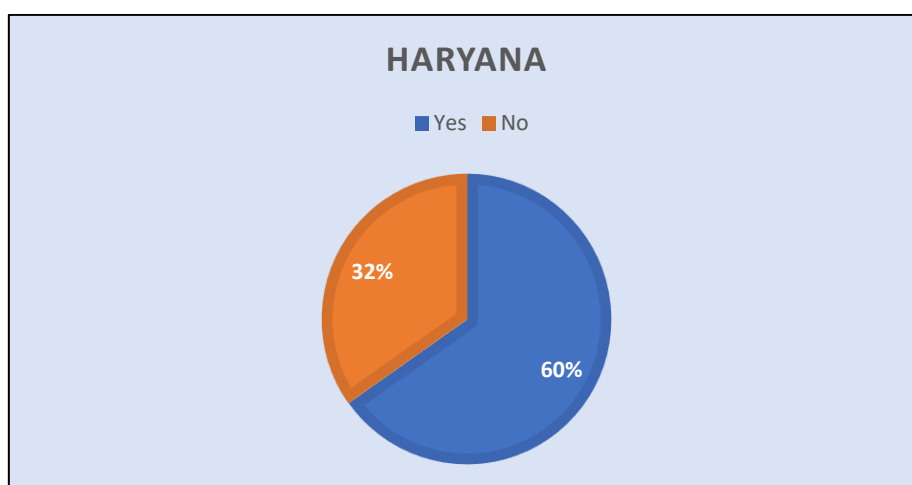
Similarly, in Delhi 63% women scientists gained some skill where as 28% did not participate in any skill development course. Also 7 women scientists left blank or did not fill anything in skill development.

Table 4.23: Status of skill developed among women scientists from Haryana and Delhi

Skill development	Haryana	Delhi
Yes	15(60%)	51(63%)
No	8(32%)	23(28%)
p-Value	0.1444*	0.001134**
Chi square test	0.96422	

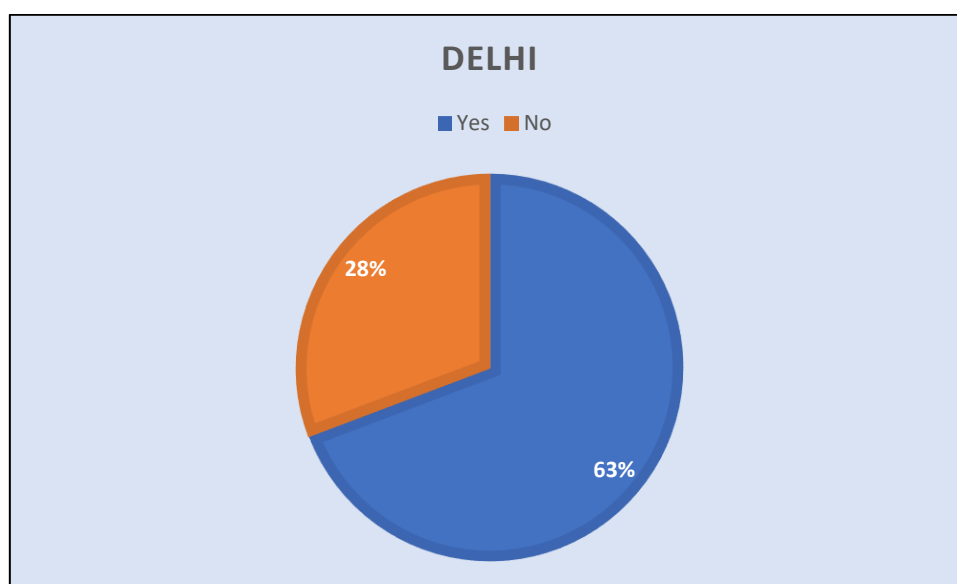
Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.23(a): Status of skill developed among women scientists from Haryana



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Figure 4.23(b): Status of skill developed among women scientists from Delhi



To assess the mobility due to various reasons among women scientist, transfer of research projects to other institutes in Haryana and Delhi was presented in Table 4.24. The analysis of the data revealed that in Haryana no projects were transferred to other institutes. It is 100% people completed their project within same institute.

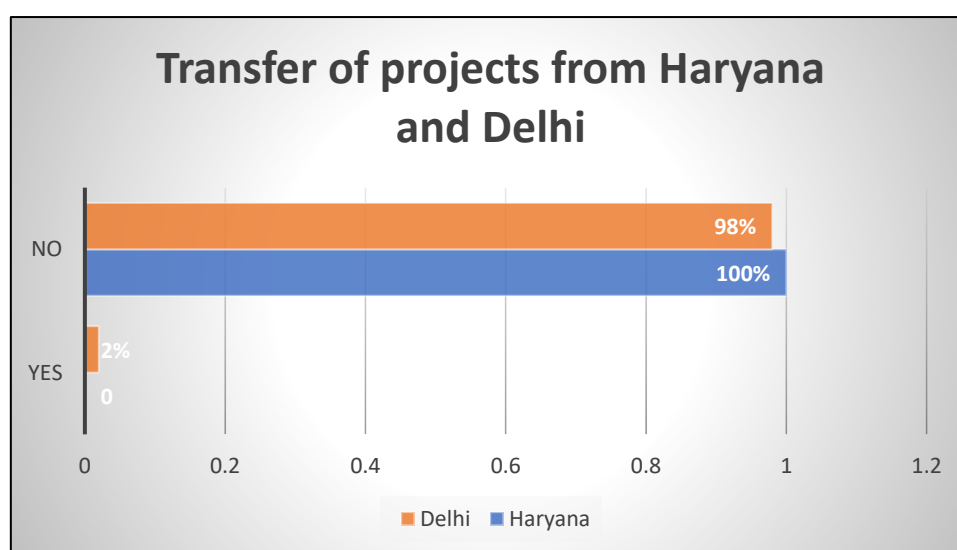
Similar observations were noted in Delhi region where most of the sanctioned projects (98%) were not shifted to other institutions. Only 2% projects were shifted to other institutes.

Table 4.24: Number of projects transferred to other institutions in Haryana and Delhi

Transfer of project to another institution	Haryana	Delhi
Yes	---	2(2%)
No	25(100%)	79(98%)
Chi square test	N.A.	

Level of significance p-Value < 0.05*, p-Value < 0.01**

Figure 4.24: Number of projects transferred to other institutions in Haryana and Delhi



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The major reasons of transfer of research projects from one institute to other among women scientist in Haryana and Delhi is depicted in table 4.25.

Table 4.25: Reasons for transfer of projects to other institutions in Haryana and Delhi

Reason of Transfer of project to another institution	Haryana	Delhi
Mentor suspension	---	1(1%)
Change of city	---	1(1%)

Table 4.26 demonstrate the number of conferences/seminars attended by women scientists of Haryana and Delhi. The analysis of data presented that in Haryana 16% and 20% of women scientists have attended 1- 2 national and international conferences respectively. While 28% and 16% of women researchers had attended national as well as international conferences/ seminars. Also 12% and 8% respectively had attended national and international conferences/seminars. Whereas only 20% and 16% women scientists did not attend either national or international conferences/ seminars.

In Delhi region 25% of women scientists have attended national conferences, while 28% of the total respondents had attended international conferences. Whereas 16% and 17% women scientist had attended 3 to 4 national and international conferences. Also, 12% and 8% respectively had attended national and international conferences/seminars. While 28% and 26% of women scientists from Delhi region did not attend either national or international conference.

