INSTITUTE OF HOME ECONOMICS

(UNIVERSITY OF DELHI)

Supporting documents for Criterion 3.3.3

Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

INSTITUTE OF HOME ECONOMICS
(University of Delhi)
इंस्टिट्यूट ऑफ़ होम इकोनॉमिक्स
(दिल्ली विश्वविद्यालय)

NAAC GRADE 'A' ACCREDITED

Ref. No. .....

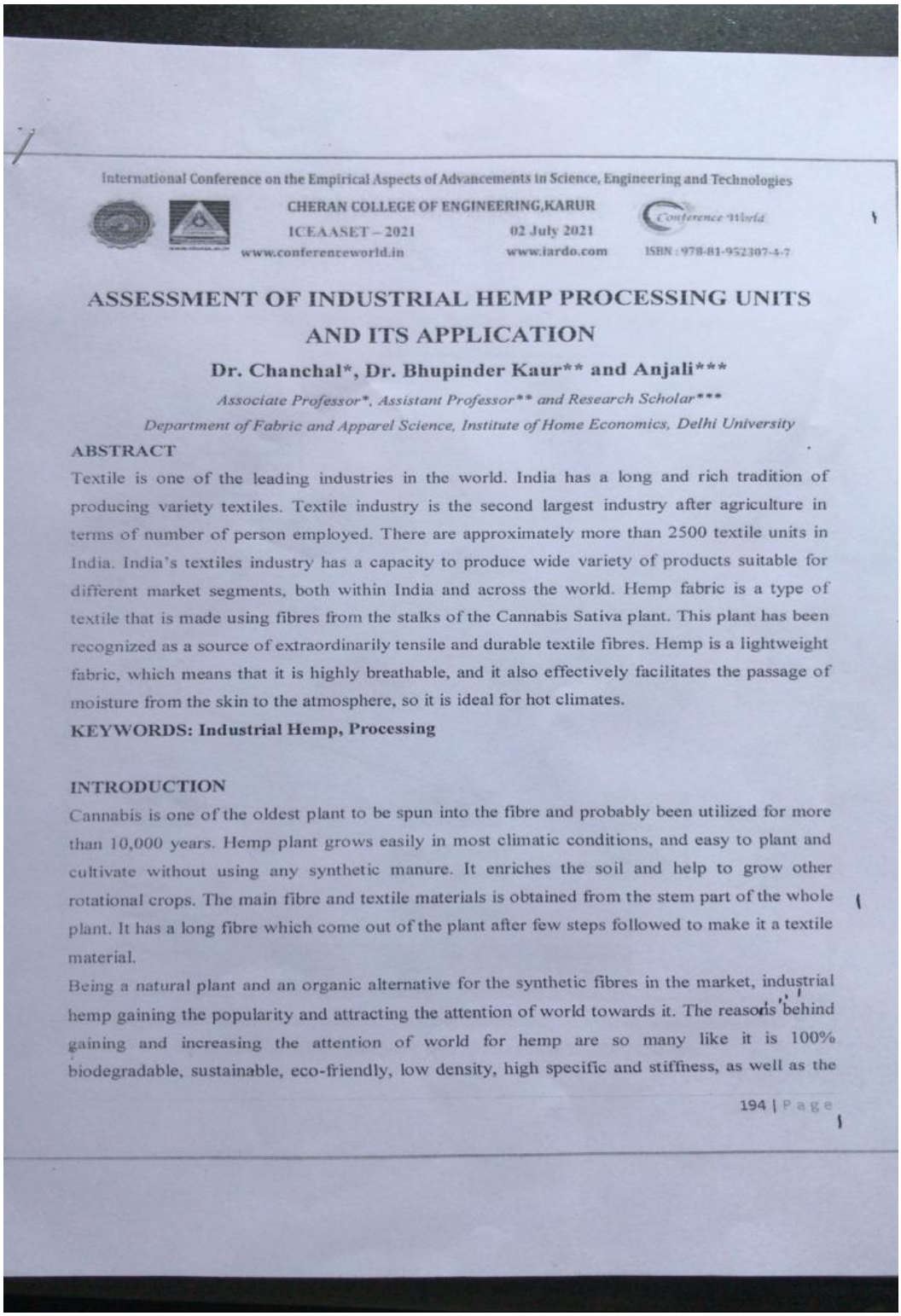
Supporting documents for Criterion 3.3.3

Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

Key Indicator	Details	Page No
3.3.3	2021	3-15
	2020	16-32
	2019	33-38
	2018	39-52
	2017	53-67
	2016	68-82

F-4, HAUZ KHAS ENCLAVE, NEW DELHI-110016 / एफ-4, हौज़ खास एन्क्लेव, नई दिल्ली-110016
Phone / फ़ोन : 011-[illegible], Director's Office : 011-46018108
Email / ई मेल : principal@ihe.du.ac.in Website / वेबसाइट : www.ihe-du.com

Chanchal, **Kaur, B.**, Anjali, **Conference Paper** **2021**
Assessment of Industrial hemp processing units and its application,
International conference on the empirical aspects of advancements in Science, Engineering And Technologies,
ISSN 1753-0814



International Conference on the Empirical Aspects of Advancements in Science, Engineering and Technologies
CHERAN COLLEGE OF ENGINEERING,KARUR
ICEAASET – 2021 02 July 2021
www.conferenceworld.in www.iardo.com ISBN : 978-81-952307-4-7

ASSESSMENT OF INDUSTRIAL HEMP PROCESSING UNITS AND ITS APPLICATION

Dr. Chanchal*, Dr. Bhupinder Kaur and Anjali*****
Associate Professor, Assistant Professor** and Research Scholar****
Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University

ABSTRACT
Textile is one of the leading industries in the world. India has a long and rich tradition of producing variety textiles. Textile industry is the second largest industry after agriculture in terms of number of person employed. There are approximately more than 2500 textile units in India. India's textiles industry has a capacity to produce wide variety of products suitable for different market segments, both within India and across the world. Hemp fabric is a type of textile that is made using fibres from the stalks of the Cannabis Sativa plant. This plant has been recognized as a source of extraordinarily tensile and durable textile fibres. Hemp is a lightweight fabric, which means that it is highly breathable, and it also effectively facilitates the passage of moisture from the skin to the atmosphere, so it is ideal for hot climates.

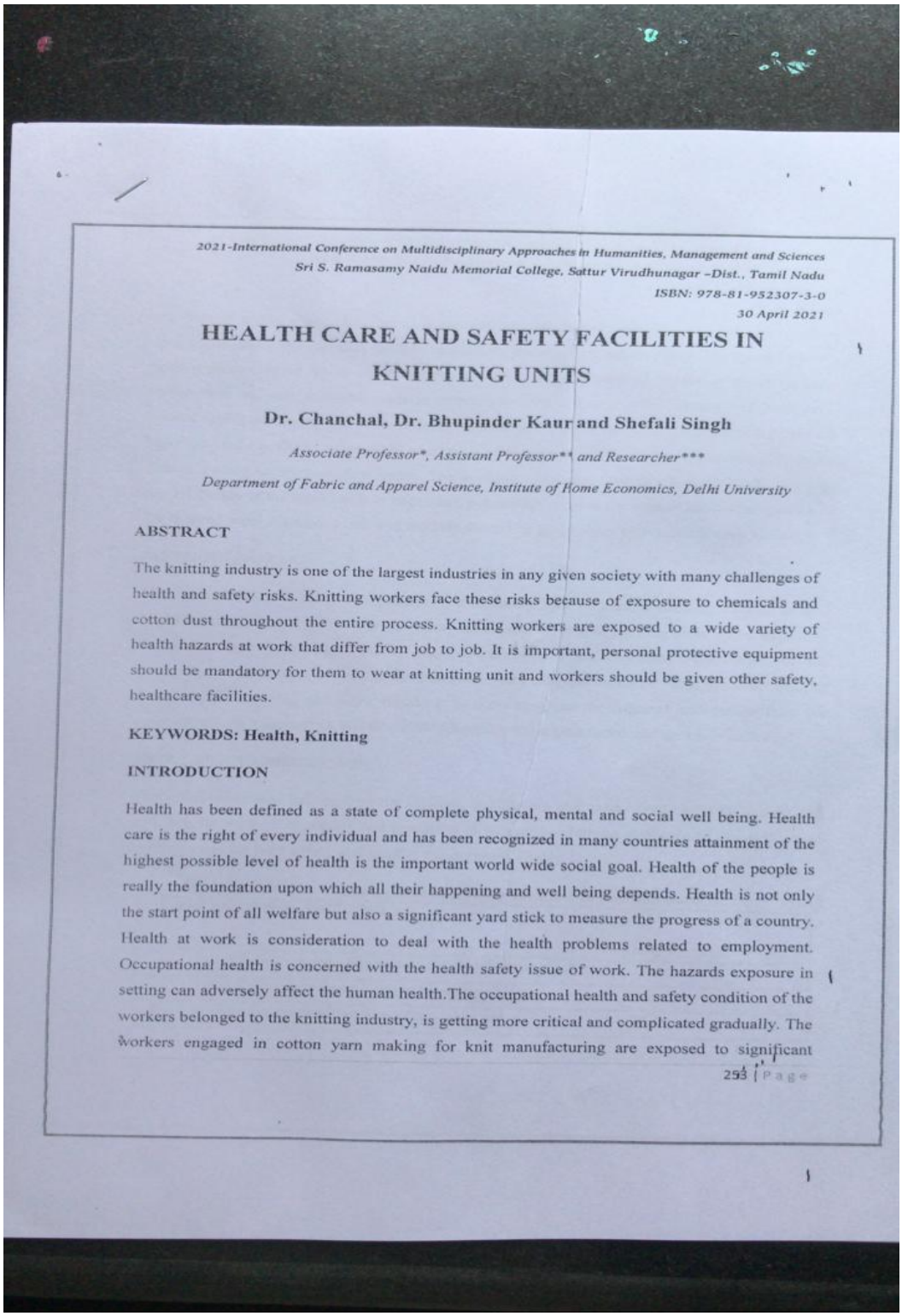
KEYWORDS: Industrial Hemp, Processing

INTRODUCTION

Cannabis is one of the oldest plant to be spun into the fibre and probably been utilized for more than 10,000 years. Hemp plant grows easily in most climatic conditions, and easy to plant and cultivate without using any synthetic manure. It enriches the soil and help to grow other rotational crops. The main fibre and textile materials is obtained from the stem part of the whole plant. It has a long fibre which come out of the plant after few steps followed to make it a textile material.

Being a natural plant and an organic alternative for the synthetic fibres in the market, industrial hemp gaining the popularity and attracting the attention of world towards it. The reasons behind gaining and increasing the attention of world for hemp are so many like it is 100% biodegradable, sustainable, eco-friendly, low density, high specific and stiffness, as well as the

Chanchal, **Kaur, B.,** Singh, S, **Conference Paper** **2021**
Health care and safety facilities in knitting units
International Conference on Multidisciplinary Approaches in Humanities, Management and Sciences
ISBN: 978-81-952307-3-0



2021-International Conference on Multidisciplinary Approaches in Humanities, Management and Sciences
Sri S. Ramasamy Naidu Memorial College, Sattur Virudhunagar –Dist., Tamil Nadu
ISBN: 978-81-952307-3-0
30 April 2021

HEALTH CARE AND SAFETY FACILITIES IN KNITTING UNITS

Dr. Chanchal, Dr. Bhupinder Kaur and Shefali Singh

Associate Professor, Assistant Professor** and Researcher****

Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University

ABSTRACT

The knitting industry is one of the largest industries in any given society with many challenges of health and safety risks. Knitting workers face these risks because of exposure to chemicals and cotton dust throughout the entire process. Knitting workers are exposed to a wide variety of health hazards at work that differ from job to job. It is important, personal protective equipment should be mandatory for them to wear at knitting unit and workers should be given other safety, healthcare facilities.

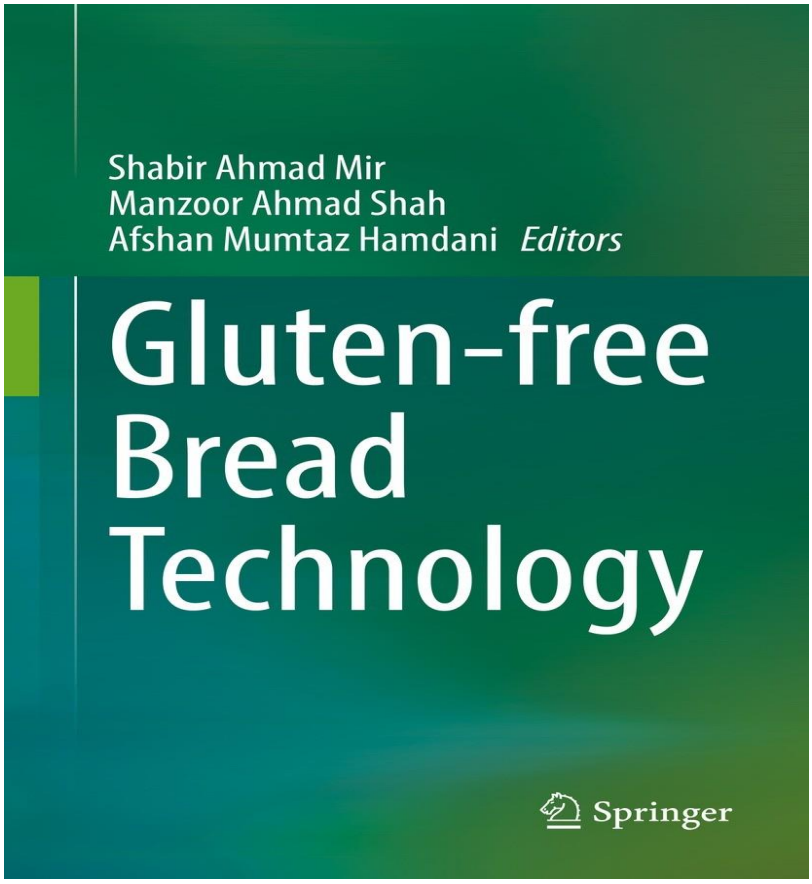
KEYWORDS: Health, Knitting

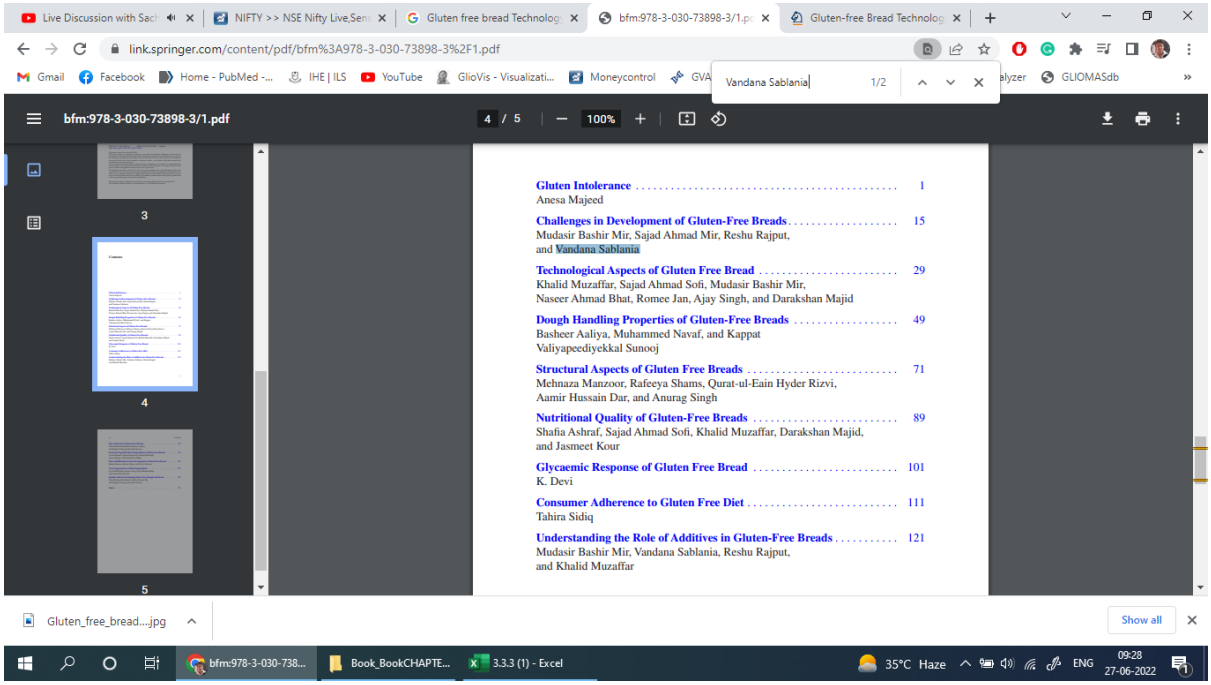
INTRODUCTION

Health has been defined as a state of complete physical, mental and social well being. Health care is the right of every individual and has been recognized in many countries attainment of the highest possible level of health is the important world wide social goal. Health of the people is really the foundation upon which all their happening and well being depends. Health is not only the start point of all welfare but also a significant yard stick to measure the progress of a country. Health at work is consideration to deal with the health problems related to employment. Occupational health is concerned with the health safety issue of work. The hazards exposure in setting can adversely affect the human health.The occupational health and safety condition of the workers belonged to the knitting industry, is getting more critical and complicated gradually. The workers engaged in cotton yarn making for knit manufacturing are exposed to significant

Vandana Sablania (Book Chapters) 2021

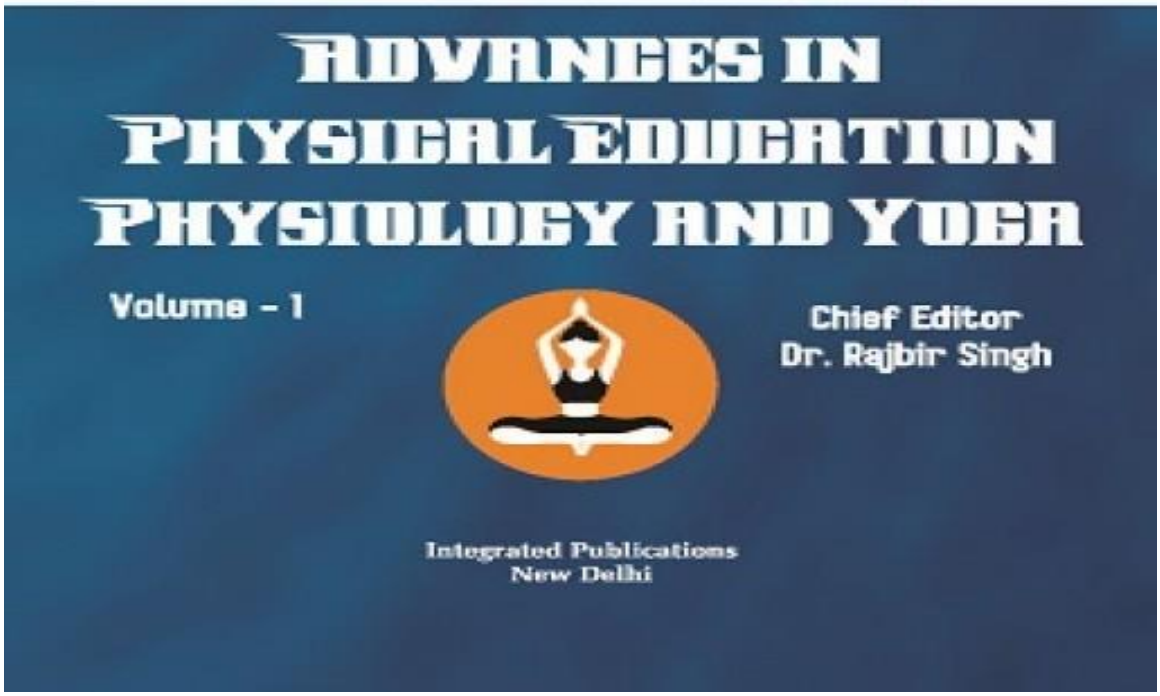
- **Gluten free bread Technology**/Changes in development of gluten free breads
- **Gluten free bread Technology**/Understanding the role of additives in gluten free breads





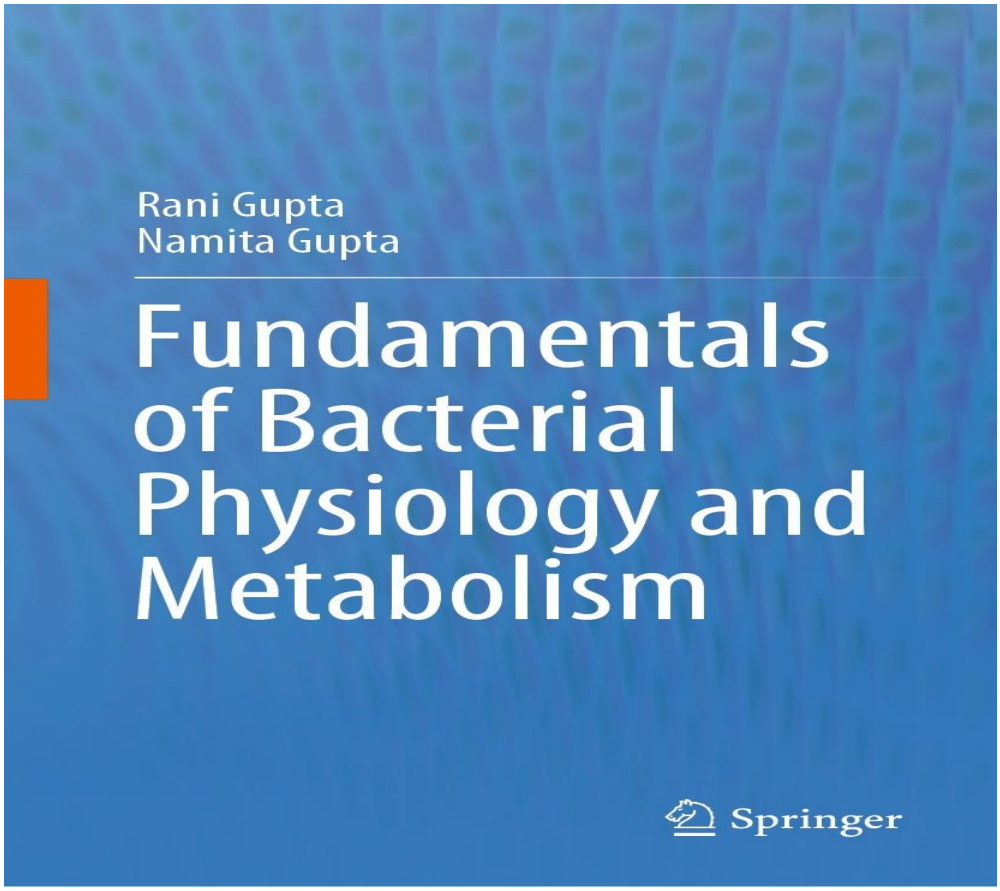
Manjula Suri and Namita Saini (Book Chapters) 2021

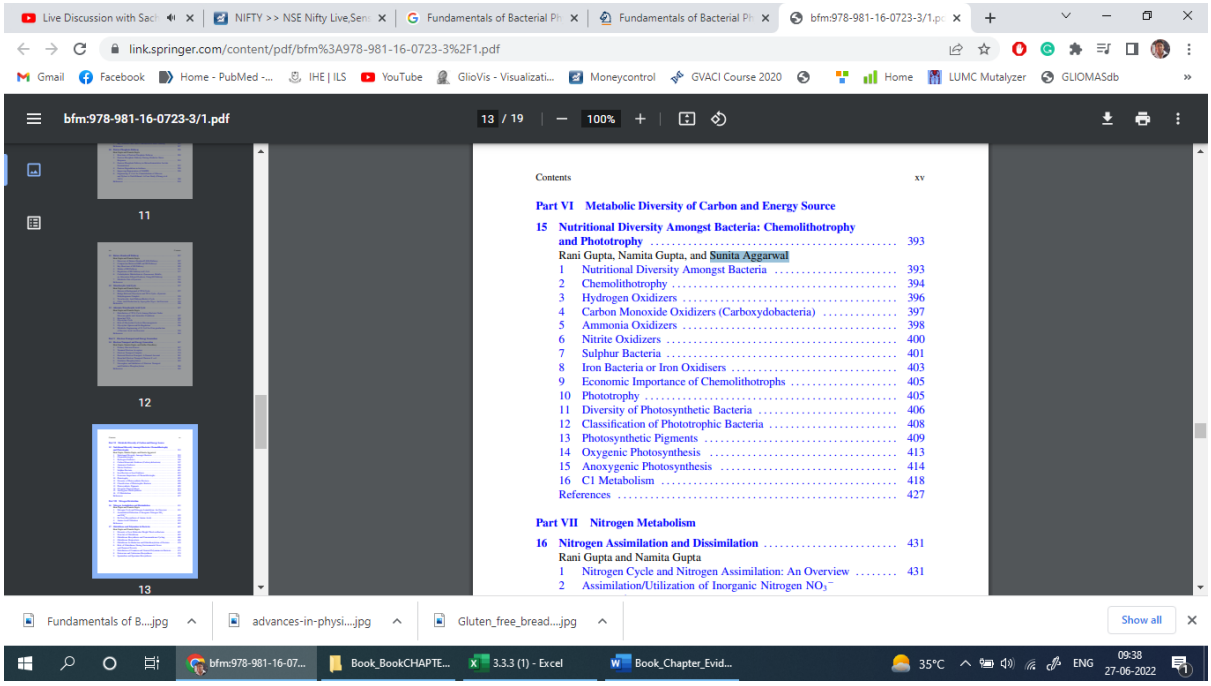
- **Advances in Physical Education Physiology and Yoga**/Yoga and Aging
- **Advances in Physical Education Physiology and Yoga**/Formula 1 Net Zero Footprint: Advances in Sustainability Strategies
- **Advances in Physical Education Physiology and Yoga**/ Aggression and its Management in Novice Cricketers



Sunita Aggarwal (Book Chapter) 2021

In **Fundamentals of Bacterial Physiology and Metabolism**/Nutritional diversity amongst bacteria: chaemolithotrophy and phototrophy.



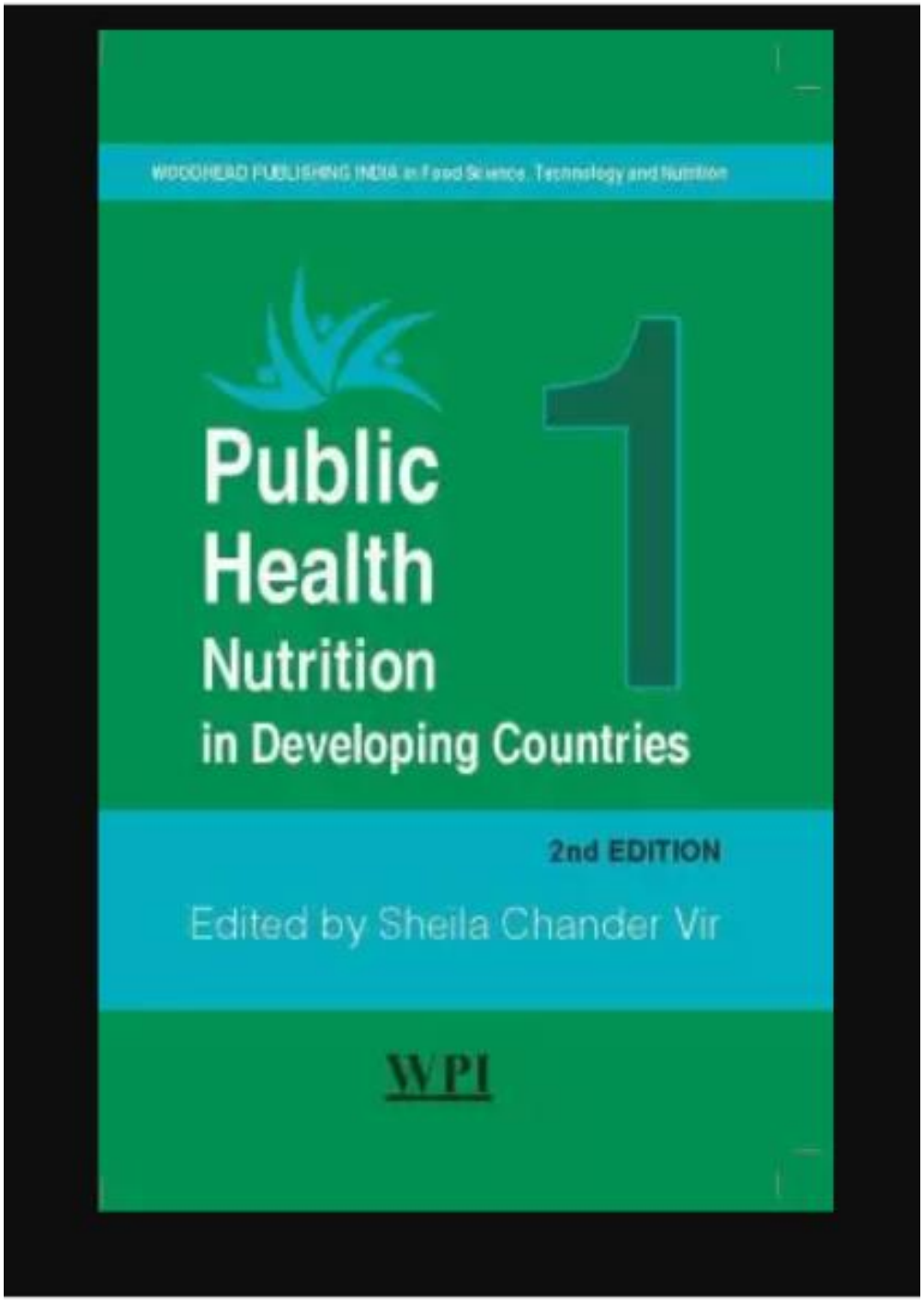


Nidhi Gulati (Book Chapter) 2021

- Adarsh balak ki chavyivan [Images of ideal childhood from primary schools]. **In The idea, work and identity of teachers [Adhyapan Karm, Adhypak ki chavi va asmita]**

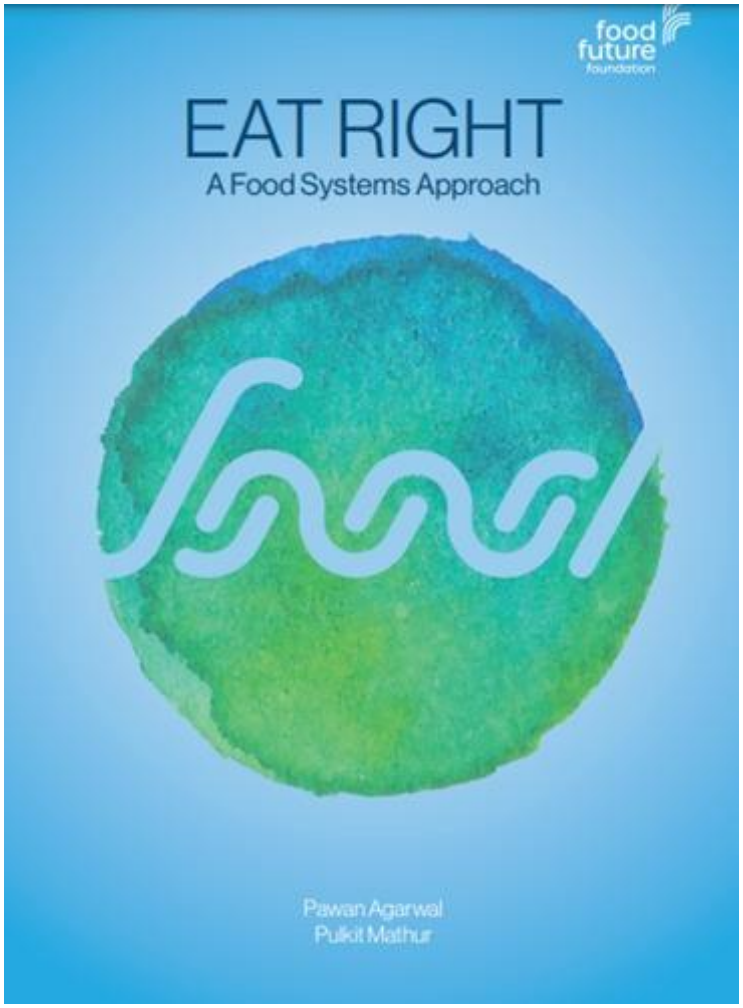
Seema Puri (Book Chapter) 2021

- **Public Health Nutrition in Developing Countries, 2nd Edition**/Nutrition for the elderly



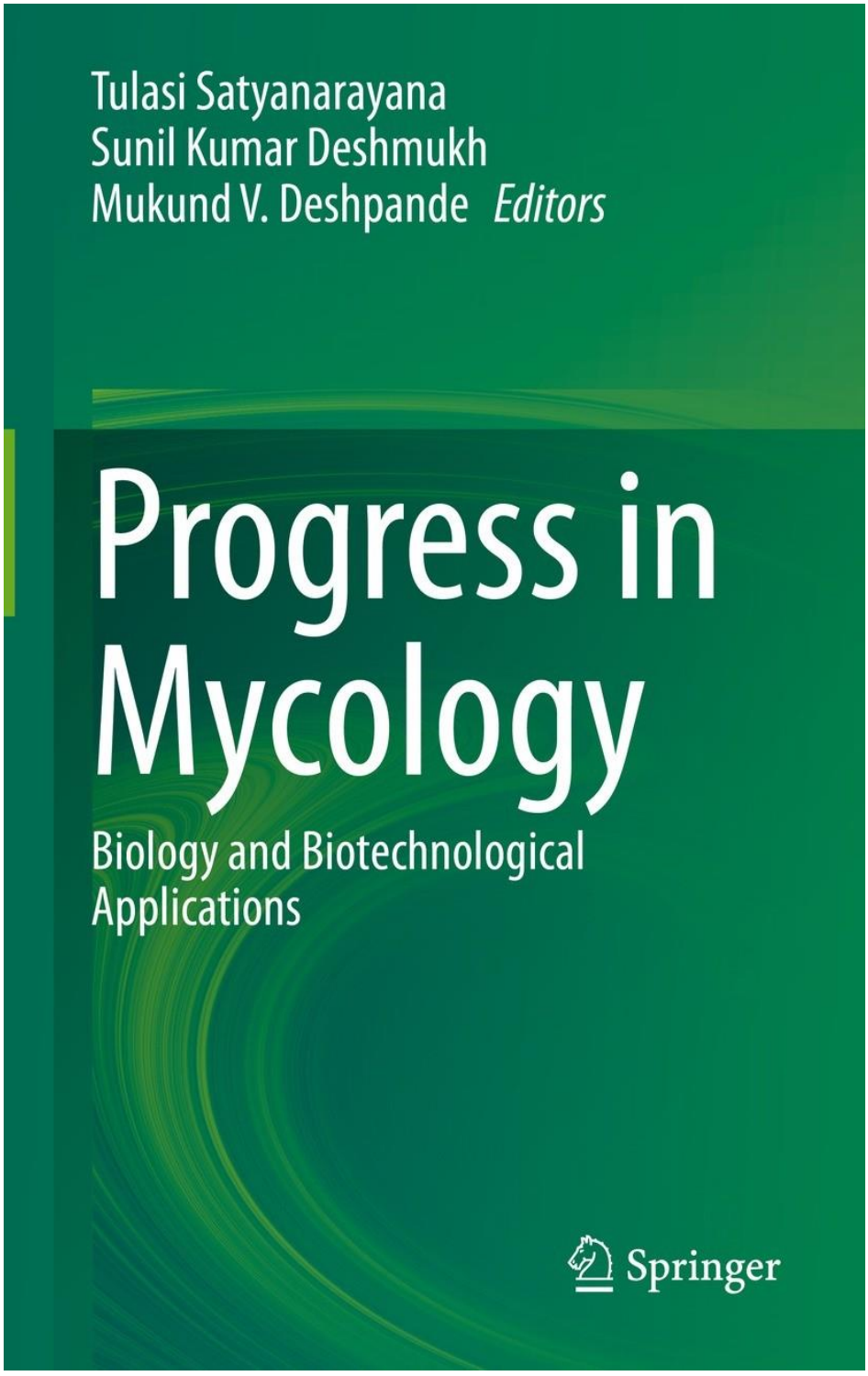
Bani Tamber Aeri (Book Chapter) 2021

- Healthy diets for all In **Eat Right - A Food Systems Approach. Agarwal, P. and Mathur, P. Eds**



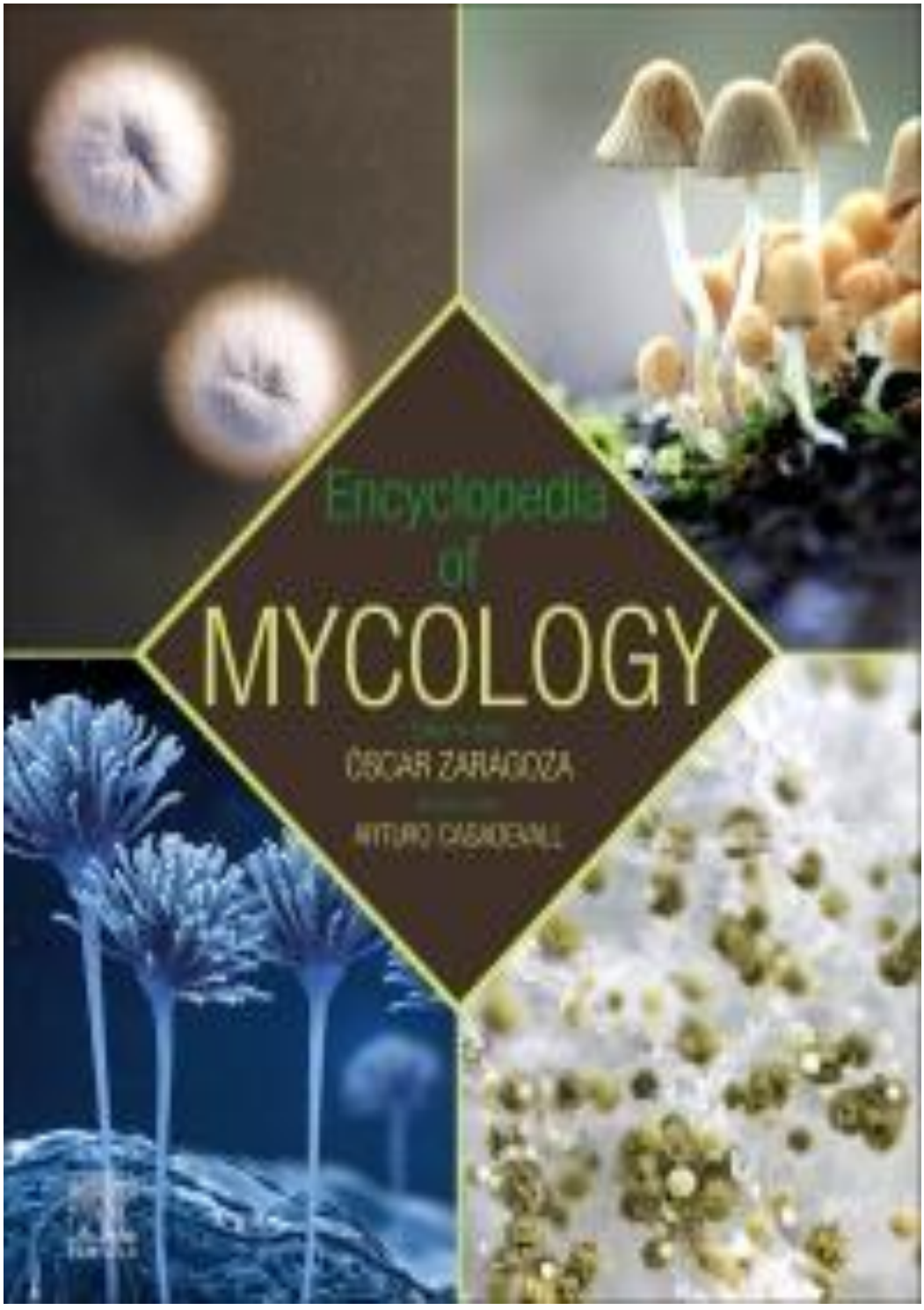
Ashima Vohra (Book Chapter) 2021

- **Progress in Mycology**/Developments in Fungal Phytase Research: Characteristics and Multifarious Applications.