Table 4.26: Number of conferences/seminars attended and by women scientists of Haryana and Delhi

No of Conferences/ seminars attended	Haryana		Delhi	
	National	International	National	International
0	5(20%)	4(16%)	23(28%)	21(26%)
1-2	4(16%)	5(20%)	20(25%)	23(28%)
3-4	7(28%)	4(16%)	13(16%)	14(17%)
>=5	3(12%)	2(8%)	10(12%)	8(9%)

Figure 4.26(a): Number of conferences/seminars attended and by women scientists of Haryana

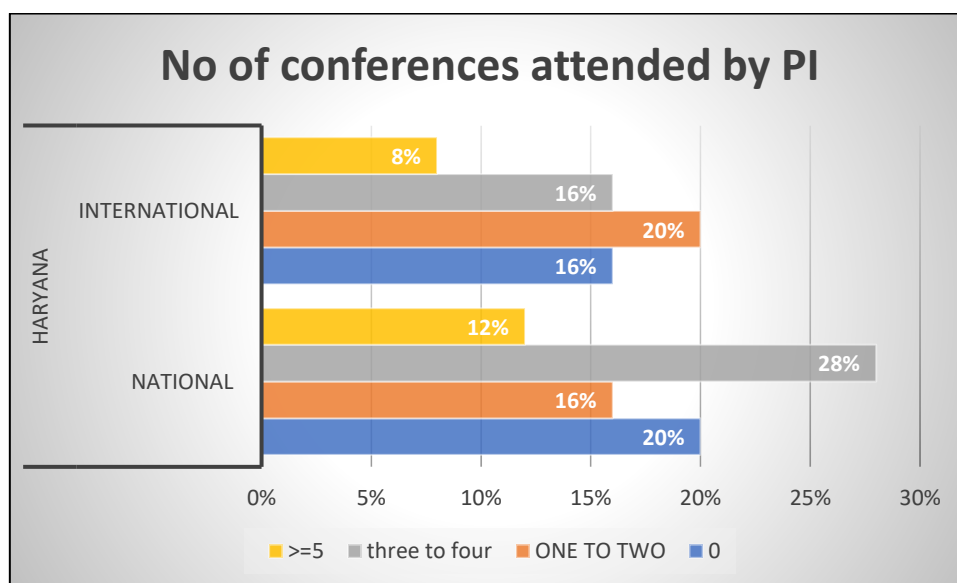


Figure 4.26(b): Number of conferences/seminars attended and by women scientists of Delhi

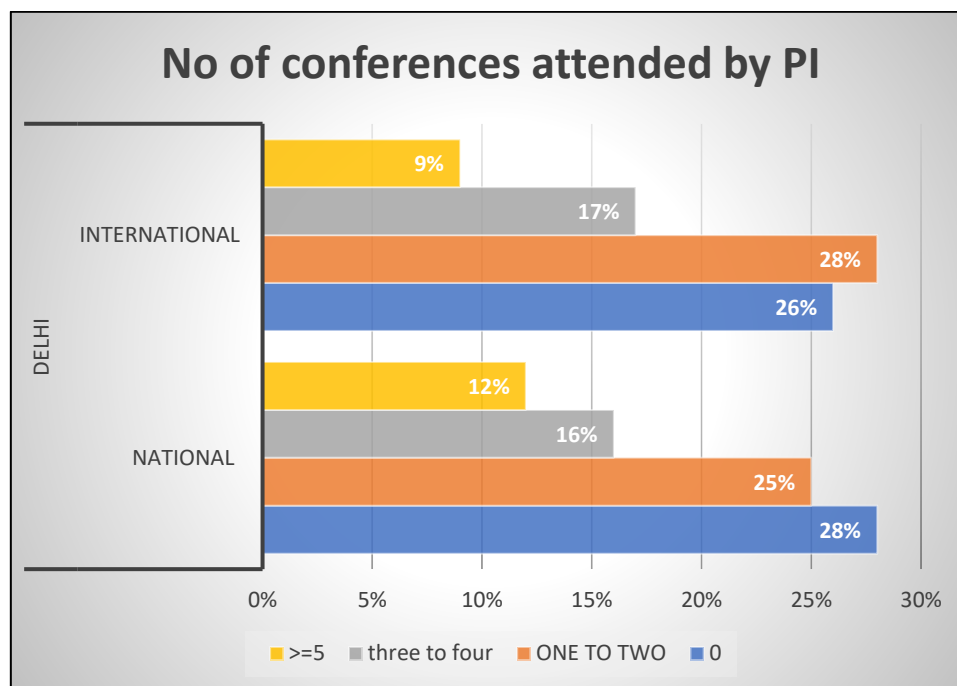


Table 4.26 demonstrate the number of papers presented in conferences/seminars by women scientists of Haryana and Delhi. The analysis of data presented that in Haryana 32% and 24% of women scientists have presented paper in 1- 2 national and international conferences/ seminar respectively. While 16% and 20% of women researchers had presented paper in national as well as international conferences/ seminars. Also 8% had presented paper in both national and international conferences/seminars respectively. Whereas only 12% and 24% women scientists did not present paper either in national or international conferences/ seminars.

In Delhi region 30% of women scientists had presented paper in national conferences, while 35% of the total respondents had presented in international conferences. Whereas 15% and 12% women scientist had presented 3 to 4 paper in national and international conferences. Also, 6% and 10% women scientist had presented paper at national and international. While 31% and 25% of women scientists from Delhi region did not present paper either in national or international conference/seminars.

Table 4.27: Number of papers presented in conferences/seminars by women scientists of Haryana and Delhi

No of Papers presented in conferences/ seminars	Haryana		Delhi	
	National	International	National	International
0	3(12%)	6(24%)	25(31%)	20(25%)
1-2	8(32%)	4(16%)	24(30%)	28(35%)
3-4	4(16%)	5(20%)	12(15%)	10(12%)
>=5	2(8%)	2(8%)	5(6%)	8(10%)

Figure 4.27(a): Number of papers presented in conferences/seminars by women scientists of Haryana

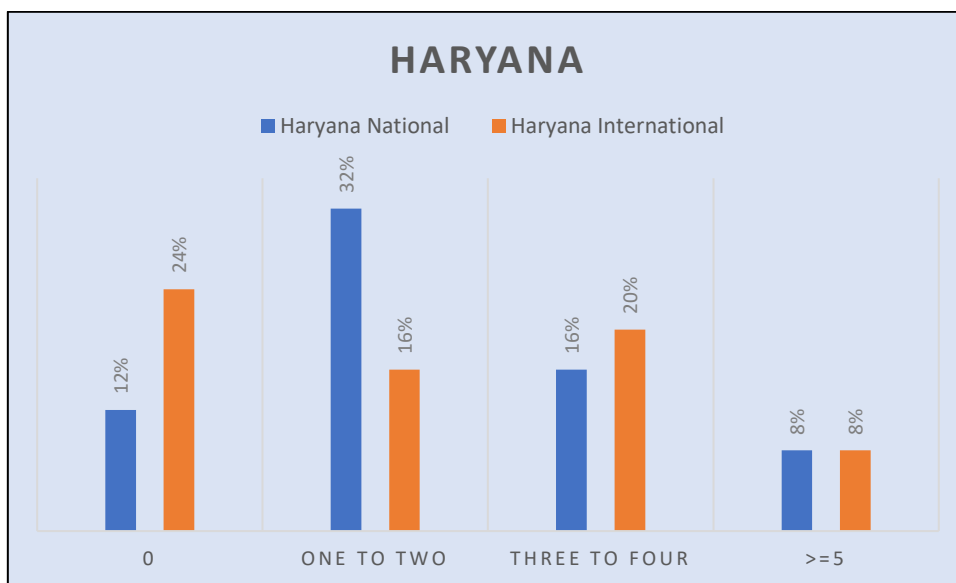
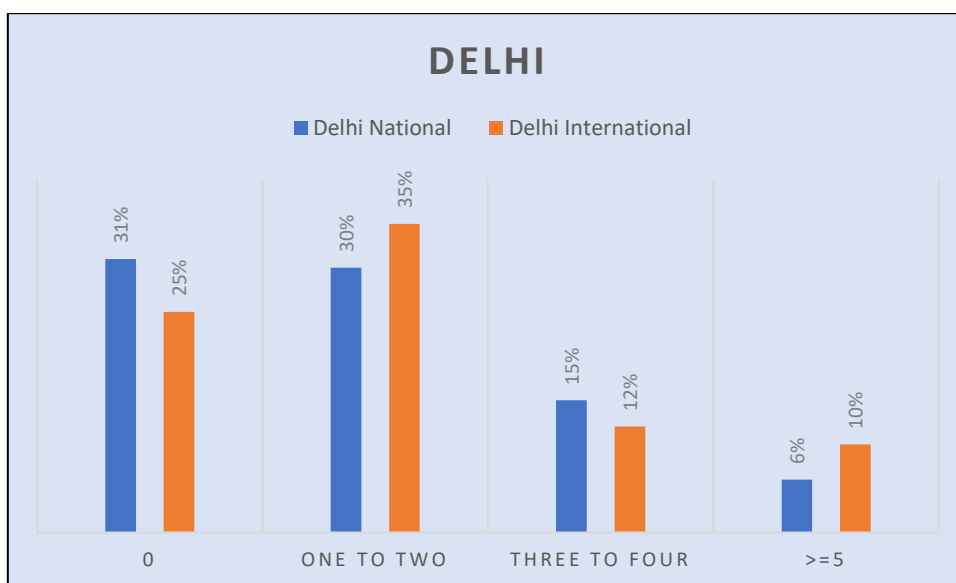


Figure 4.27(b): Number of papers presented in conferences/seminars by women scientists of Delhi



Number of workshops attended by women scientists from Haryana and Delhi is illustrated in table 4.28. It can be seen from the table that in Haryana 48% and 64% of women scientists did not attend any workshop at national and international level respectively and 12% of principal investigators attended one to two workshops at national level followed by 4% who attended workshops at international level. Moreover, there was no women scientist who had attended five workshops during the tenure of the project.

Similarly, in Delhi, majority of the women scientists did not attend any workshop at national (53%) and international (64%) level. 17% and 14% of women scientists attended one to two workshops at national and international level followed by 5% and 1% attended workshop at national and international level respectively. There are only 5% and 1% women scientist who attended workshop at National and International level.

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Table 4.28: Number of workshops attended and by women scientists of Haryana and Delhi

No of workshops attended	Haryana		Delhi	
	National	International	National	International
0	12(48%)	16(64%)	43(53%)	52(64%)
1-2	3(12%)	1(4%)	14(17%)	11(14%)
3-4	---	---	4(5%)	1(1%)
>=5	---	---	4(5%)	1(1%)

Figure 4.28(a): Number of workshops attended and by women scientists of Haryana

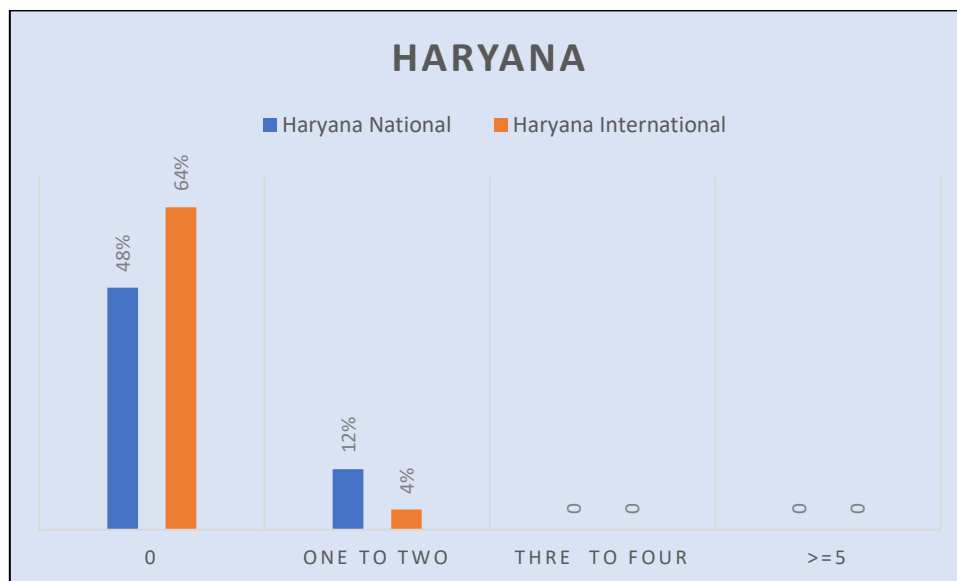
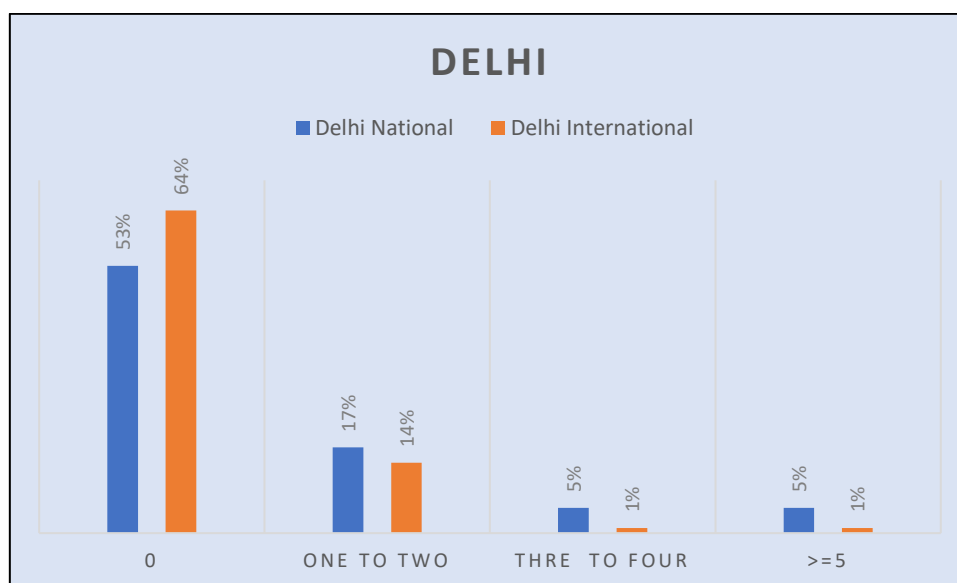


Figure 4.28(b): Number of workshops attended and by women scientists of Delhi



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The number of papers presented in workshops by women scientists of Haryana and Delhi is depicted in Table 4.29. The analysis of data presented that in Haryana 8% and 4% of women scientists have presented paper in 1-2 national and international workshops respectively. While 60% and 64% of women researchers had not presented any paper in national as well as international workshops.