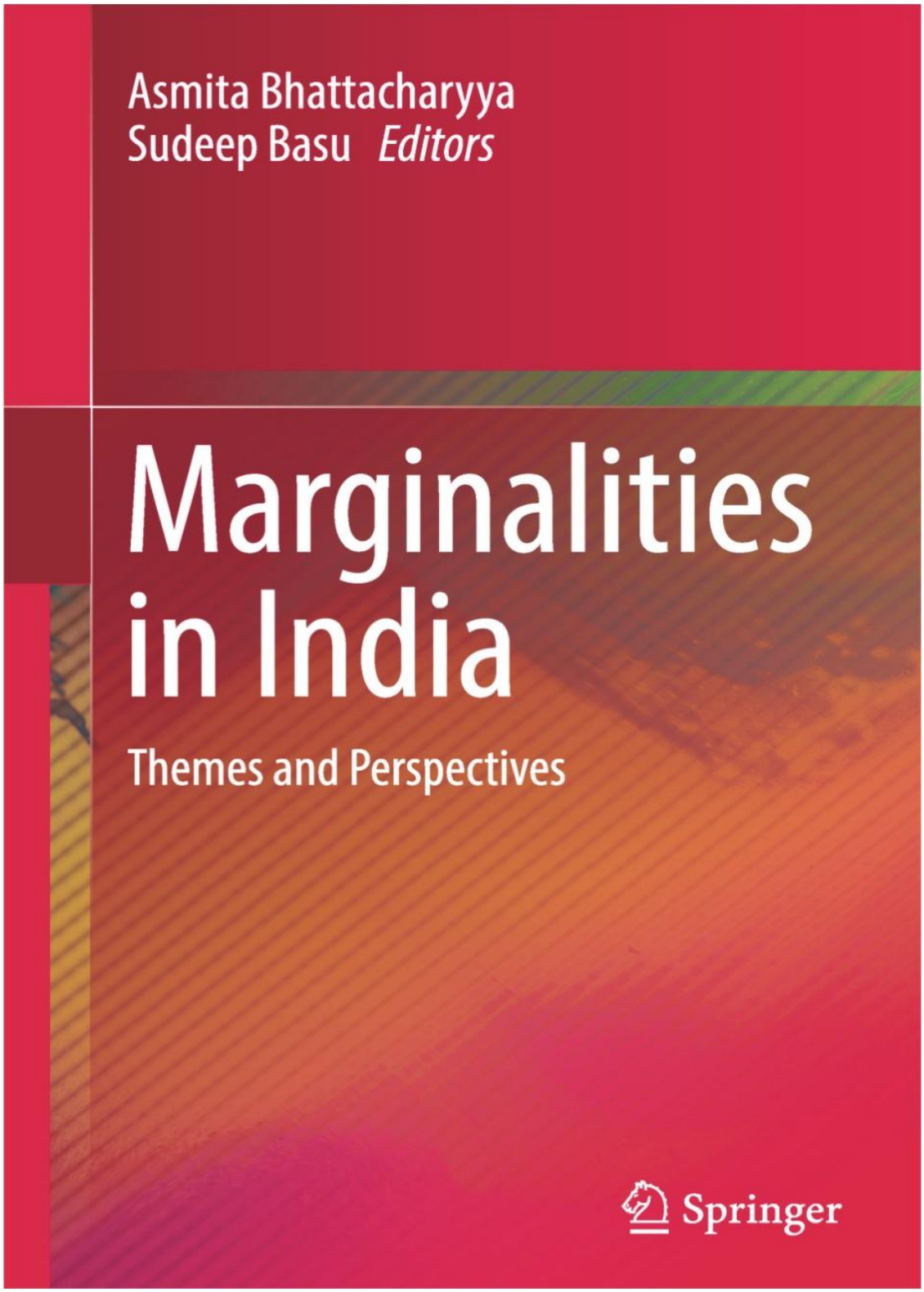
Ashima Vohra (Book Chapter) 2021

- **Encyclopedia of Mycology**/Multifarious applications of fungal phytases



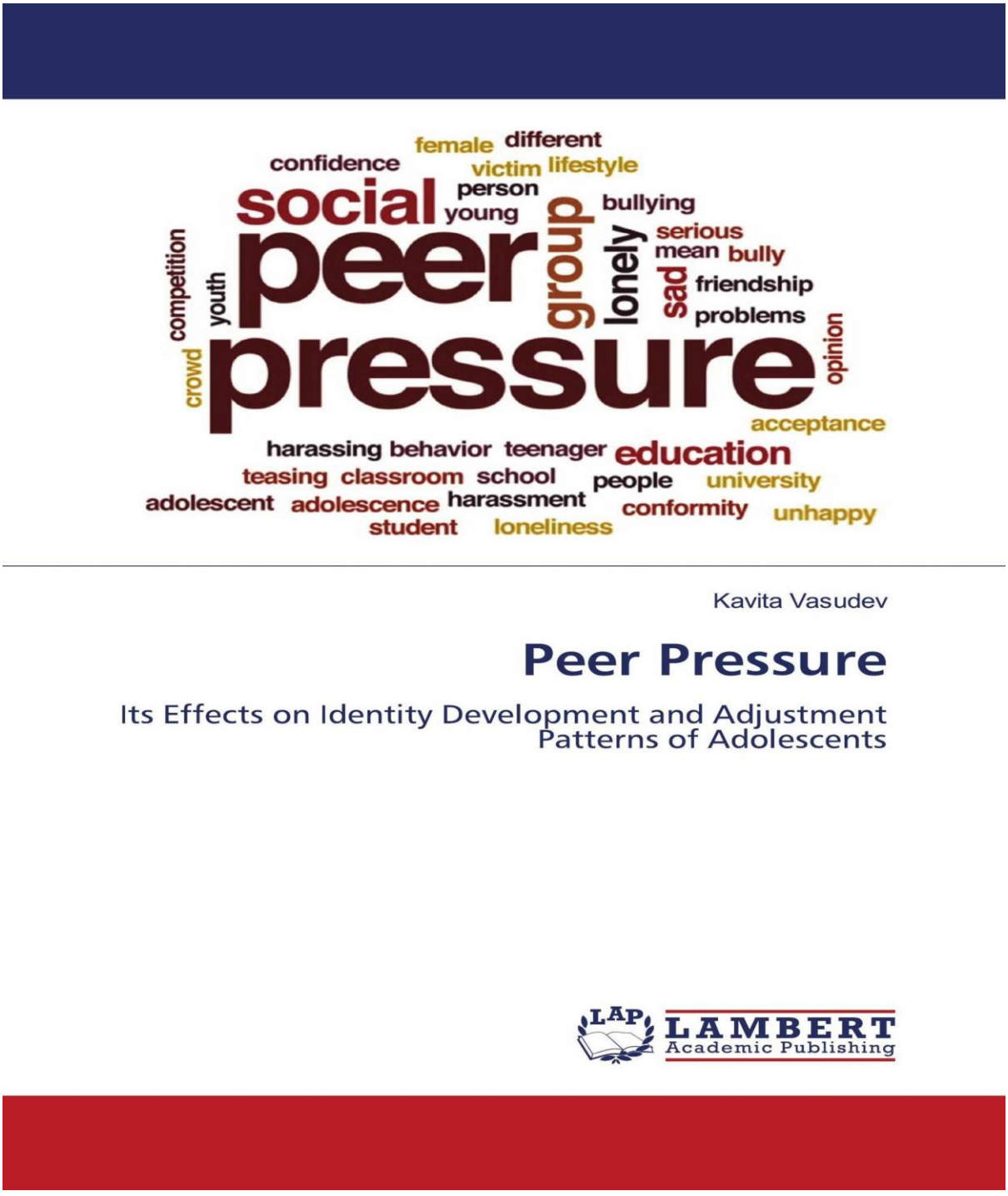
Ruchira Das (Book Chapter) 2021

- Migrant Tribe in a Globalising City: Educational Views, Aspirations and Choices of the Santals in Kolkata **In MARGINALITIES IN INDIA: Themes and Perspectives**



Dr. Kavita Vasudev (Book) 2021

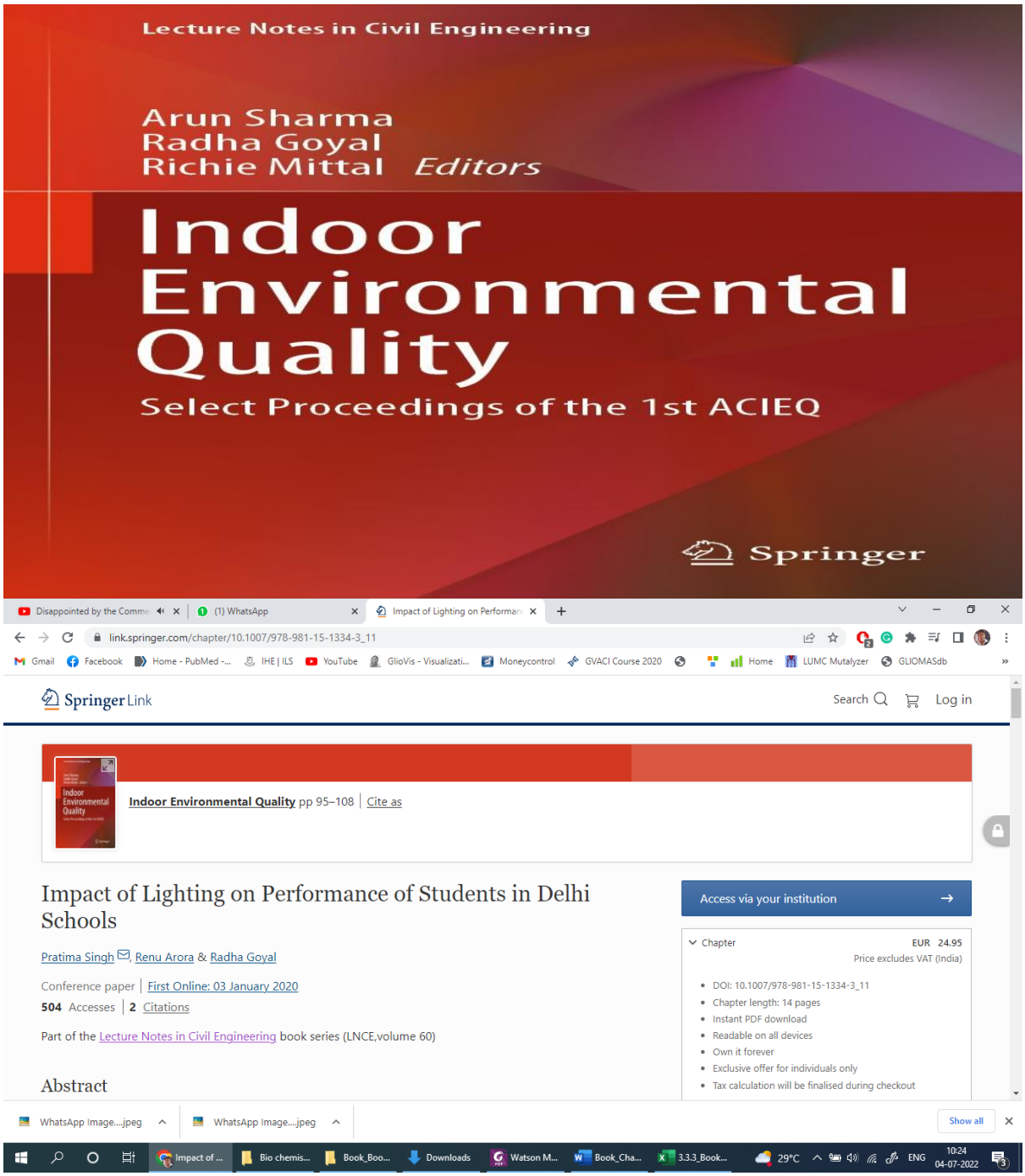
- **Peer Pressure: Its effects on identity development and adjustment patterns of adolescence**



Pratima Singh, Renu Arora, & Radha Goyal **Conference Paper 2020**

Classroom Ventilation and its impact on Concentration and Performance of Students: Evidences from Air-conditioned and Naturally Ventilated Schools of Delhi

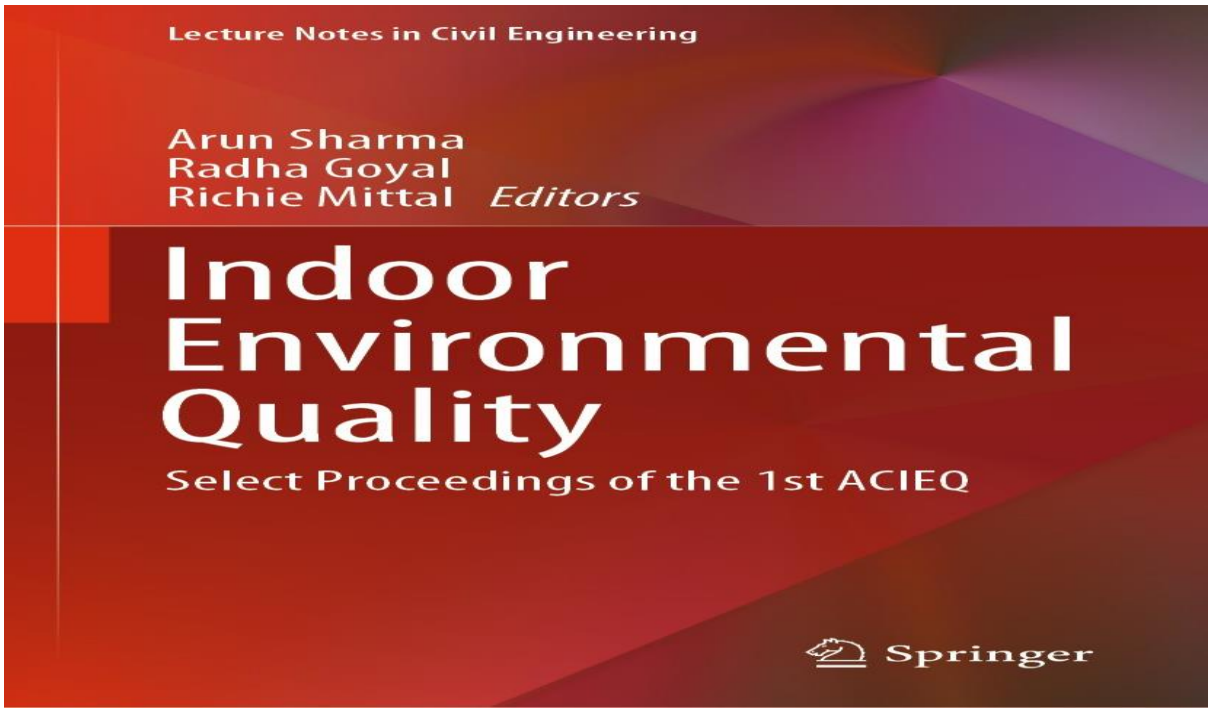
Lecture Notes in Civil Engineering Indoor Environmental Quality - Select Proceedings of the 1st ACIEQ ACIEQ published by Springer Nature Singapore Pte Ltd
https://doi.org/10.1007/978-981-15-1334-3_14
ISBN 978-981-15-1334-3

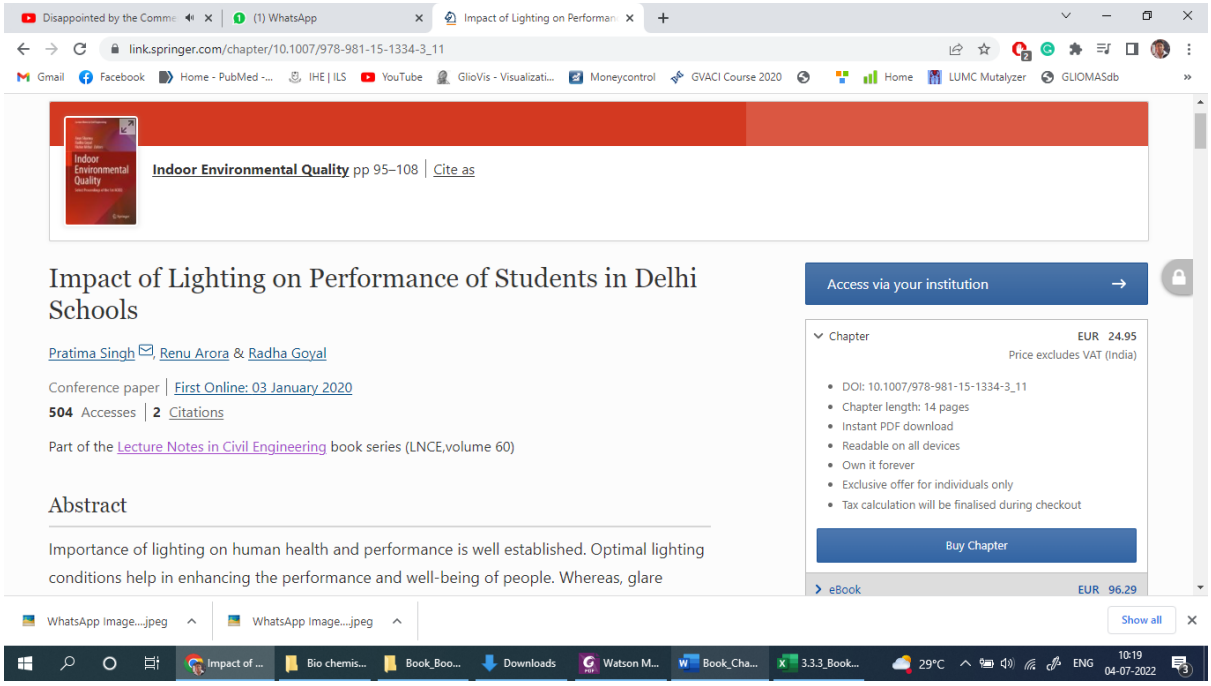


Pratima Singh, Renu Arora, & Radha Goyal **Conference Paper 2020**

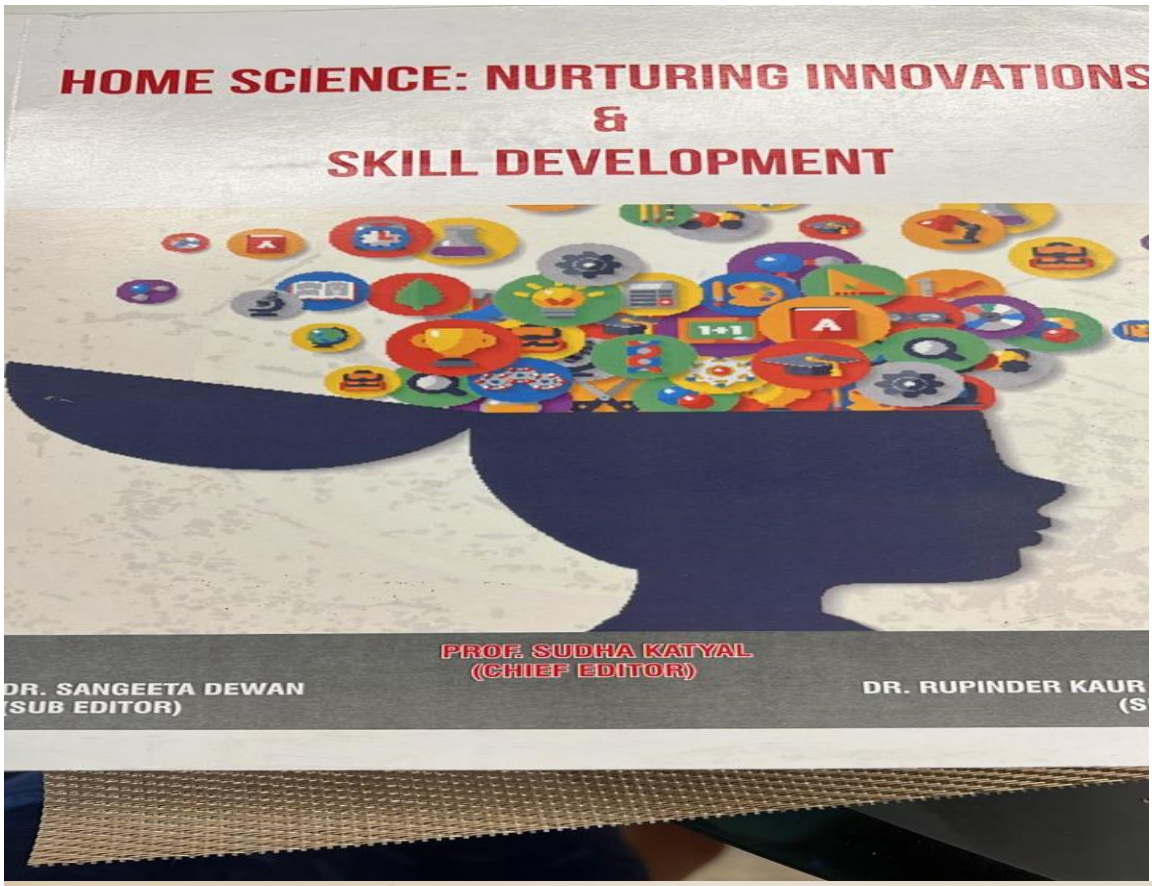
Impact of Lighting on Performance of Students in Delhi Schools

Lecture Notes in Civil Engineering Indoor Environmental Quality - Select Proceedings of the 1st ACIEQ ACIEQ published by Springer Nature Singapore Pte Ltd
https://doi.org/10.1007/978-981-15-1334-3_11
ISBN 978-981-15-1334-3





Magu,P.
Designers Vs Ergonomists - Can Home Science Win the Race? **In Home Science: Nurturing Innovations and Skill Development**



Designers Or Ergonomists- Can Home Science Win The Race

Poonam Magu
Associate Professor
Department of Resource Management and Design Applications
Institute of Home Economics (University of Delhi), Delhi, India
pmagu_65@yahoo.com

Abstract

Home Science is no longer what it used to be -a study confined to the requirements of the four walls of the house. Just like the modern home, this area of study too has changed and developed to meet the challenges of the present time. And herein lays the beauty of the subject - its flexibility and ability to take in anything and everything from any other discipline and mould it into its own. The multidisciplinary role of Home Science should not dilute its importance or make it appear unable to support itself. In order to maintain its dignity, it must therefore, create its own special space or niche which in no way trespasses into the territory of any other discipline. It should have its own individuality and command respect on the basis of its own body of knowledge and exemplary research in the field. The skills that we impart to our students should not just be at par with the skills that can be attained by pursuing other discipline of studies but offer much more for them to be able to stand out in the crowd.