Also, in Delhi, majority of the respondent had not presented any paper in national (70%) or international (73%) workshops. 6% of women scientists had presented paper in both one to two national and international workshops respectively. Whereas only 3% and 1% women scientists presented paper in three to four national or international workshops.

Table 4.29: Number of papers presented in workshops by women scientists of Haryana and Delhi

No of papers presented in workshops	Haryana		Delhi	
	National	International	National	International
0	15(60%)	16(64%)	57(70%)	59(73%)
1-2	2(8%)	1(4%)	5(6%)	5(6%)
3-4	---	---	3(3%)	1(1%)
>=5	---	---	---	---

Figure 4.29(a): Number of papers presented in workshops by women scientists of Haryana

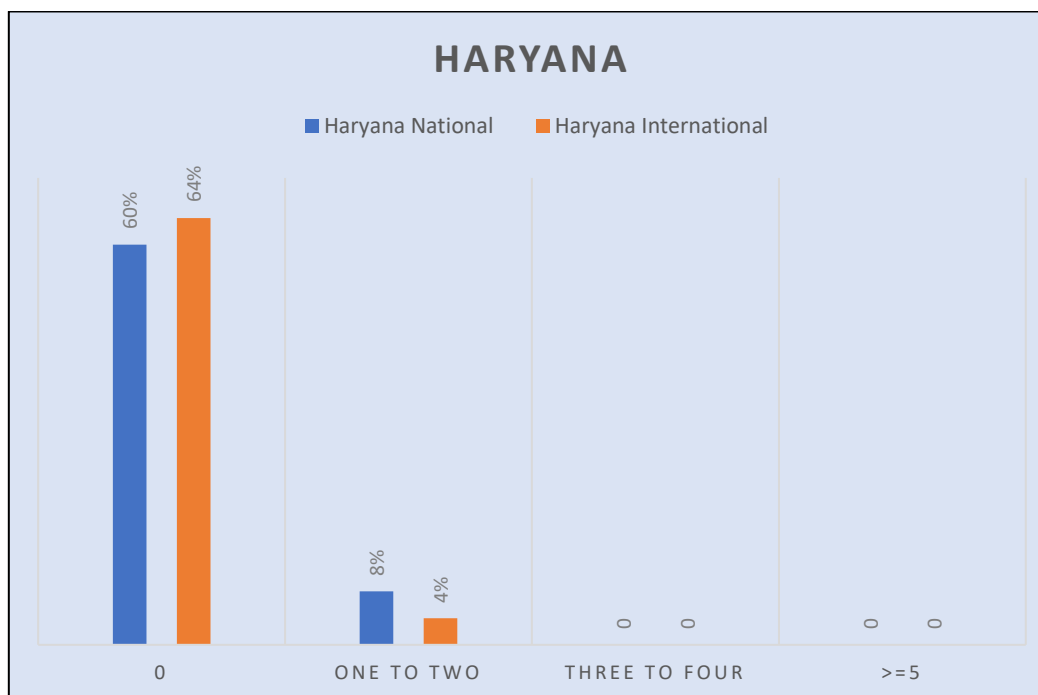


Figure 4.29(b): Number of papers presented in workshops by women scientists of Delhi

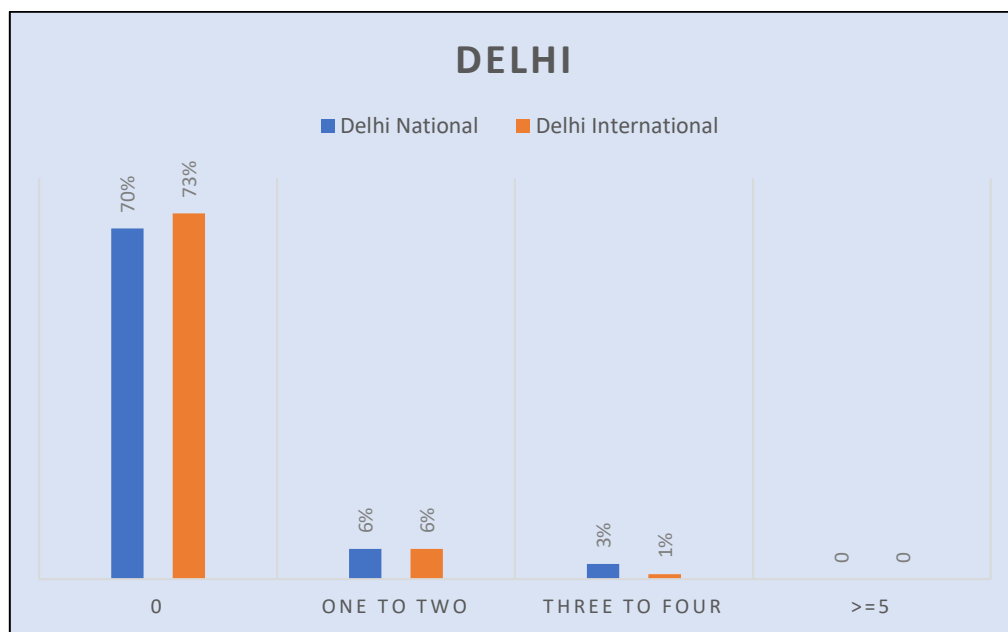


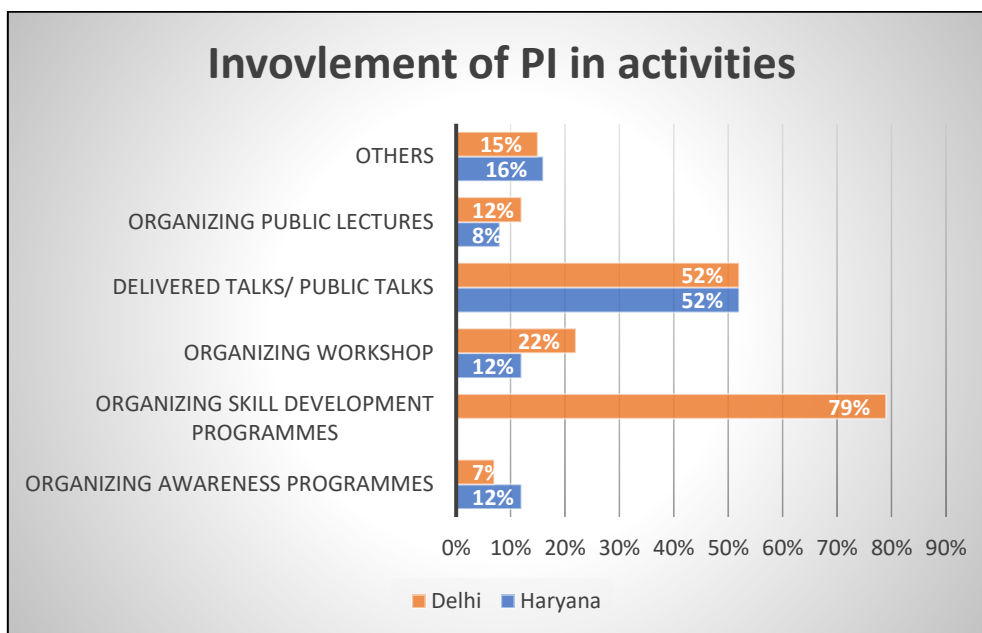
Table 4.30 presents the involvement of women scientist in organising extension activities. It is clearly perceptible from the table that majority (52%) of women researchers in Haryana were involved in delivering talks followed by organizing workshops (12%) and organizing awareness program and others i.e., PI specify (16%) and least i.e., 8% were associated with organizing public lectures. No women scientist is involved in conducted skill development program from Haryana region.

In Delhi region similar as Haryana majority of respondents (52%) is involved in delivering talks as their extension activity. The analysis of data also presented that 22% of women are involved in organizing workshop followed by 15%, 12%, 9% and 7% involvement in organizing workshop, others (PI specify), organizing public lectures, skill development program and least awareness program respectively.

Table 4.30: Involvement of women scientists in organizing extension activities in Haryana and Delhi

Involvement of women scientists in organizing extension activities	Haryana	Delhi
Organizing awareness programmes	3(12%)	6(7%)
Organizing skill development programmes	---	7(9%)
Organizing workshop	3(12%)	18(22%)
Delivered Talks/ Public talks	13(52%)	42(52%)
Organizing public lectures	2(8%)	10(12%)
Others	4(16%)	12(15%)
p-Value	0.000161**	3.709**
Chi square test	0.9560	

Figure 4.30: Involvement of women scientists in organizing extension activities in Haryana and Delhi



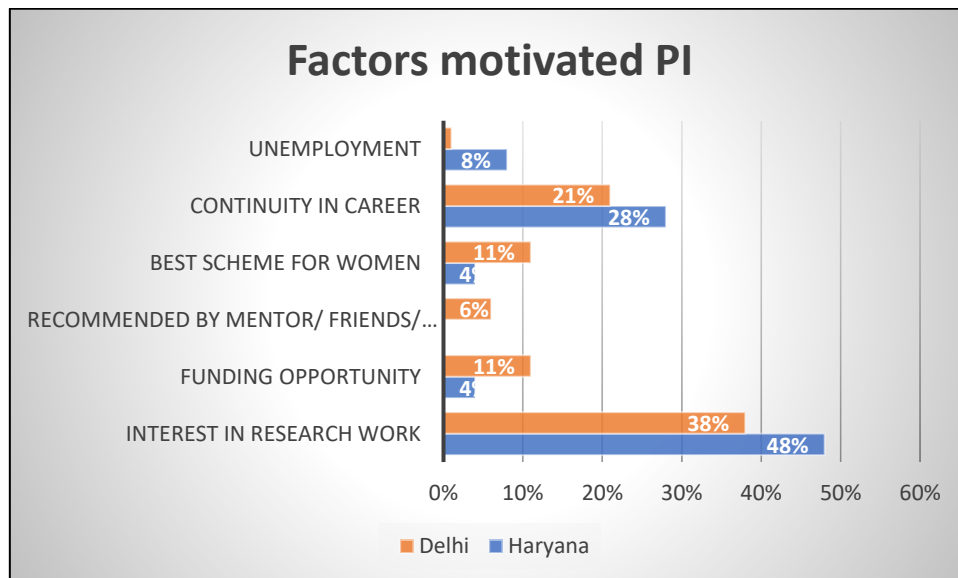
The analysis of factors that motivated women scientist to undertake the programme are demonstrated in table 4.31. It is noticeable from the table that interest in research was the most evident reason for undertaking independent research project in all the regions i.e., Haryana (48%), and Delhi (38%). In Haryana interest in research followed by continuity in career (28%) and Unemployment (8%) were documented as the major motivating factors. Rest 4% in both funding as well as best scheme respectively.

Similarly, in Delhi region 38% and 21% of women researchers described interest in research and continuity in career followed by 11% as best scheme and financial need respectively as the factors responsible for inspiring women scientist. Only 6% are recommended by Mentor or family or Relative.

Table 4.31: Factors motivated women scientists to undertake the programs in Haryana and Delhi

Factors motivated women scientists to undertake the programs	Haryana	Delhi
Interest in Research work	12(48%)	31(38%)
Funding opportunity	1(4%)	9(11%)
Recommended by Mentor/ Friends/ Relative	---	5(6%)
Best scheme for Women	1(4%)	9(11%)
Continuity in Career	7(28%)	17(21%)
Unemployment	2(8%)	1(1%)

Figure 4.31: Factors motivated women scientists to undertake the programs in Haryana and Delhi



SUMMARY

As stated above the following factors, measures or evaluate number of responses submitted by women scientists from the region Haryana and Delhi under different DST schemes.

CHAPTER 5: Results and Inference from Statistical Analysis

Results

Statistical analysis of present study revealed an increase in number of projects sanctioned to women scientist from 2003 to 2018 in Haryana and Delhi. Unpredictable with the findings of present study it is also observed a remarkable enhancement in the number of women enrolled in higher education i.e. from 32.3% to 47.9% in various institutes from 1990 to 2017. Most of the women beneficiaries had break in their career and family responsibility was the major reason for this break in all the three regions under consideration. A considerable proportion of women scientists were satisfied from their mentor's, host institutes and family support. Women scientist from Haryana and Delhi revealed little mobility for transferring projects from one statute to another. In Haryana a significant proportion of women scientist had enhanced their educational qualification from postgraduate to doctorate during their research project.

In the present study maximum number of women scientists belonged to life sciences. Very few women scientist from Punjab represented chemical sciences (4.48%), engineering (5.97), mathematical sciences (2.99%) and Engineering and technology development (2.99%) field of specialization. No woman scientist from Haryana and Delhi received any project in engineering and mathematical sciences.

Similarly, health food and nutrition as well as earth science were not very popular among women scientist. Findings of Goal (2007) highlighted the status of women in engineering, and also discussed the underlying determinants responsible for lack of interest among women towards engineering. After analysing the MHRD data (1950-2001), he revealed that number of women enrolling in sciences has improved much more as compared to engineering.

Analysis of research publication part of women scientists is not very encouraging. It is clearly noticeable from the analysis that out of the total respondents a considerable percentage of the women scientist (35.82%) in Haryana and Delhi have not published even a single research paper from the projects awarded to them. A substantial proportion of women beneficiaries published one to two research papers only. This may be due to majority of women scientist have not developed any skill or attended any seminar or conference/ workshop to update their knowledge with emerging and advanced techniques as well as methods of their subject in all the three regions understudy.

It was observed from the analysis that in Delhi State highest number of projects were sanctioned.

It is evident from the previous chapter that most of the projects were sanctioned to the host institute located in the regions with higher literacy rates. This may be attributed to either little awareness to the people in less developed areas or more facilities of research are available at urban areas.

Although hard facts on the crucial stages of a women's career in science is unavailable or at best fragmentary, it would appear that there are serious leakages in the pipeline of women scientist careers. These dropouts are a costly loss of talent especially when women leave science careers after substantial investments of time, funding and other resources have been dedicated for them and by them. This has prompted several studies worldwide to gain insights into the obstacles to entry, retention and progress of women in science and factors contributing to the attrition that provoke women to abandon science careers midway. As is readily appreciated the issue of family commitments, particularly child rearing is perceived as the foremost and major barrier and as such has received considerable attention. Suggestions to resolve the problem have included more family friendly work environments, compulsory equal sharing of leave by both parents during child birth, training boys to make them more competent to look after their future families etc. However, gradually an appreciation has evolved of the

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subtler factors that influence the issue. Among these are certain preconceived notions and stereotyping that is instrumental in discouraging young women from taking up a career in science. Even for women in professional scientific careers, some attitudes and values of the traditional male bastion retard progress. We would like to enumerate the mind-sets that unconsciously discriminate against women and are potential barriers to the entry and progress of women in the sciences.