More specifically, the area of designing - interior designing, landscape designing, product etc. are very popular courses of study being offered by the private institutions outside the realm of government colleges and universities. A number of studies have shown that in the coming times there will be a huge requirement for designers. The issue for the profession is not whether there will be a demand for interior design services, but rather, of what kind and provided by whom."

The present paper deals with this question - should the designers be from - private, diploma giving institutions or degree students from universities of repute which can teach designing not just in isolation but in the light of changing family characteristics, newer needs and requirements and most importantly in tune with emphasis on creating healthy environments. If the later is the obvious answer then are we equipping our students with the essential skills essential for the profession? Or are we again losing out to the private institutions?

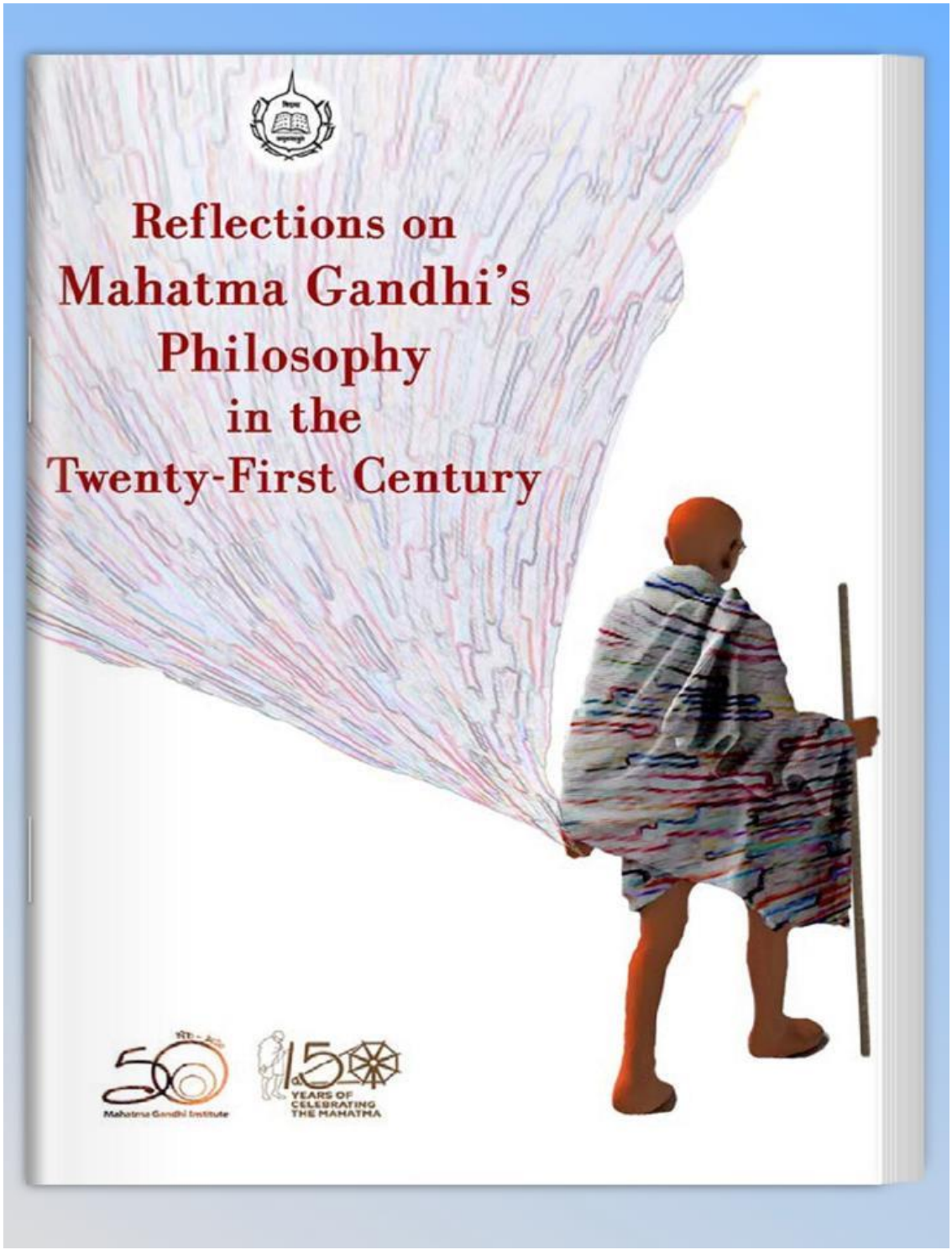
Introduction

Home Science- missed opportunities

Traditionally, whatever had been the role of Home science, as times changed and newer job opportunities came into the market, it was essential that the course curriculum should have changed to meet the requirements of the newer professions. But perhaps, unfortunately, this did not happen. That is the reason that Food and Nutrition students have to compete with students doing a specialization course in Hotel Management. The Textiles or Fabric and Apparel Sciences have to fight for a place under the sun (which should have belonged to them) with students from

Yuki Azaad Tomar & P.A. Sharma **(Book Chapters) 2020**

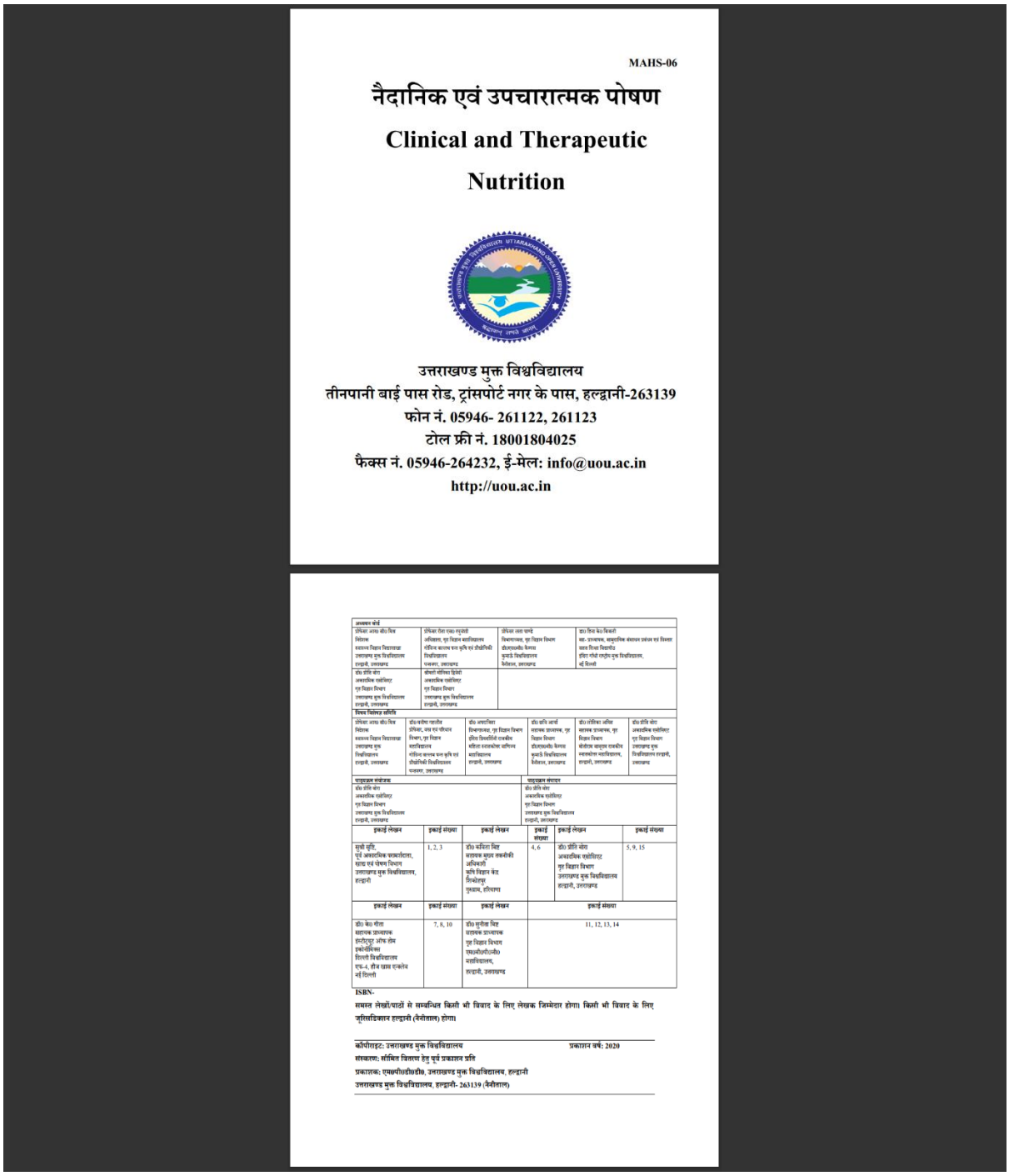
- Influence of Gandhian Philosophy in shaping New India. In **Reflections on Mahatma Gandhi's Philosophy in the Twenty-First Century Editor- Nirsimloo- Gayan Sooryakanti**



CONTENTS

Kumari Geeta (Book Chapters) 2020

- Block II: Unit 7: Therapeutic Diet. In **MAHS-06: Clinical and Therapeutic nutrition**
- Block II: Unit 8: Diet in Gastrointestinal Diseases In **MAHS-06: Clinical and Therapeutic nutrition**
- Block II: Unit 10: Diet in Diseases of Liver and Pancreas In **MAHS-06: Clinical and Therapeutic nutrition**



MAHS-06

नैदानिक एवं उपचारात्मक पोषण

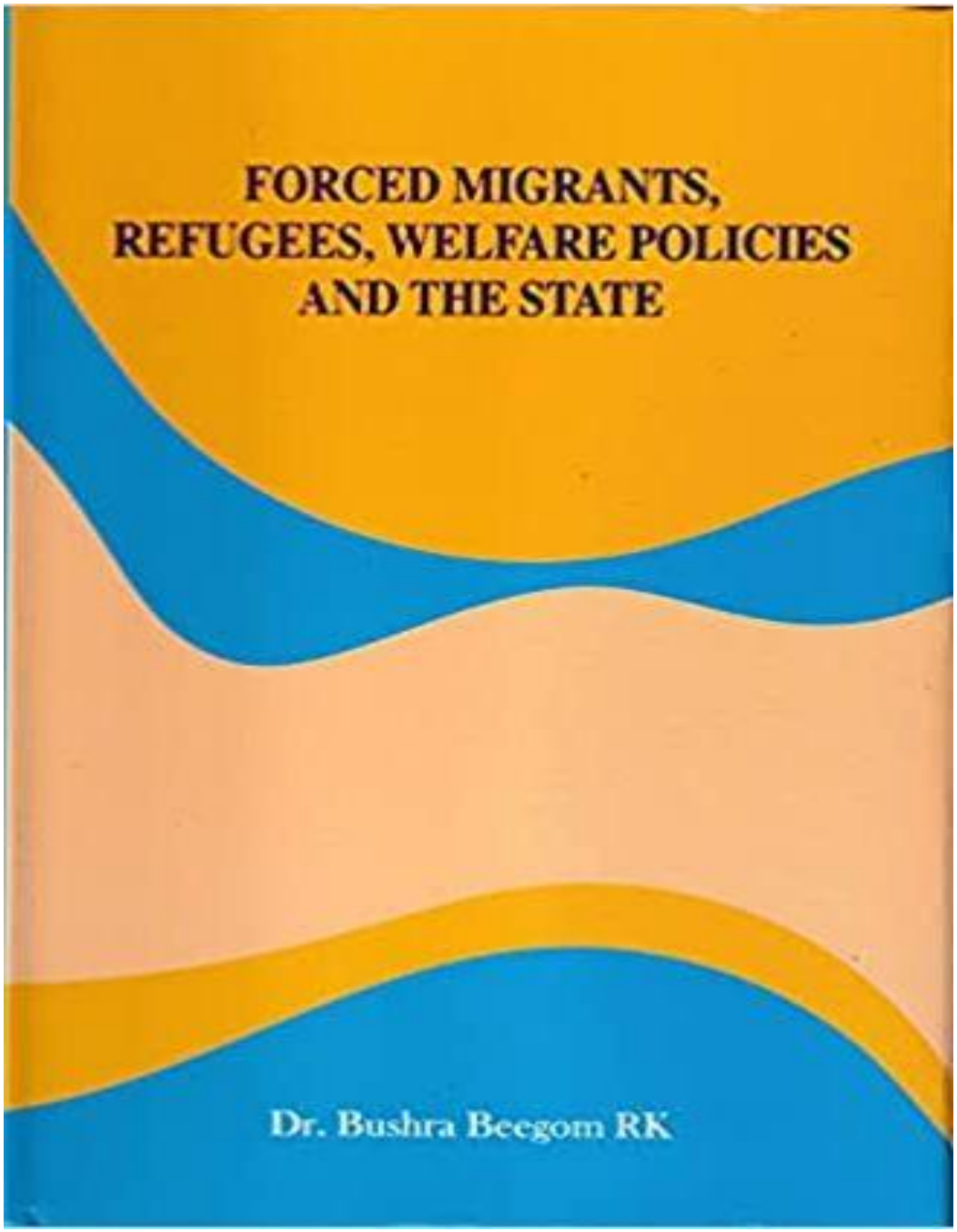
Clinical and Therapeutic Nutrition

उत्तराखण्ड मुक्त विश्वविद्यालय
तीनपानी बाई पास रोड, ट्रांसपोर्ट नगर के पास, हल्द्वानी-263139
फोन नं. 05946- 261122, 261123
टोल फ्री नं. 18001804025
फैक्स नं. 05946-264232, ई-मेल: info@uou.ac.in
http://uou.ac.in

प्रकाशन वर्ष: 2020
संस्करण: सीमित वितरण हेतु पूर्व प्रकाशन प्रति
प्रकाशक: एमएमपीएचडीडी, उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी- 263139 (नैनीताल)

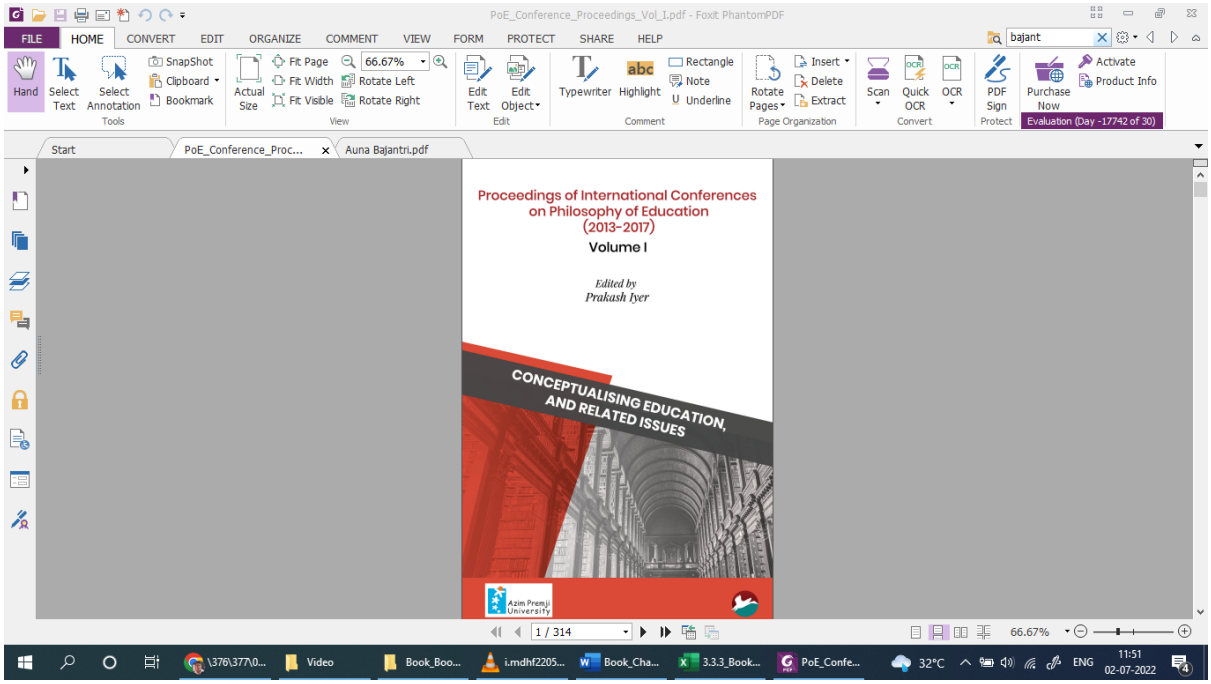
Sharmila Rathee (Book Chapter) 2020

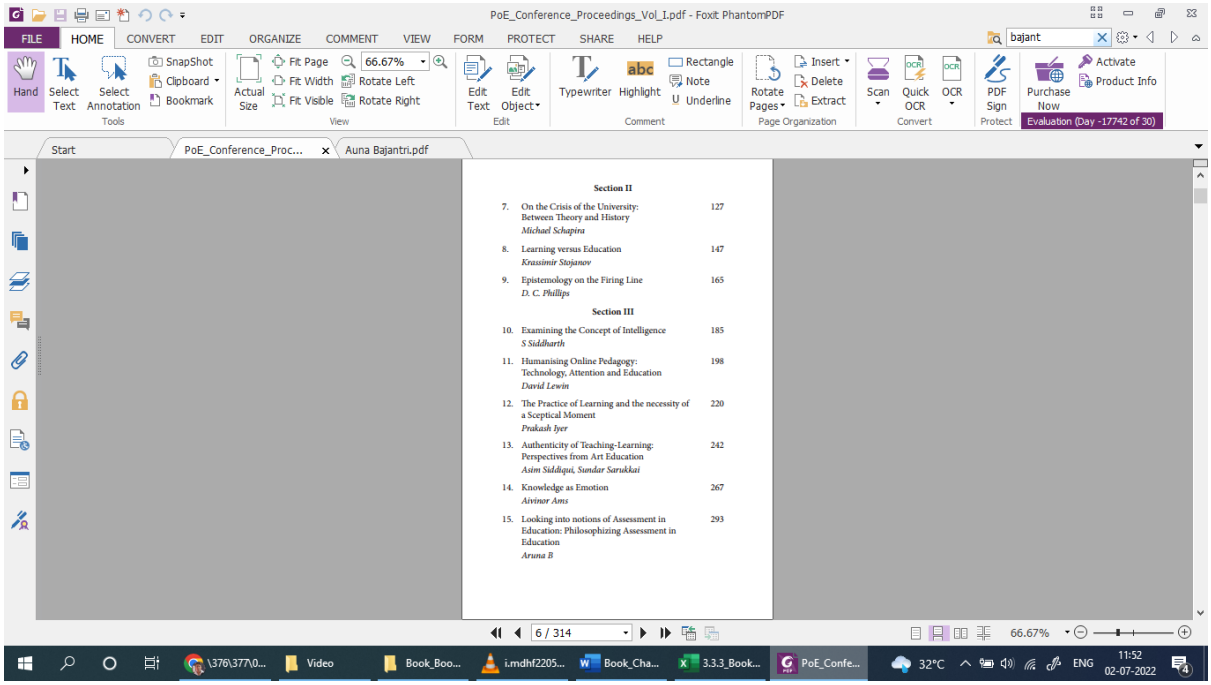
- **Forced Migration, Refugees, Welfare Politics and the State (ed. by Dr. Bushra Beegom RK)**/Refugees of Development': the Protracted Crisis of Kadar Community of Kerala



Aruna Bajantri (Book Chapters) 2020

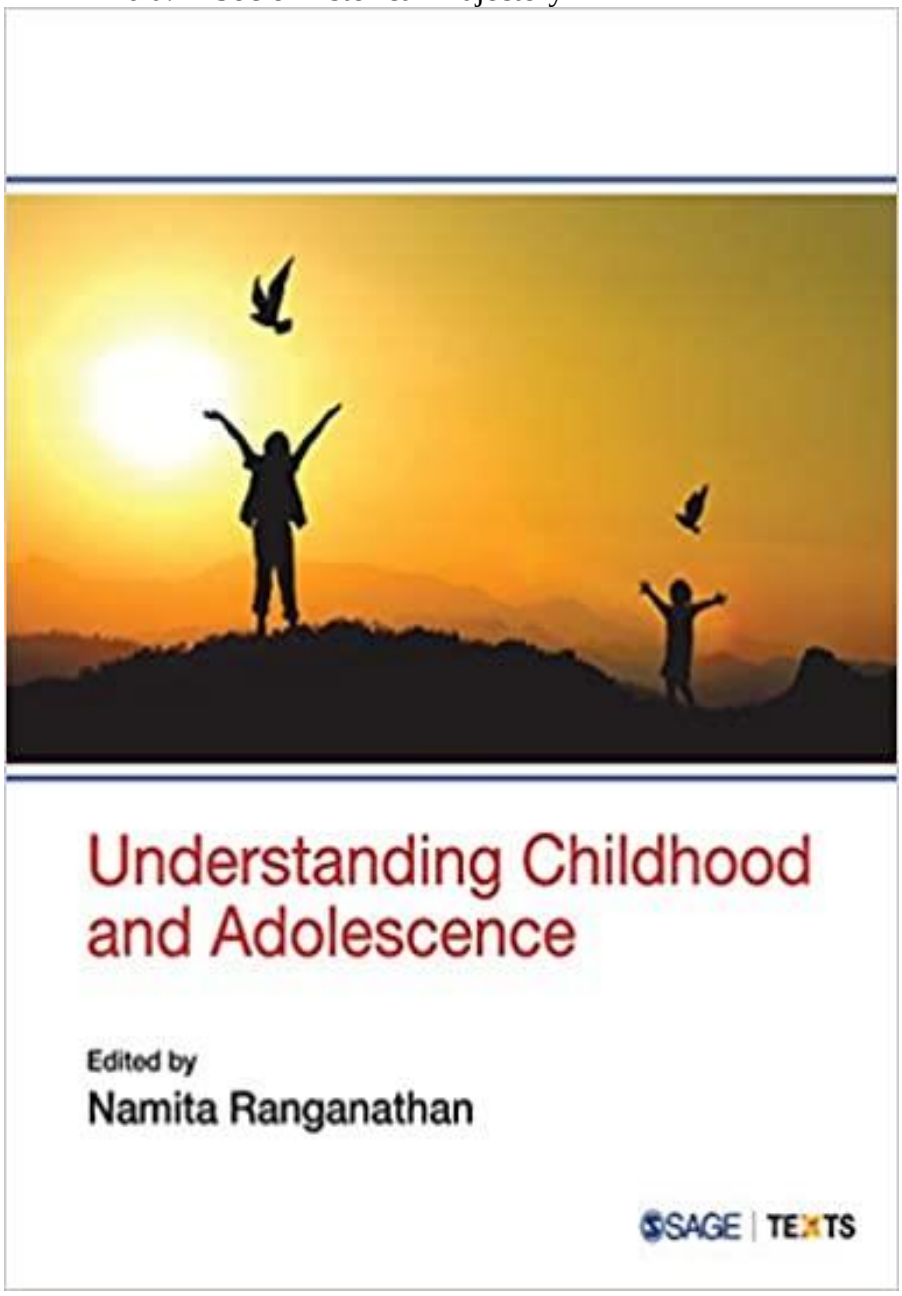
- Looking into Notions of Assessment in Education:Philosoph ising Assessment in Education. In **Conceptualising Education and Related Issues Ed. by Prakash Iyer**





Nidhi Gulati (Book Chapter) 2020

- **Understanding Childhood and Adolescence (Ed.) N Ranganathan**/ Childhood in India: A Socio-Historical Trajectory

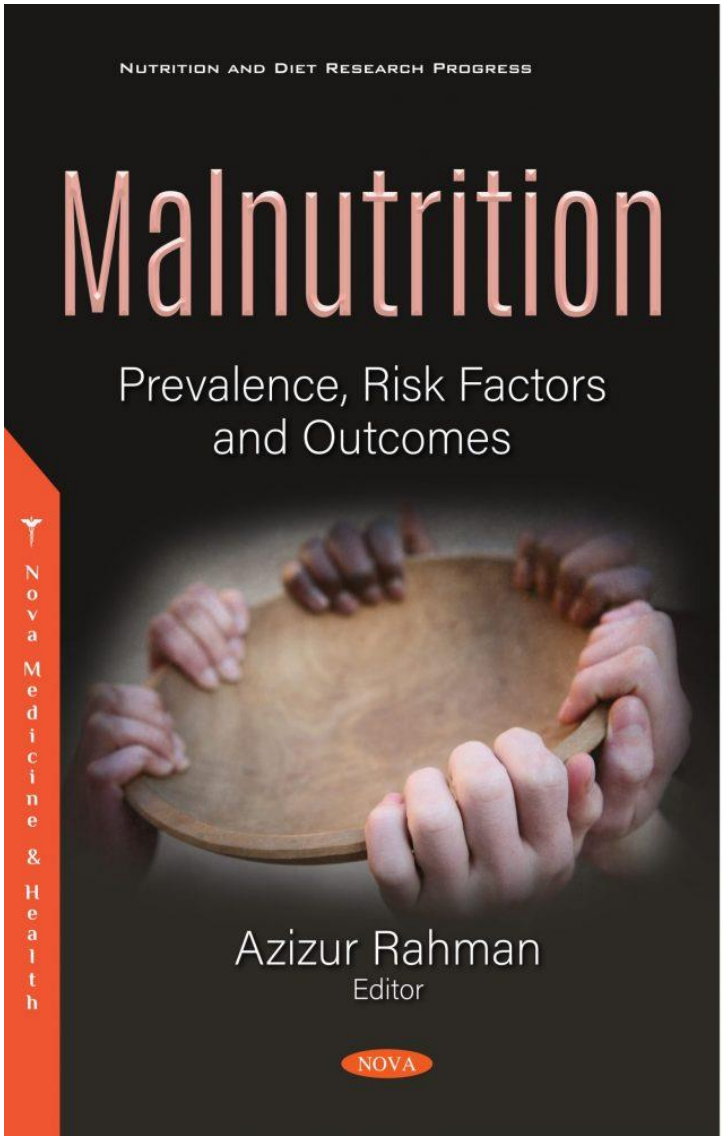


Yadav, S., Saini, A., Vasdev, K. (Book Chapters) 2020

- **In S. Yurish (Ed.). Advances in Biosensors: Reviews Volume 3** /Chapter 9 Nanobiosensors (pp 273- 333)
- **In S. Yurish (Ed.). Advances in Biosensors: Reviews Volume 3 (pp 273- 333)** /Enzyme Biosensors. (pp 223-272)

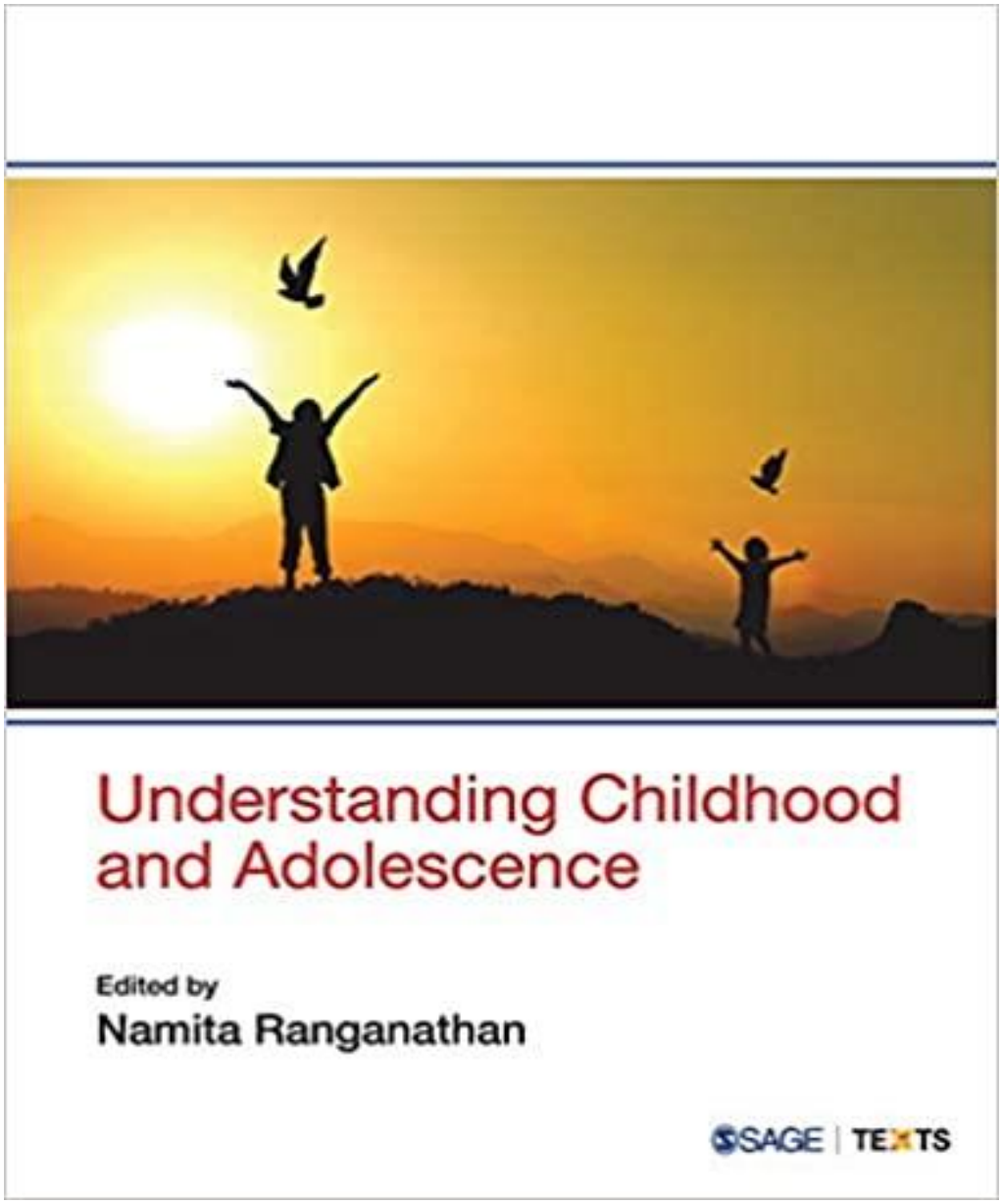
Dr. Manjula Suri (Book Chapter) 2020

- **Malnutrition: Review of Prevalence, Risk Factors, and Outcomes /** Chapter 1 Malnutrition: Prevalence, Risk Factors and Outcome in Geriatric Population"



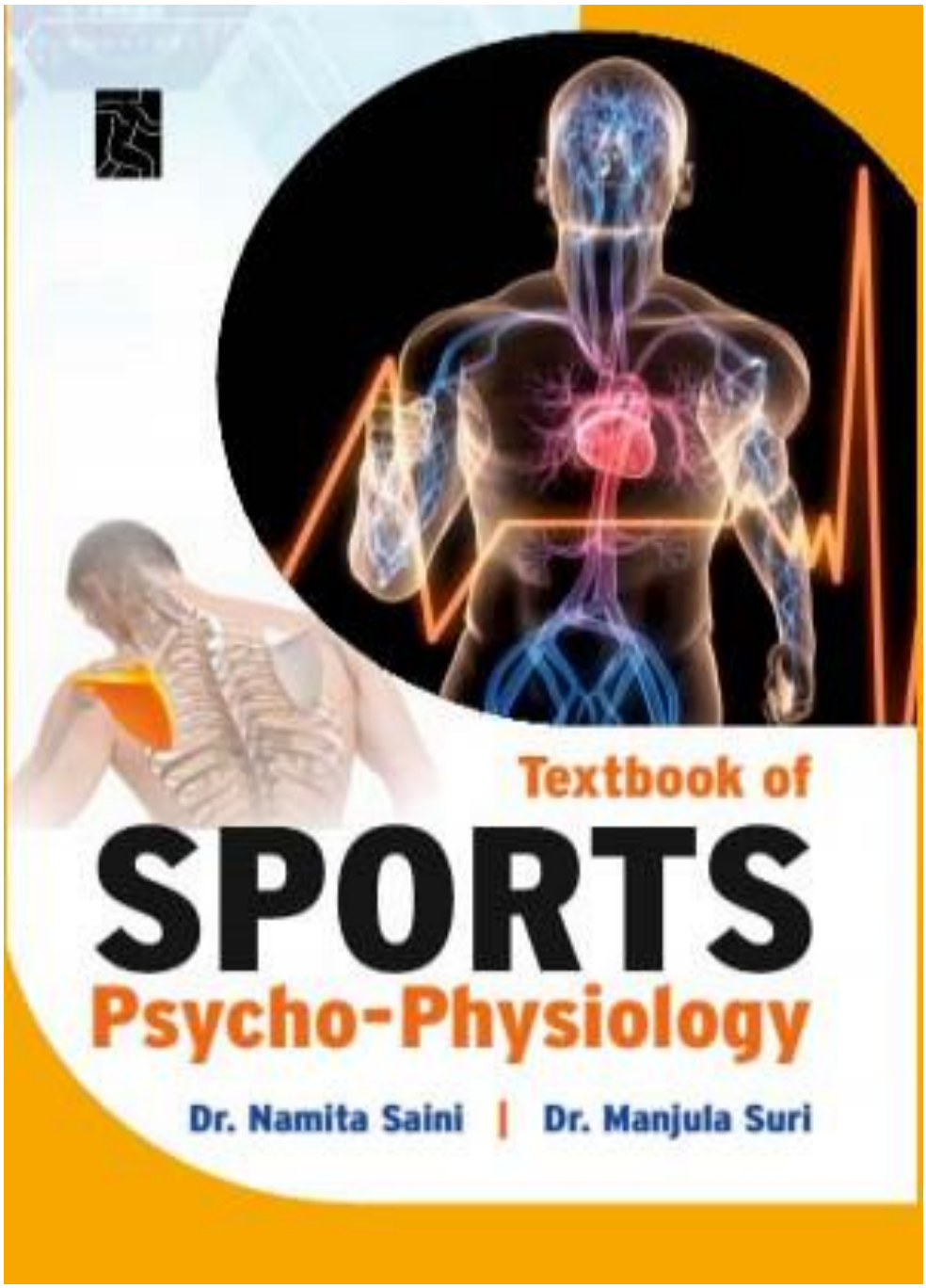
Dr. Kavita Vasudev (Book Chapter) 2020

- **Understanding Childhood and Adolescence**/Rights of Children in Difficult Circumstances
- **Understanding Childhood and Adolescence**/Policy Perspectives on Protection Services for Children



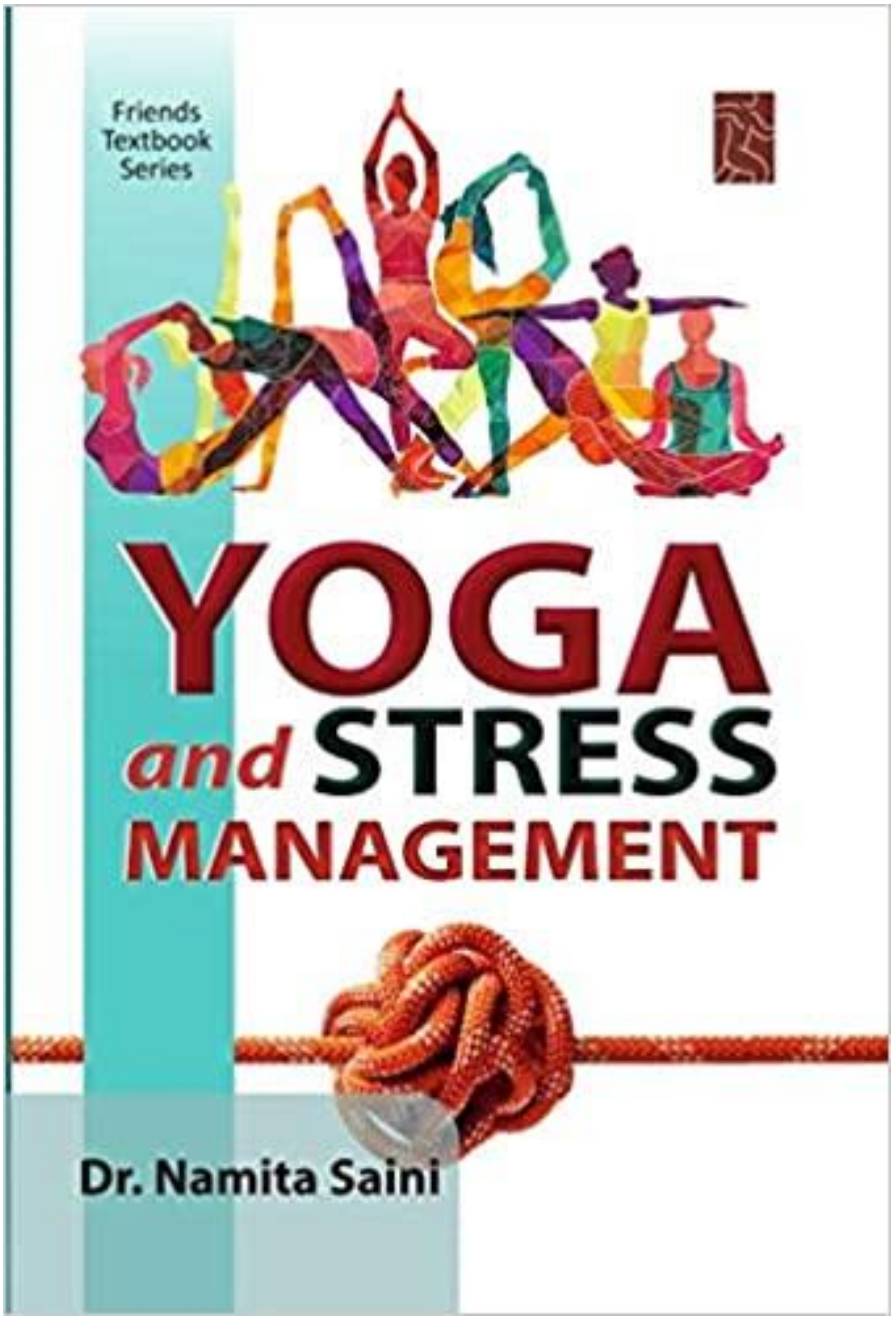
Dr. Manjula Suri, Dr. Namita Saini (Book) 2020