CHAPTER 6: SUGGESTIONS AND STRATEGIES

INTRODUCTION

The Department of Science and Technology plays a pivotal role in promoting new realms of Science & Technology and as the nodal agency for organizing, coordinating and promoting S&T activities in the country. Although, the Department has made every effort to bring highly educated women to the mainstream but social, economic and infrastructure factors are the potential hindrance for bringing more women in Science.

According to UNESCO Institute for Statistics (UIS) factsheet (2017) only 30% women researchers are present across the globe. Despite great efforts by governmental agencies to fill this gap still the scenario is not very encouraging, so the analysis of present study is an attempt to assess the impact of Government of India's gender mainstreaming programme for women in science with respect to Haryana and Delhi regions of North India.

6.1 SPECIFIC ISSUES RAISED IN THE ANALYSIS AS A PART OF SUGGESTIONS

SWOT analysis was performed collectively for all the regions under consideration to know the strengths, weaknesses, opportunities and threats of the topic.

6.1.1 STRENGTH

Present study has both direct (academic impact, research impact, professional impact, and capacity building impact) as well as indirect impacts (societal status upliftment of the women in science) on the women beneficiaries. This study provided a holistic perspective of impact of women empowering projects on the women in science. These Gender Mainstreaming programmes helped women scientist to enhance their research skills. The success stories of women scientist will encourage other women scholars and researchers to pursue their career in science.

6.1.2 WEAKNESSES

Following are certain weaknesses at the data collection level, institutional level, scheme level and on the part of women beneficiaries, which were encountered while analysing the topic. During data collection we were unable to track some of the beneficiaries of the schemes, as year wise projects awarded to the women scientist in the respective schemes are missing. In some cases, information regarding PI's name, contact information and research topic was not available. Only mentor's name was provided in the data received from DST. We tried to contact them through their mentors also, but most of them were not supportive. Some observations regarding this are as follow:

- 1) Complete data of women beneficiaries before 2008 from WOS-A and WOS-B scheme was not available.
- 2) Most of the information about the beneficiaries of WOS- C scheme is not available. So, we were unable to reach them as their details regarding institution name, mentor names, phone numbers, e-mail id, and department are missing or incorrect in the available datasets.

- 3) It is difficult to reach the beneficiaries once they change in their locations. Some of the women scientists were settled abroad, so it was difficult to contact them.
- 4) The arrogant attitude of some women beneficiaries towards providing the information or filling the form was also a hindrance.
- 5) We faced obstacles in getting project related information from the host institute of the women scientist because the host institute also did not have any information about them once they complete their projects.
- 6) When we tried to contact women scientists from Delhi region, we faced **Authentication** problem, despite of having **Authentication** letter issued by DST and showing to them they don't trust us and were not ready to share or fill the form.
- 7) Some women scientist left in between their project sanctioned by DST due to personal issues such as maternity, transfer case, or family issues, etc so their data is unrelated to collect.

6.2 OPPORTUNITIES

These women centric schemes initiated by Department of Science and Technology are an attempt to dismantle gender imbalance in science and bring women scientist in the mainstream. Gathering program-specific information about problems faced by beneficiaries or their requirement and impact on their professional development in academia, research and professional settings was a challenging yet vital requirement for successful assessment of these schemes.

6.3 THREATS

There were some practical problems which are being faced by the women scientist; The major problem faced by most of the women scientist is a discrepancy in terms of rules and regulations between the university and the funding institutions. The guidelines and rules and regulations issued by DST were not acceptable by the auditing wing of the concerned university. To resolve this procedural anomaly takes a long time and once the disparity was cleared two three months were lost. In the absence these clearances it was not possible to buy requisite chemicals and other provisions for the ongoing projects and by the time money arrived the project period was already over. Hence many of them requested for extension for the project.

- ❖ Few women scientist have not received funds for the second year of the project. Hence, they did not provide us required information.
- ❖ Some of the women scientists were not satisfied with the tenure of their sanctioned project. Because crucial time of their research period was wasted in taking ethical clearances and taking permission to purchase their equipment.
- ❖ Even when women scientists get projects there are several operational hindrances that they have to encounter. When these projects are perused in university system and are funded by DST, the university

is not willing to certify researcher's contribution in that project. What is further troubling is funding agency fail to certify the research contribution of the principal investigator. In the absence of any written recognition of researcher in various projects the concerned researcher is not able to draw benefit that can recruit her.

- ❖ Some women scientist also informed that it is mandatory by DST to publish project research in reputed journals, but it is a time-consuming process, as the journals take time for the review process.

6.4 LIMITATIONS

- 1) Inaccessibility of database from the offices due to COVID-19 lockdown was one of the major limitations. Women scientist who did not respond to our email, project team visited their host institutes before lockdown to establish rapport with them or to get information about the beneficiaries who have completed the project. But after lockdown personal contact with them was not possible.
- 2) Incomplete projects due to the unavailability of project funds from the funding agency.
- 3) Mentor transferred/retired/absence of the mentor, from mid of the project was a hindrance in getting information about women beneficiaries.
- 4) The non-cooperative attitude of the women beneficiaries despite the regular calls and follow-ups was also a limitation.

6.5 DISCUSSION ON THE STRATEGY WHICH CAN BE ADOPTED FOR SUCCESSFUL IMPLEMENTATION BY THE STAKEHOLDERS – GOVERNMENT, BENEFICIARIES.

Given the focus of the present government on promotion of girl and women education in the New Education Policy, we need concerted efforts to promote intellectual capacities of women in general and women scientist in particular. These are some recommendations for effective implementation and rewarding results of effort made to bring women scientist in mainstream:

- Projects funded under Department of Science and Technology schemes should not be governed by the rules and regulations of host institute, rather DST should have a calendar pertaining rules for governing the DST sponsored research projects, which all of the host institutes should follow. There is a disparity in terms of rules and regulations between the university and the funding institutions.
- Most of the women scientist from Punjab and Chandigarh are from general category. In Jammu and Kashmir all the women scientists were from general category. Women from OBC and SC/ST categories had little representation. Policy makers should encourage women scientist from all backgrounds to explore scholarly and scientific careers, thereby contributing to their research excellence.
- These projects are perused in university system and are funded by Department of Science and Technology, the university is not willing to certify researcher's contribution in that project. In the

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absence of any written recognition of researcher in various projects the concerned researcher is not able to draw benefit that can recruit her. It is imperative that this fundamental anomaly in certifying research contribution of the project should resolved immediately.

- Most research projects are sanctioned for a stipulated period of three years. Once the project is completed and report submitted these young brilliant women researchers feel in capacitated because their research experience neither entitled them regular employment either within university system, central scientific laboratories or institutions. The period spent in perusing the research project should be counted in the promotion wherever or whenever they get employment.
- It should be mandatory for the host institute to give at least five hours per week teaching load to the women scientist, so they can get teaching as well as research experience for this period. This will enhance their possibility to get permanent job once the project is over.
- It is not enough to launch women centric projects, but for their perpetuation in the scientific world special attention on the skill development is required. Because the findings of present study for north India demonstrated limited skill development among women beneficiaries.
- There should be workshops on the latest techniques for women scientist to update/improve their knowledge or develop concepts, theories, models, techniques instrumentation.