- **Textbook of Sports Psycho-physiology**



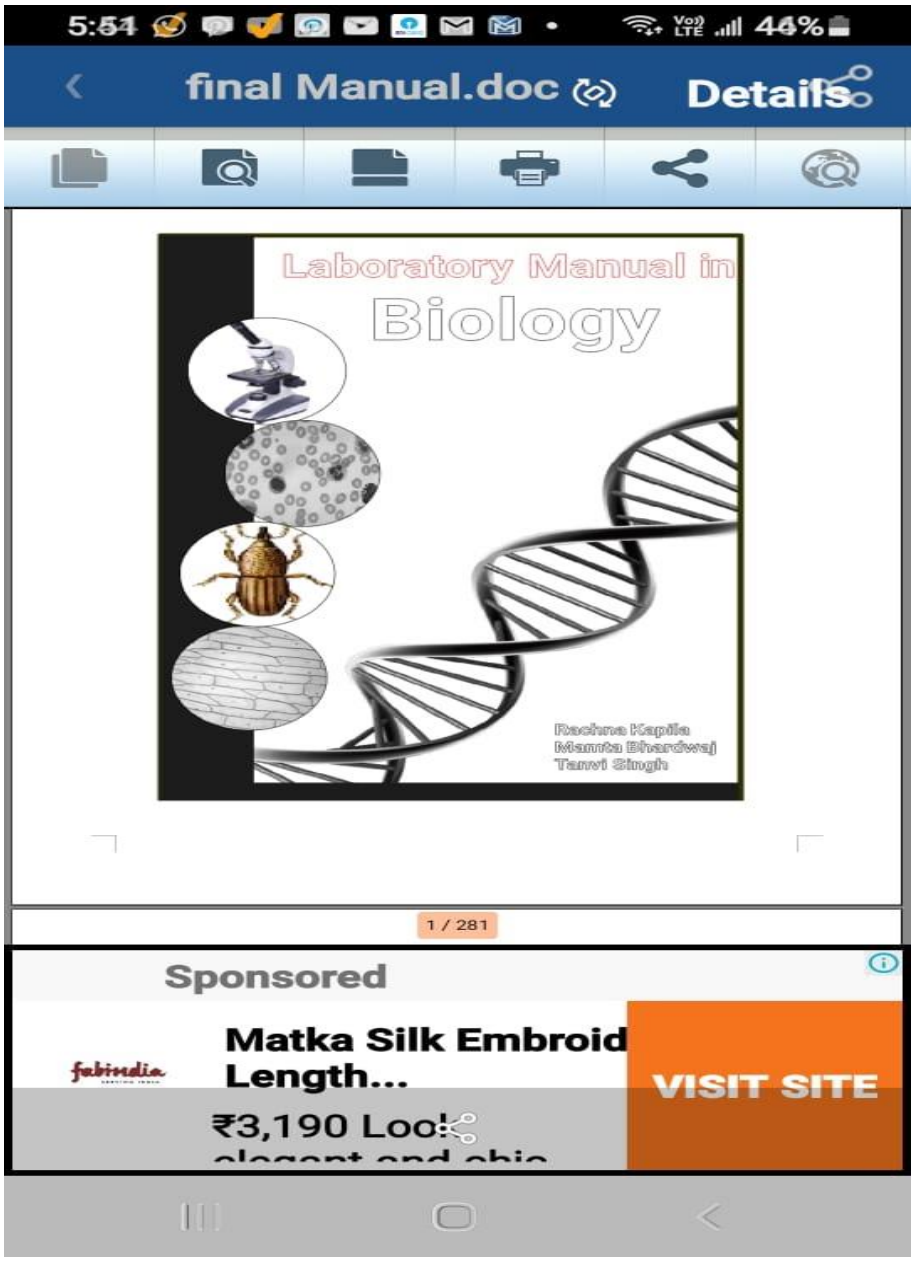
Dr. Namita Saini (Book) 2020

- **Yoga and Stress Management**



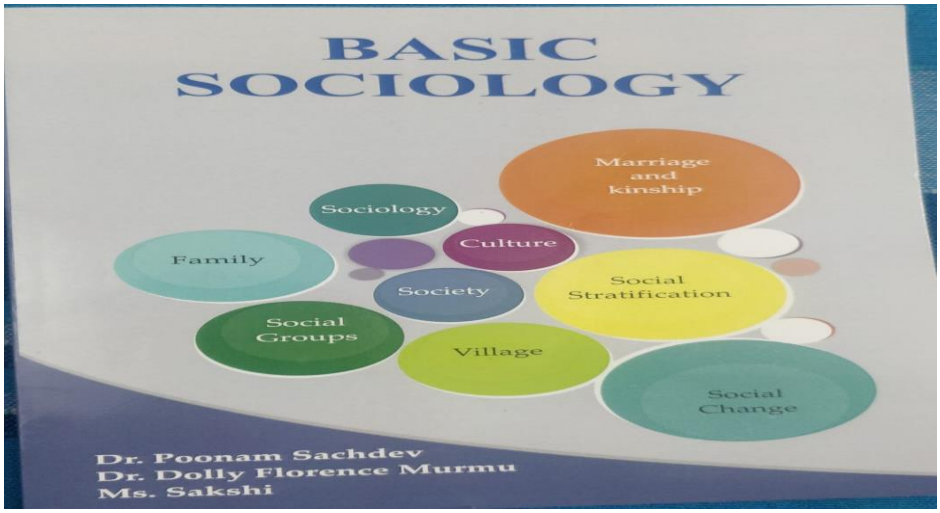
Dr. Rachna Kapila (Book) 2020

- **Laboratory Manual of Biology**



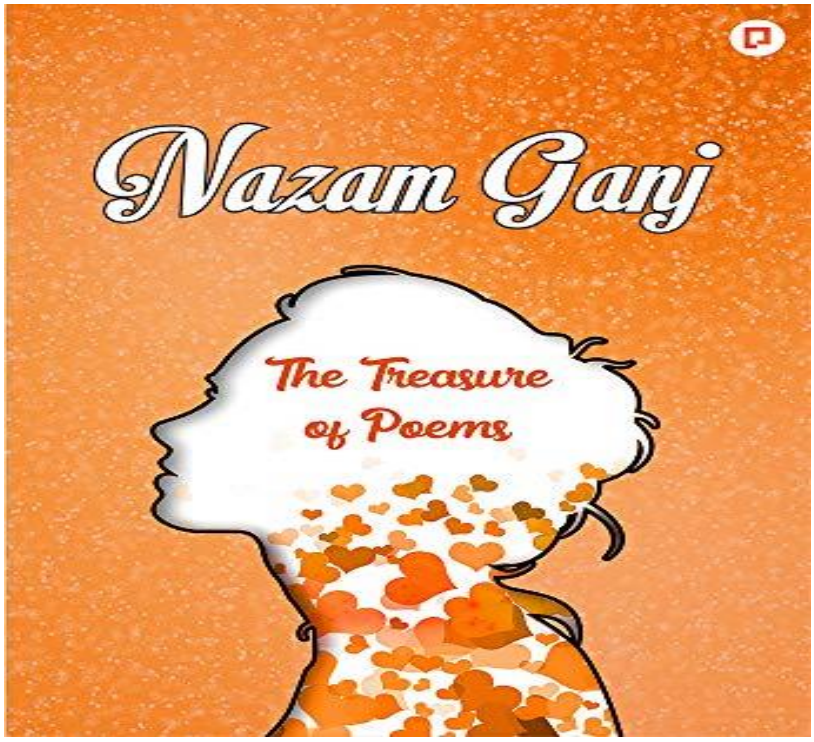
Dr. Poonam Sachdev, Ms. Sakshi (Book) 2020

- **Basic Sociology**



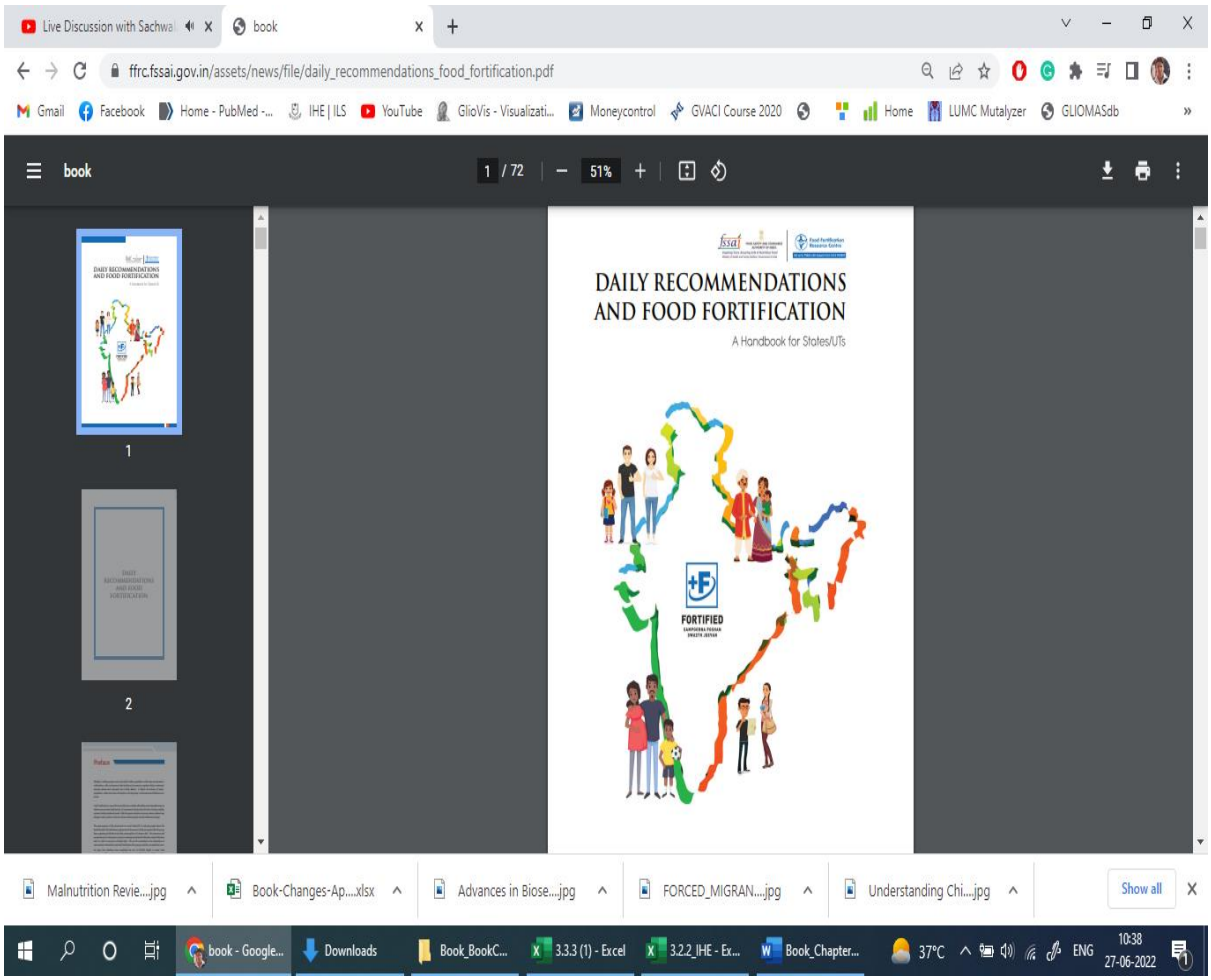
Sneha Abhishek (Book) 2020

- **Nazam Ganj**



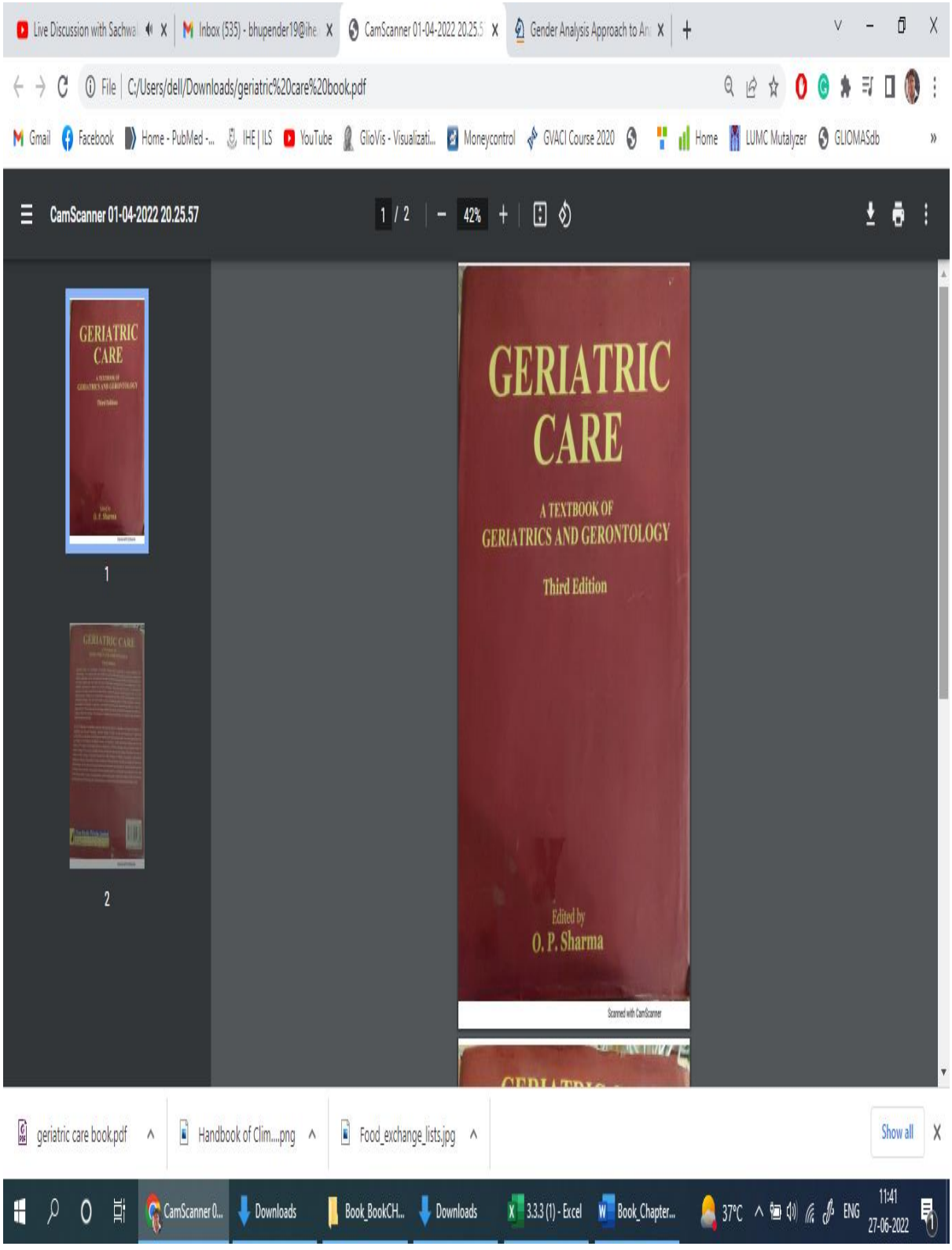
Bani Tamber Aeri (Coauthor - Book)

- **Daily recommendations and Food Fortification - A handbook for states and UTs**



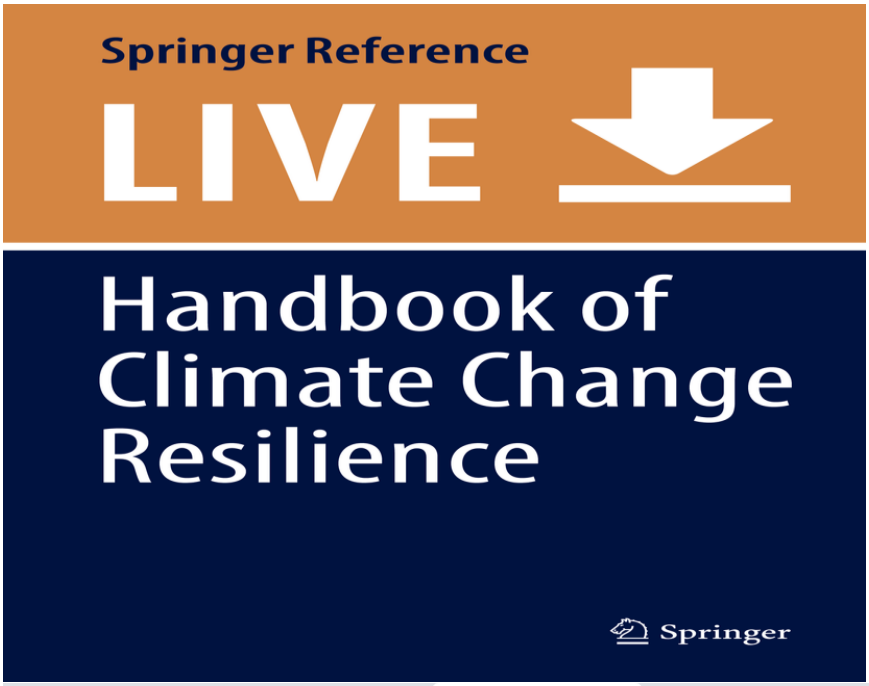
Seema Puri, Majida Shaheen **(Book Chapter) 2019**

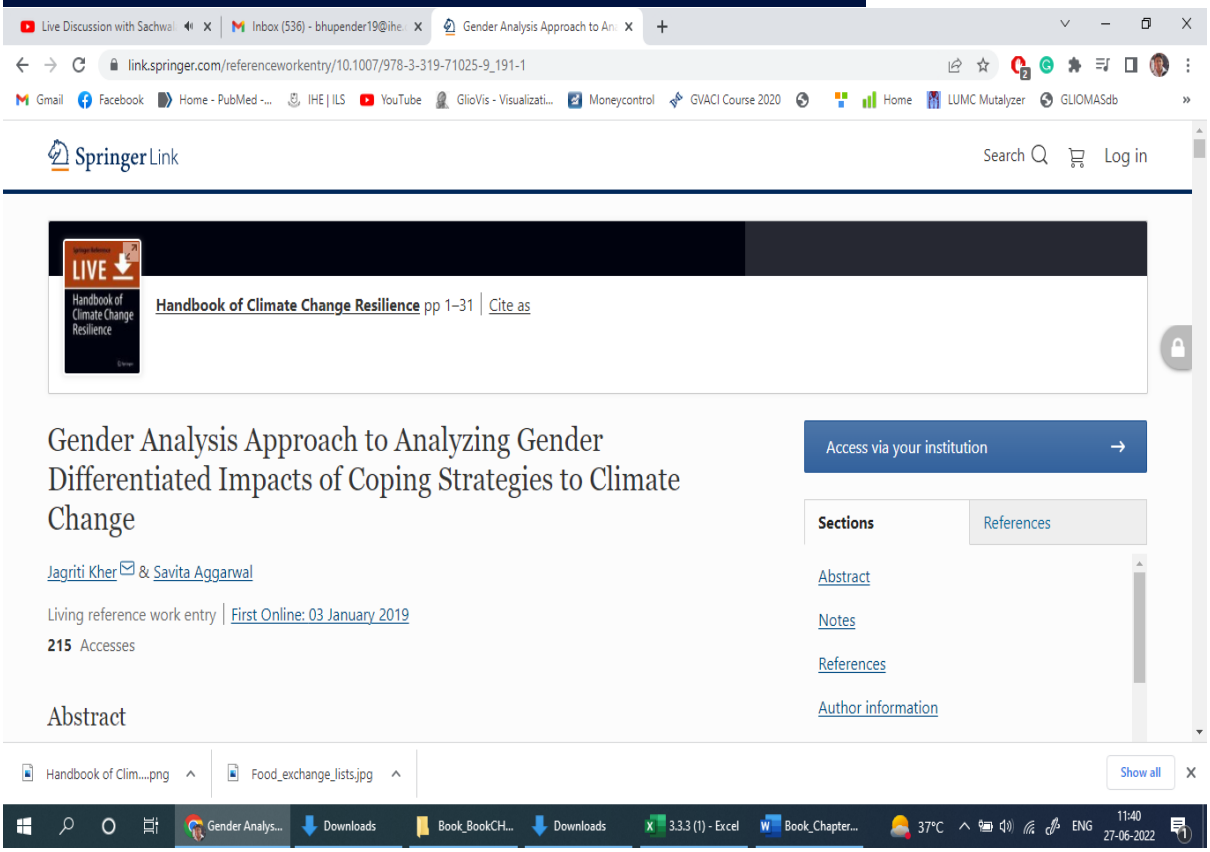
- **Handbook of Geriatric Care. Ed OP Sharma.**/Nutrition in Old Age



Kher, J. & Aggarwal, S (Book Chapter) 2019

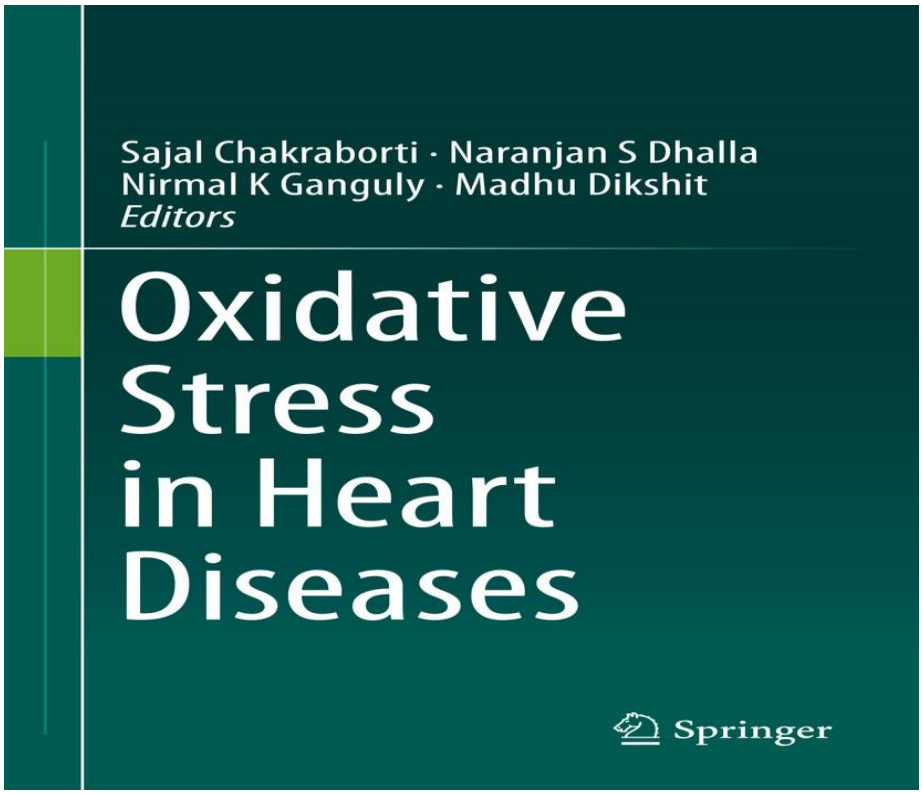
- **Handbook of Climate Change Resilience, Leal FilhoW.(eds.)**/Gender Analysis: Approach to Analyzing Gender Differentiated Impacts of Coping Strategies to Climate Change

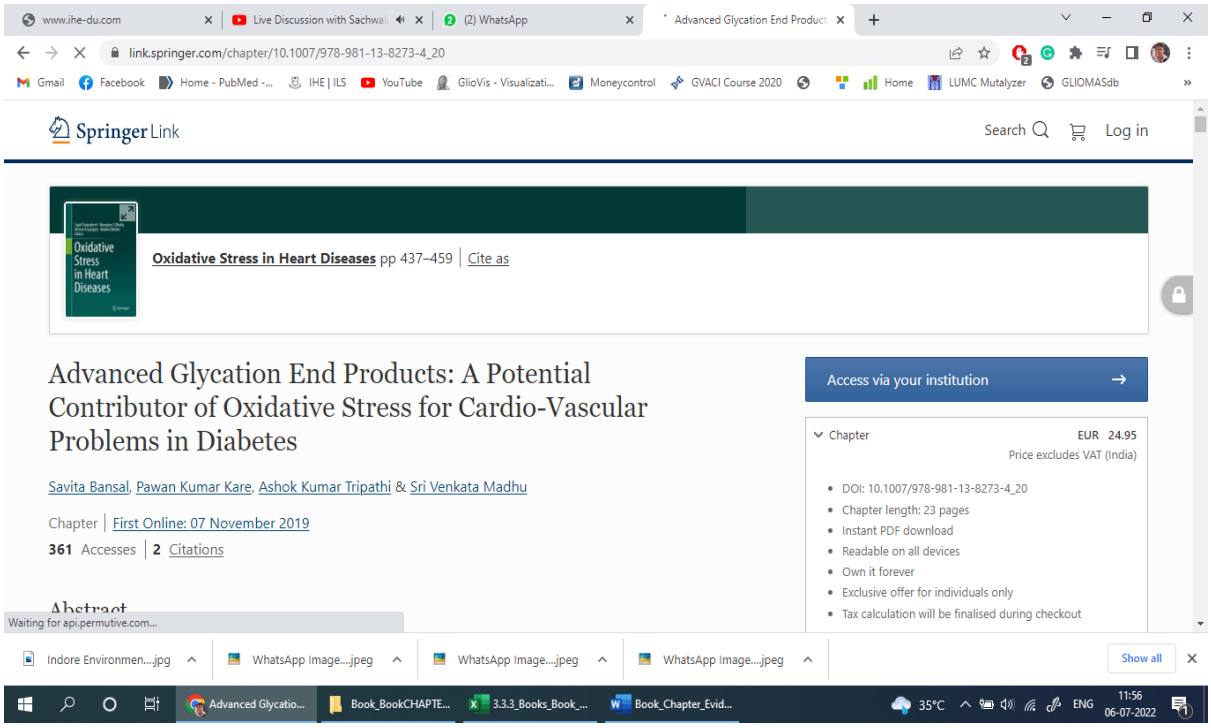




Bansal, S. (Book Chapter) 2019

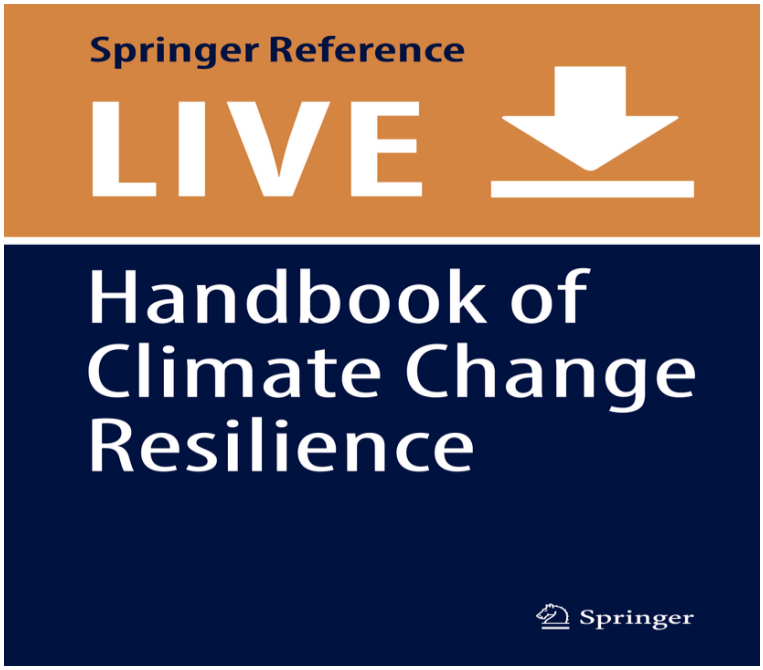
- **Oxidative Stress in Heart Diseases. Editor – Prof. Sajal Chakraborti, Prof. Naranhan S Dhalla**/Advanced Glycation End Products: A potential Contributor of Oxidative Stress for CardioVascular Problems in Diabetes Chapter 20, 437-460

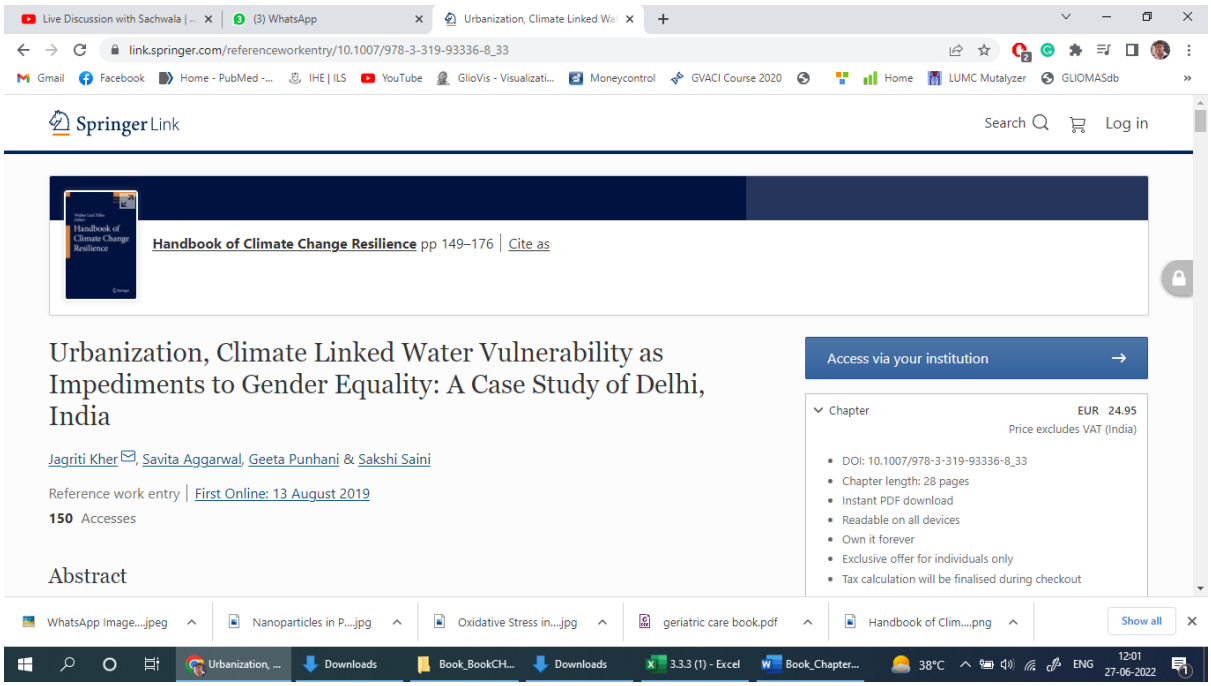




Kher, J., Aggarwal, S., Punhani, G & Saini, S. **(Book Chapter) 2019**

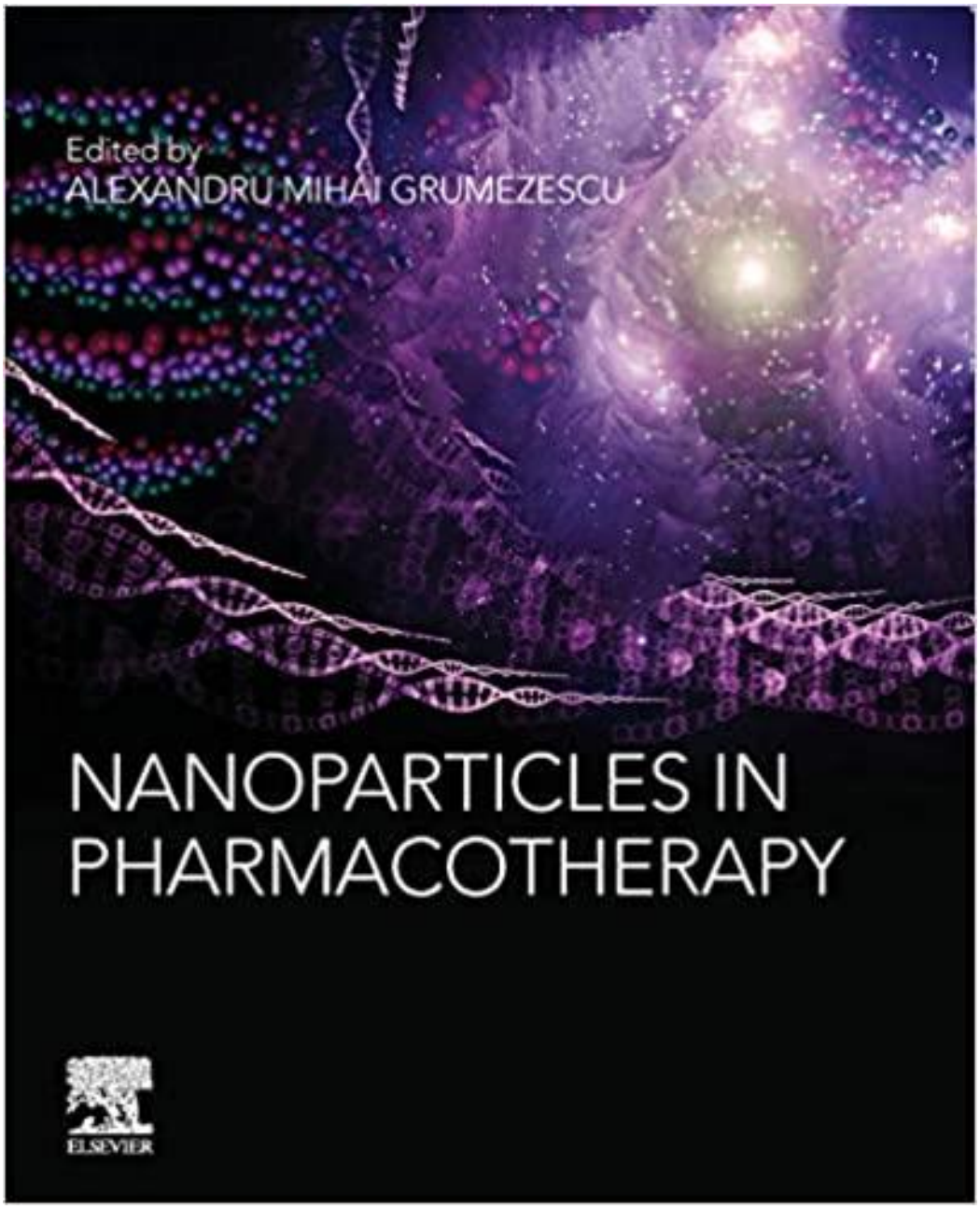
- **Hand book of climate change Resilence** /Urbanization, Climate Linked Water Vulnerability as Impediments to Gender Equality: A Case Study of Delhi, India





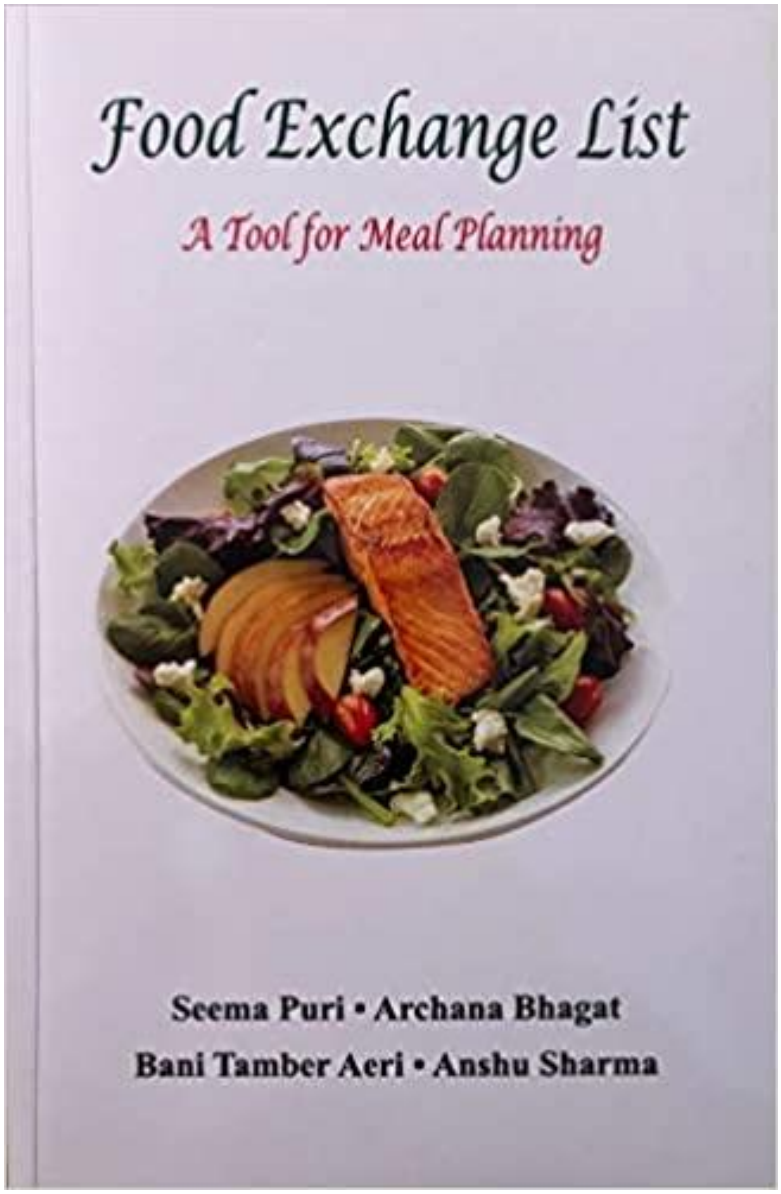
Taruna Arora (Book Chapter) 2019

- **Nanoparticles in Pharmacotherapy**/Nanoparticulate Drug Delivery Systems for the Oral Administration of Macromolecular Drugs; Chapter 6



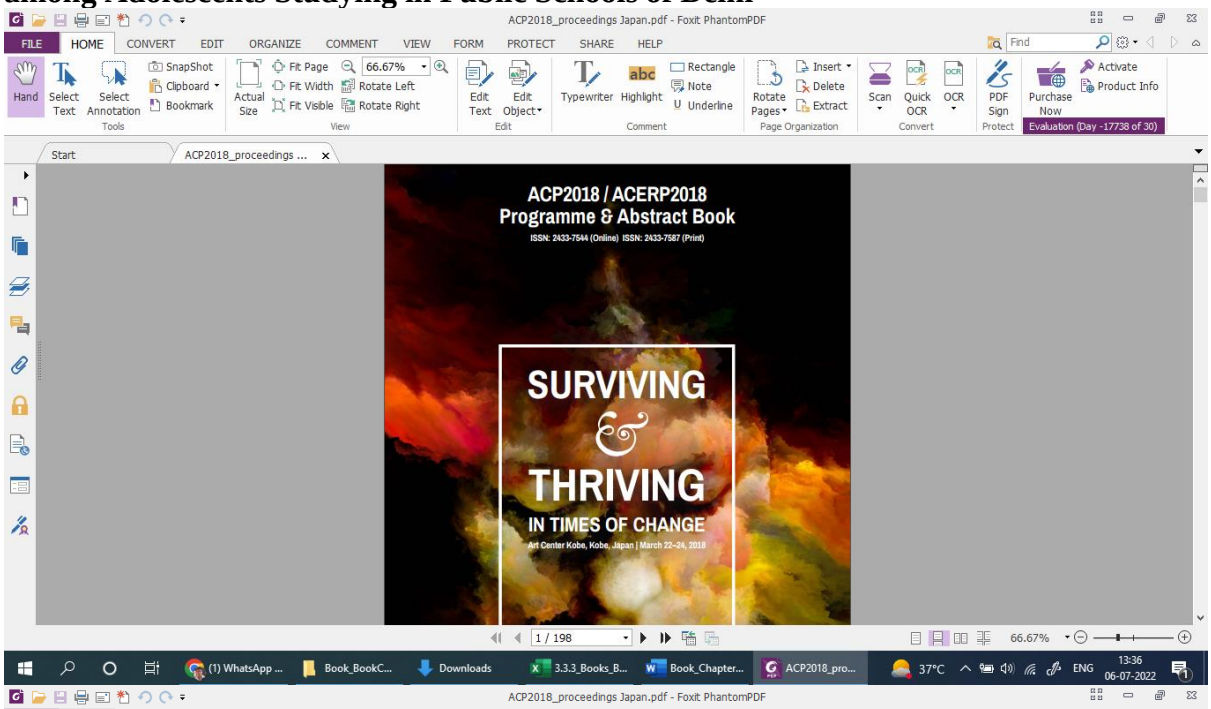
Puri,S., Bhagat,A., Aeri,B.T. & Sharma, A (Book) 2019