CONCLUSION

“In kindergarten my teacher asked me—actually asked the whole class—now what do you want to be when you grow up? And I said, “I want to be a scientist.” And she looked at me and she said, “Don’t you mean a nurse?” Now clearly, there is no issue with being nurse. But the issue back then was, is that’s the only thing she could see a little girl growing up to do, that had something to do with sciences. So, she was trying to help guide me and counsel me, and... as to what was possible. But I really just put my hands on my hips, and I said, “No, I mean a scientist.”- Mae Robinson American Astronaut, First African American woman to get into space.

Women have been technologists and natural resource managers for centuries. They are fully aware of the various species and ecosystems. Hence they can contribute a lot in the environmental protection and conservation of natural resources to achieve cleaner and still cleaner environment.

They can develop model projects for Governmental agencies to enable them to implement policies. They can conduct research in pollution abatement practices. Risk analysis and Environmental Impact Analysis studies can be undertaken. Women are most suited to take up teaching profession in science and technology and be guides for undertaking research in various fields like, environment, chemistry, material science, engineering & technology, safety etc.

When we, as scientists, wear blinders, about anything, we fail. We have never seen science succeed by using only one view, by using only one tool, by using only one person's thoughts, by looking at something only one way. We cannot back out of some invention, some theory and some solution whether or not the originator was female or male. We need to celebrate these women and raise them to be heroes. Understanding of science and technology will only strengthen our life, our work and our world. Solutions to problems come from research, thought and technology. By the end of the 20th century we have women by the thousands achieving advanced degrees in all the technical fields. It took 188 years for American women to get the vote; in the last 15 years American women earned over 15,000 Ph.D.s in technical fields. Graduate schools in medicine and dentistry are routinely 50% female. Astronomy has over 30% of its graduate’s students who are women. Perhaps it is time to put our women of the past into our stories of the present and our hope for the future

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- 3) Delhistemprogramm.info
- 4) Mapsofindia.com
- 5) Wikipedia.com

APPENDIX I

QUESTIONNAIRE SURVEY

INSTRUCTIONS to Fill the Form (on-Line/ hard Copy):

1. Before starting to fill the form, you may have a thorough look to the entire questionnaire.
2. You may keep all the details/documents of the projects you have undertaken, or is currently on-going.
3. Please select the suitable check-box for answering the questions.
4. Certain questions are descriptive. You may answer in the space provided. Please share your own views.
5. Where ever Codes are assigned, you may select an appropriate Code and write in proper space given. For hard copy Survey Form the codes are available Annexures-1, Annexures-2, and Annexures 3. Wherein, in on-line Form you may have to select from the pull-down menu.
6. You are requested to fill the information for all projects you have undertaken from these schemes.
7. Please do not submit the incomplete form. You may go through the filled form once again before submitting.
8. The correct information and your positive support will bring accurate meaning to the project objectives.
9. On submission of complete information and correct information, the DST will give you a Certificate of 'Women Scientist Volunteer'.

Hoping to have your positive support.

Thanking you in anticipation.

APPENDIX II

Assessment of Government of India's Gender Mainstreaming Programms for Women in Science

(Department of Science and Technology, Government of India Sponsored Research Project)

Sample QUESTIONNAIRE SURVEY

PERSONAL INFORMATION:

Last Name: Nair	Name: P V Lalitha	Middle Name:
Date of Birth:	DD/MM/YYYY: 03/12/1964	
Residential Address:	D 2/1, NPL Colony Rajendra Nagar New Delhi 110060	
Email ID:	lalithapv@hotmail.com	
Marital Status: (Tick Mark)	Married: <input checked="" type="checkbox"/>	Unmarried:
	Other (Specify):	
Category: (Tick Mark)	General: <input checked="" type="checkbox"/>	SC:
	ST:	OBC:
	Physically Handicapped:	Any Other, specify):
Education Qualification (At Present)	PhD	

INFORMATION ON CURRENTLY AFFILIATED INSTITUTION:

Name and Address of the Institute: (Currently Affiliated)	Indo-German Science & Technology Centre Plot No. 102, Institutional Area Sector - 44, Gurgaon - 122003 INDIA		
	City: Gurgaon	Pin Code:122003	State: Haryana
Current Position:	Senior Scientific Officer		
Accreditation Status of the Affiliated Institution:	Select from the List Given in an Annexure 1 and write appropriate Code No) in space below:	YES/ NO	Not Applicable <input checked="" type="checkbox"/>
		Number	
Source of Information to access the Project and the Institution: (Multiple Ticks are permitted)	Friends/ Relatives:	University Web site:	
	Scientific Journal:	Awareness Programme: <input checked="" type="checkbox"/>	
	News Paper: <input checked="" type="checkbox"/>	DST Web site: <input checked="" type="checkbox"/>	
	Any Other Sources:		

Assessment of Government of India's Gender Mainstreaming

PRE-PROJECT CONDITION OF WOMEN SCIENTIST:

Break in Career: (Tick Mark)	Yes:	No: <input checked="" type="checkbox"/>	Duration of Break:
Reasons for the Break:			
Any Eligibility Test Cleared: (Tick Mark)	ICMR	ICAR	SLET
	CSRI NET	UGC NET	Any Other (Specify): GATE 1988
Family Support received for Research/ Professional Activities: (Tick Mark)	Motivational: <input checked="" type="checkbox"/>	Moderate:	Not Satisfied:
	Neutral:	Any Other (Specify):	

PROJECTS RELATED INFORMATION: (Write the details of all projects you have availed)

Number of Projects availed from the Government of India's Gender Mainstreaming Programme: (Tick Mark on Number):				1 <input checked="" type="checkbox"/>	2	3	4	5
Project Availed: (Chronological Order)	Scheme: (Select the Scheme from the List given in Annexure 2 and write appropriate Code No)		Field of Specialisation: (Select from the List given in Annexure 3 and write appropriate Code No):					
Expression and analysis of fusion proteins of P. falciparum	007WOSA		008LS					

Assessment of Government of India's Gender Mainstreaming

PROJECT-WISE INFORMATION:

BASIC INFORMATION - PROJECT 1:

Project ID: SR/WOS/A/LS-174/2005 Dated 20/09/2006		
Date of Sanction of the Project:	20/09/2006	
Duration of the Projects as per Sanctioned Order (In Years): 3		
Date of Completion:	13-01-2009, could not complete the tenure and the project because I took up a non-research scientific position at Wellcome Trust – DBT India Alliance.	
Status of the Project (As on Date):	Completed: YES	On-Going: YES / NO
Requested for the Extension: NO	Extension Granted: YES / NO	Duration of the Extension (in Months):
Reasons for Extension Request: (Explain)	1 2 3	

INSTITUTIONAL INFORMATION (PROJECT 1):

Name and Address of the Institute: (Affiliated during Project 1)	School of Life Sciences, Jawaharlal Nehru University, New Delhi 110067		
	City: New Delhi	Pin Code:110067	State: Delhi
Accreditation Status of the Affiliated Institution:	Select from the list given in an Annexure 1 and write appropriate Code No in space below): 020 UGC	YES/ NO/	
		Not Applicable	

MENTOR'S INFORMATION:

Mentor's Name:	Prof R K Saxena
Mentor's Designation at Host Institution:	Professor

SUPPORT RECEIVED FROM:

Mentor's Support:	Extremely Satisfied	Very Satisfied <input checked="" type="checkbox"/>	Moderately Satisfied
	Slightly Satisfied	Not Satisfied	
Institutional Support:	Extremely Satisfied	Very Satisfied <input checked="" type="checkbox"/>	Moderately Satisfied
	Slightly Satisfied	Not Satisfied	

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STATUS OF THE PROJECT 1 RELETED:

Whether the Project was transferred to another Institution?	YES	NO ✓	
Any Reason for the Transfer? (Specify)			
Name and Address of the Institution where the Project Transferred and Completed:			
In case of a change in the Mentor, (New) Mentor's Name:			
(New) Mentor's Designation at this Institution:			
Mentor's Support: (Tick Mark)	Extremely Satisfied	Very Satisfied	Moderately Satisfied
	Slightly Satisfied	Not Satisfied	
Institutional Support: (Tick Mark)	Extremely Satisfied	Very Satisfied	Moderately Satisfied
	Slightly Satisfied	Not Satisfied	

PROFESSIONAL DEVELOPMENT RELATED:

Educational Qualification (at the time of grant of the Project):	PhD with PDF				
Educational Qualification (at the completion of the project):	PhD with PDF				
Awards and Honours Received (During the Project Period): (Write the Details)	1				
	2				
	3				
Number of the Publications from the Project Awarded:	2				
Citation Index:	9				
H Index:					
Numbers of Seminars/ Conferences: (Write the Nos)					
National Level:	Attended: 5		Papers Presented: 5		
International Level:	Attended:0		Papers Presented: 0		
Numbers of Workshops: (Write the Nos)					
National Level:	Attended: 0		Papers Presented: 0		
International Level:	Attended:0		Papers Presented: 0		
Involvement/ Organising Extension Activities: (Tick Mark)	Organising Awareness Programmes		Organising Skill Development Programme		
	Organising Workshop ✓		Delivered Talks ✓		
	Organising Public Lectures		Delivered Public Talks		
	Any Other (Specify):				

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Special Contributions/ Achievements: (Give Details)	Achievements:
	Innovations:
	Patent:
Societal Technology Benefits: (Give Details)	
Technology Dissemination: (Give Details)	
Transfer of Technology: (Give Details)	

SKILL DEVELOPMENT:

Any Skill Developed:	YES	NO <input type="checkbox"/>
Particular Skill Developed: (Write in specific, if relevant)	1 2 3	

EMPLOYMENT STATUS PROJECT 1:

	Year	Details/ Position	Nature of Job		
Before an Award of the Project:	2006	Young Scientist Fellow	Research		
After the Completion of the Project:	2009	Grants Adviser	Science administration		
Current Job:	Senior Scientific Officer				
Satisfaction Level with current job: (Tick Mark)	Excellent	Very Good <input checked="" type="checkbox"/>	Good	Average	Not Satisfied
Reason for your choice of the Level:	1 Very good because I do have job satisfaction 2 Not excellent because I am paid less as compared to my qualifications and experiences for this demanding job.				

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PROGRAMME LEVEL FEEDBACK: (Tick Mark)

Your Rating on the Programme/ Scheme:	Excellent √	Very Good	Good	Average	Not Satisfied
Satisfaction Level of Programme/ Scheme:	Excellent	Very Good √	Good	Average	Not Satisfied
Problems related to receiving Grants:	YES	Specify: Very disappointed with the approach of the then officer in charge.			
Problems faced in Spending grants:	NO	Specify:			

COMMON QUESTION:

WHAT MOTIVATED YOU TO UNDERTAKE PROGRAMME/ PROJECT:

After completing PhD in Chemistry from the prestigious Indian Institute of Technology, Madras in 1993, I moved to life sciences field. Received research experience from some of the best laboratories in India (IIT Madras, IISc Bangalore, ICGEB and JNU, New Delhi) and abroad (Walter Reed army Institute of Research, Washington DC). I have been in active research for several years either as a team member or team leader and have been awarded independent grants by Department of Science and Technology, India and the National Research Council (Senior Fellowship), Washington DC. 23 publications in journals of repute and two U S patents (few are pending) in addition to several conference abstracts describe my research output. Before taking up the WOSA project, I was working with DST's Young Scientist Fellowship grant. Due to the following reasons I applied for a grant under this programme:

1. I could not settle in a regular job until the completion of the tenure of the Young Scientist Fellowship;
2. My age was crossing 40 and no more eligible for another Young Scientist Fellowship from DST;
3. I had to continue in Delhi due to family reasons;
4. I wanted to be in research preferably with own funding and did not want to join in a private firm.

YOUR REMARKS/ OVERALL EXPERIENCE:

This was a wonderful scheme for women to bring back / allow to remain in science. With family responsibilities, women have less flexibility in choosing a job of their choice and place. This scheme is an excellent fit to fill this gap. However, to bring them back and maintain in the scene, more friendly /professional approach from the officers handling such programmes are necessary. Placing female scientific administrators / officers in such positions may be better to deal with women programmes.

APPENDIX III

Template for success stories

FORMAT

(TO CAPTURE SUCCESS STORIES FROM THE BENEFICIARIES)

Photograph with a brief highlighted bio-data (in their person) that should include

- **Current affiliation**
- **Brief academic profile**
- **Punch lines specific about the beneficiary**

PHOTOGRAPH

Example: Dr. Parul Saxena has completed her Ph.D. in year 2000 in ... discipline. She is currently in ... position in ... institution on ... designation. She is a proud mother & wife with 2 children.

How was the academic & professional life of the beneficiary before joining the scheme?

Example: Before being awarded with the project, I was staying at home after my second baby was born. Although, I had my Ph.D. degree, I was just taking care of my child and I had no professional carrier....

How did the beneficiary got to know about this scheme

Example: I heard about this scheme through internet/friend/social media....

How did you got passion to pursue career in STEM

How the scheme has helped the beneficiary to get back on the track after carrier break

When I applied for this scheme, I was not expecting that things will move in such a positive and forward manner for me after all these years of break... The interview was conducted in.... And the whole process was very smooth...

Rewards/Awards/achievements received during the scheme

During the scheme I have attended many Technology conferences which were so informative and inspiring... I have developed this project during the scheme.... I have published n number of papers in Conferences & journals...

Critical Skills developed during the scheme

Example: During WOS-A, I have developed Programming skills, software development, mathematical modelling etc

Impact of Fellowship/Internship of the scheme on

- **Professional life**

Example: I am teaching in a reputed university and have also guided number of students for M.Tech./Ph.D. dissertations. I am also carrying out research in the emerging field of Climate Change science and wrote research papers in peer review National/International journals.

- **Family front**

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Example: Earlier I was not able to support my family financially. Now not only I have sufficient economic standing, the love and passion for science is inspiring me to give my children the same education I got...

- Personal Front

I see myself as an eminent researcher and member of scientific community now...

Contribution of research/entrepreneurship to society

Example: The topic of my project under the scheme is green energy... which can be used to lower the Global pollution index & carbon footprint... My application is helping with assisted living for the elderly etc

Message to other women in Science

Example: To the women in science & technology field I would like to say that don't lose hope when you get dragged by family responsibilities. There is still hope and real time opportunity ... Govt is taking initiatives in building a platform for comeback...

Feedback on scheme (how to improve further)

Example: More women are required to get aware about this scheme, so government should also put some effort in spreading awareness and should also increase the quantum of support under these schemes.

DISCLAIMER

[Lines-50-100 words]

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