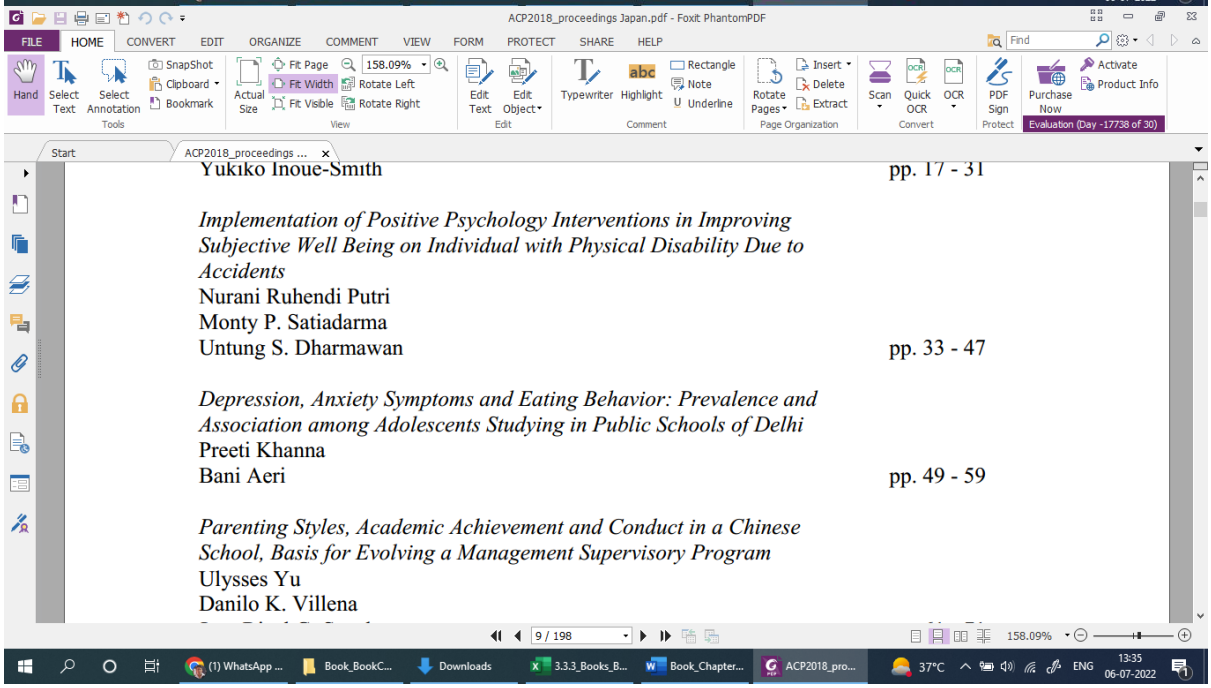
- **Food Exchange Lists – A tool for Meal Planning (Book) 2019**



Preeti Khanna, **Bani T Aeri (Book Chapter) 2018**

Depression, Anxiety Symptoms and Eating Behavior: Prevalence and Association among Adolescents Studying in Public Schools of Delhi





Yukiko Inoue-Smith pp. 17 - 31

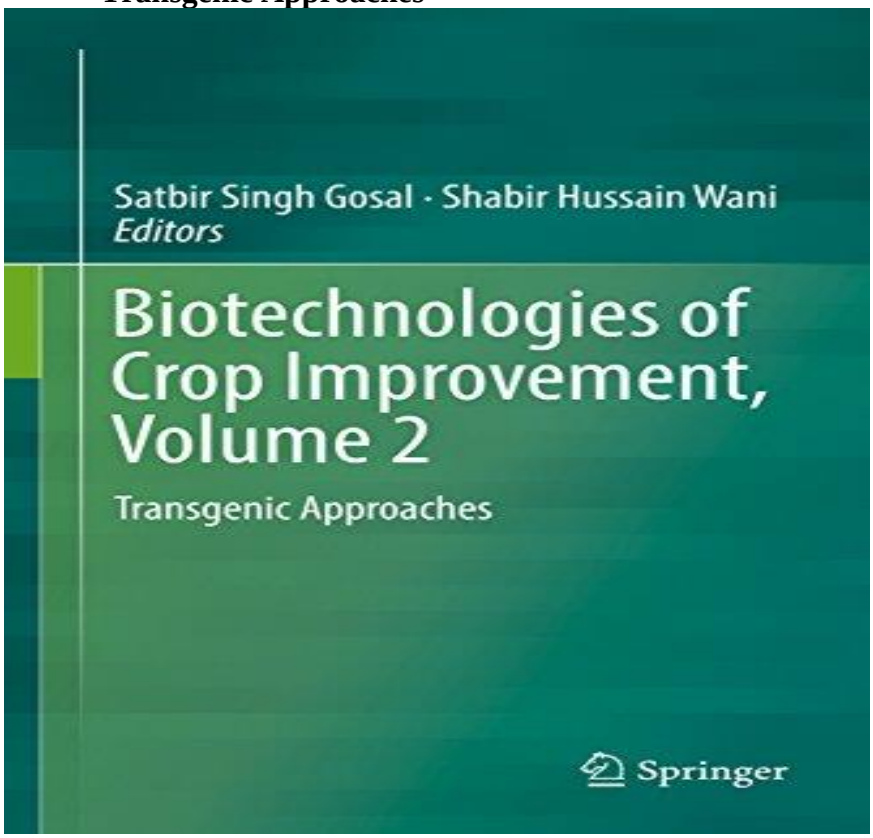
Implementation of Positive Psychology Interventions in Improving Subjective Well Being on Individual with Physical Disability Due to Accidents
Nurani Ruhendi Putri
Monty P. Satiadarma
Untung S. Dharmawan pp. 33 - 47

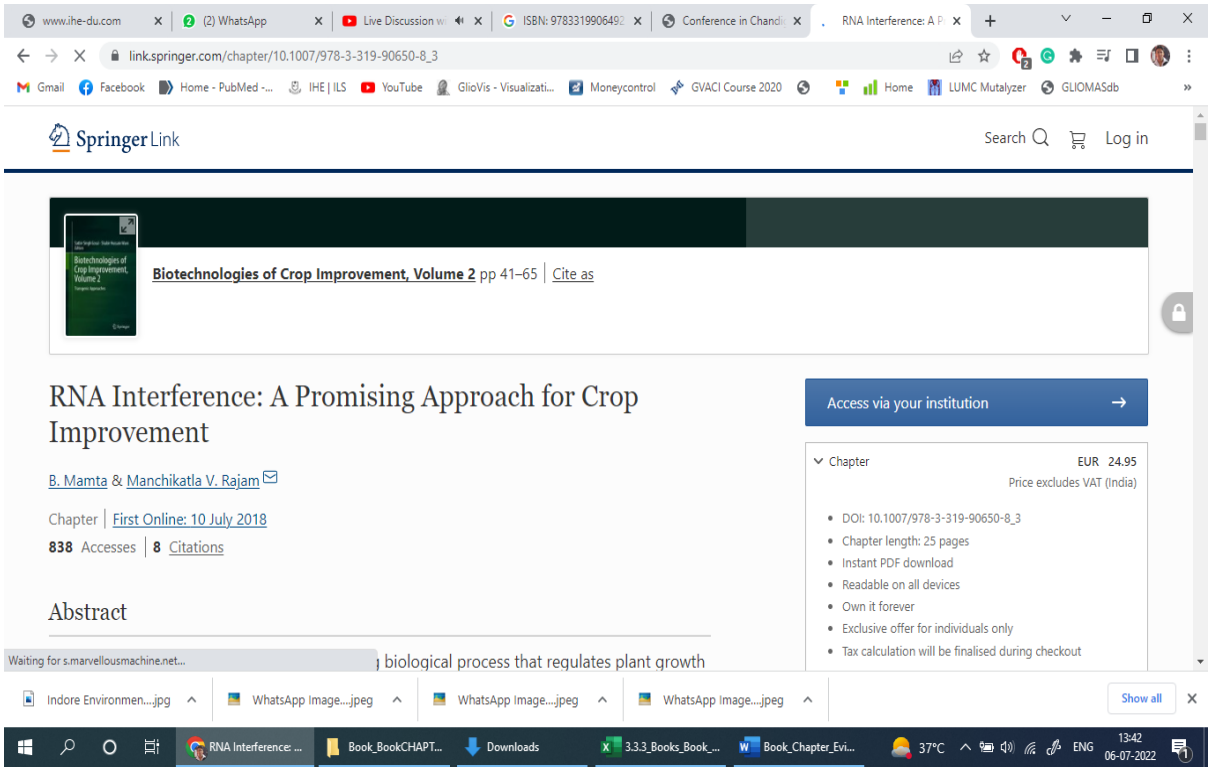
Depression, Anxiety Symptoms and Eating Behavior: Prevalence and Association among Adolescents Studying in Public Schools of Delhi
Preeti Khanna
Bani Aeri pp. 49 - 59

Parenting Styles, Academic Achievement and Conduct in a Chinese School, Basis for Evolving a Management Supervisory Program
Ulysses Yu
Danilo K. Villena

Bhardwaj, M., Rajam, MV. **(Book Chapter) 2018**

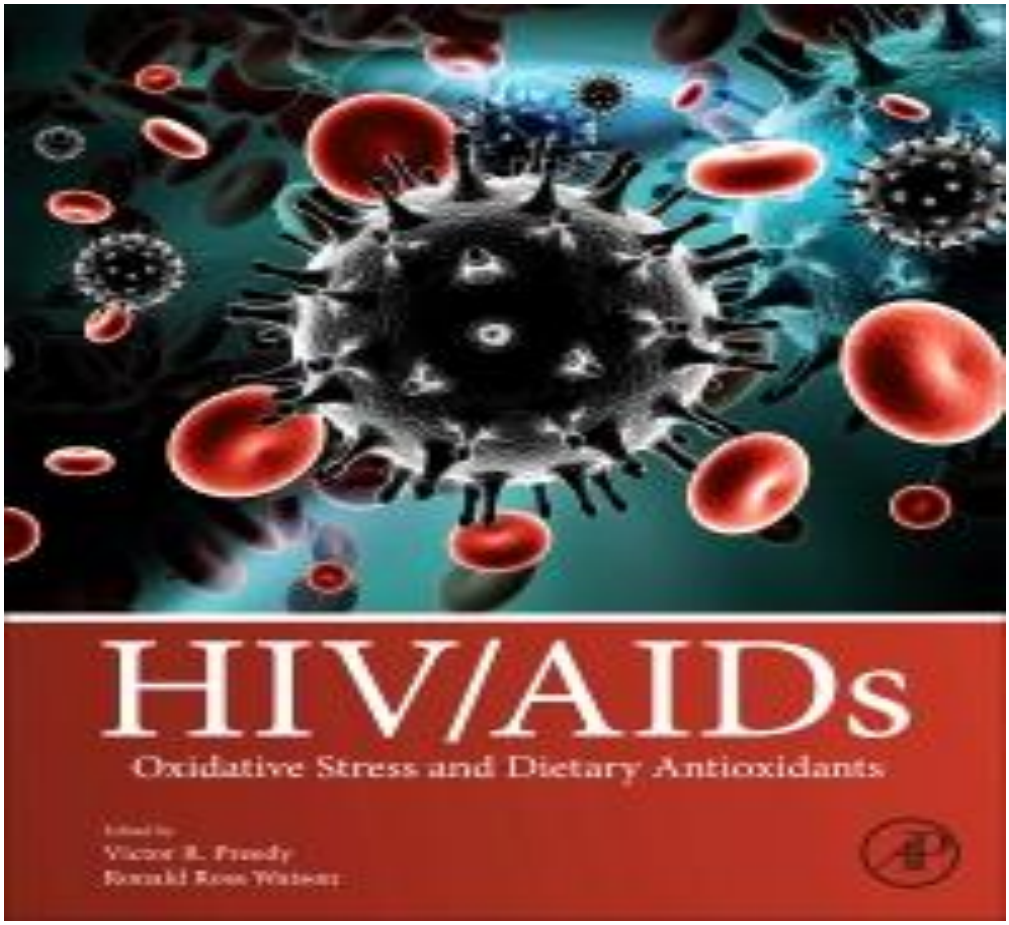
- RNA Interface: A Promising Approach for Crop Improvement, **In: Gosal, Singh, S. Wani, Hussain, S. (Eds) Biotechnologies of Crop Improvement, Vol 2: Transgenic Approaches**





Anand D, **Puri S (Book Chapter) 2018**

- Knowledge, Attitude and Practices of HIV Positive Adults in India: Rural – Urban Differences. **In HIV/AIDS Oxidative Stress and Dietary Antioxidants**



Arora, G., **Aggarwal, J. (Book Chapter) 2018**

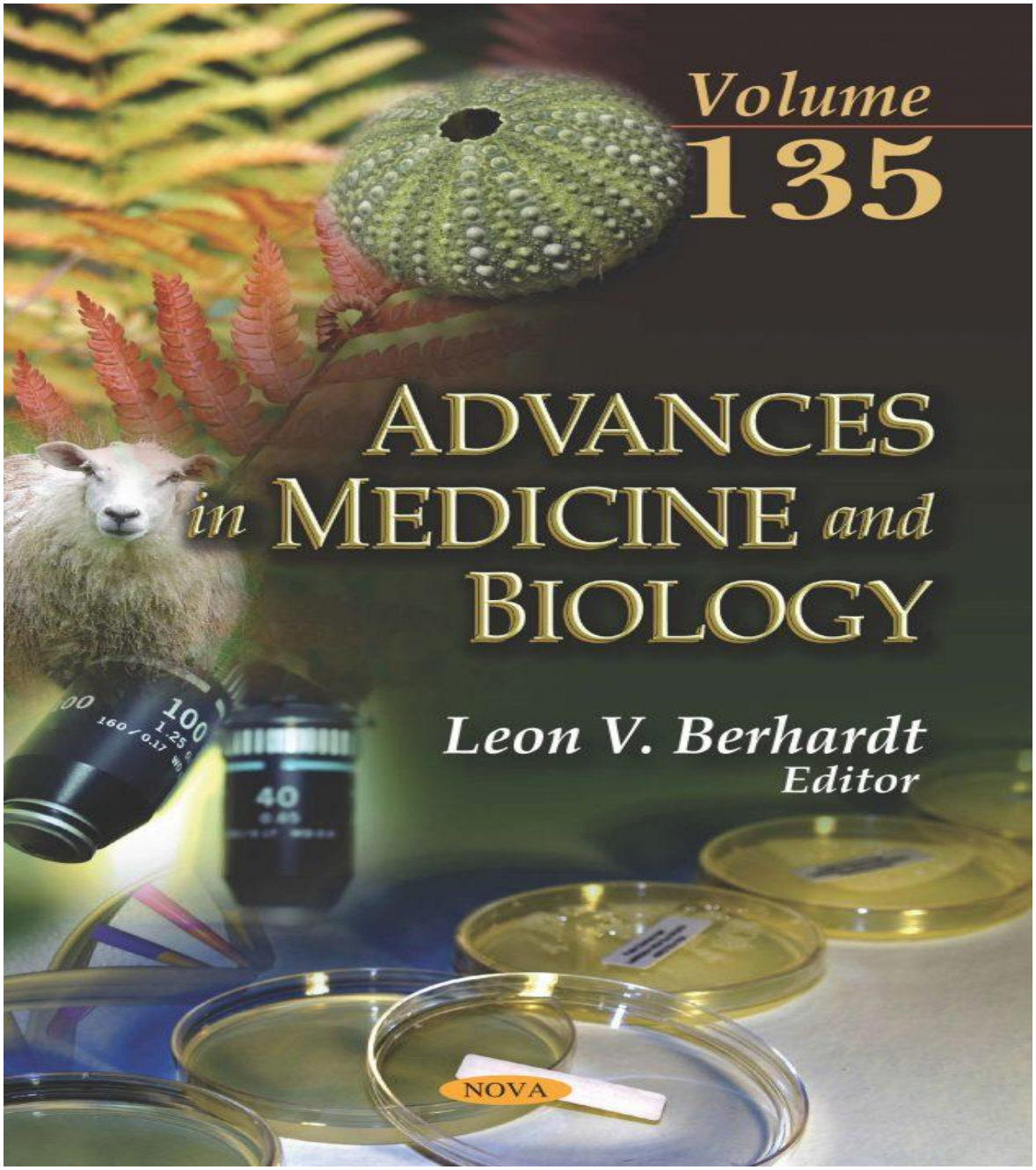
- Impact of media on body Image and Clothing Preferences amongst Women **In Women and Development: Issues and Challenges**

Das R (Book Chapter) 2018

- Migrant Tribe in a Globalizing City: Educational Views, Aspirations and Choices of the Santals in Kolkata **In Marginalities in India: Themes and Perspectives**

Kare PK, Ghosh R, **Bansal S**, ,Banerjee BD, Kalra OP, Tripathi AK **(Book Chapter) 2018**

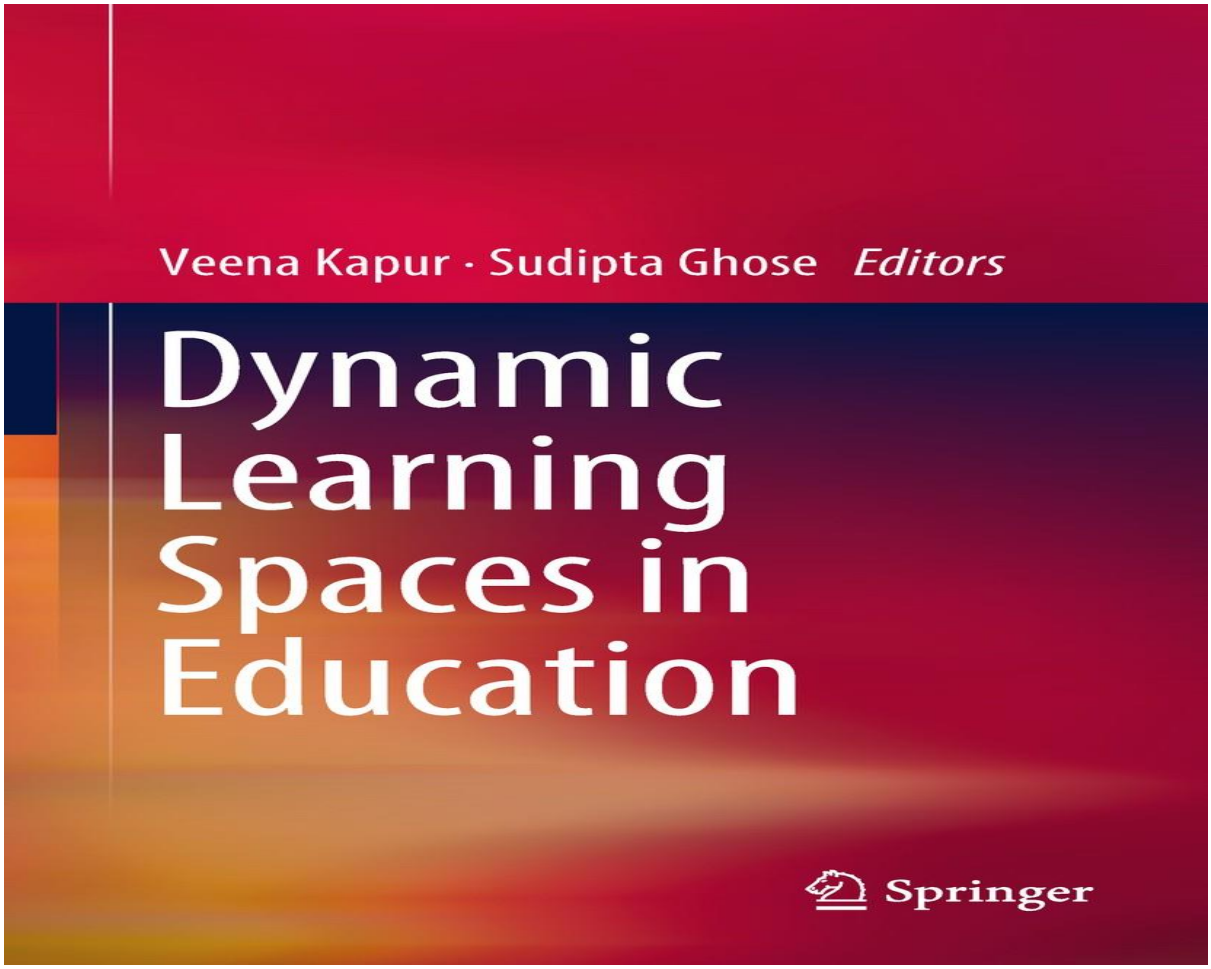
- Advanced glycation end products-Mediated Consequences in Diabetic Nephropathy **In Advances in Medicine and Biology volume 135 NOVA**

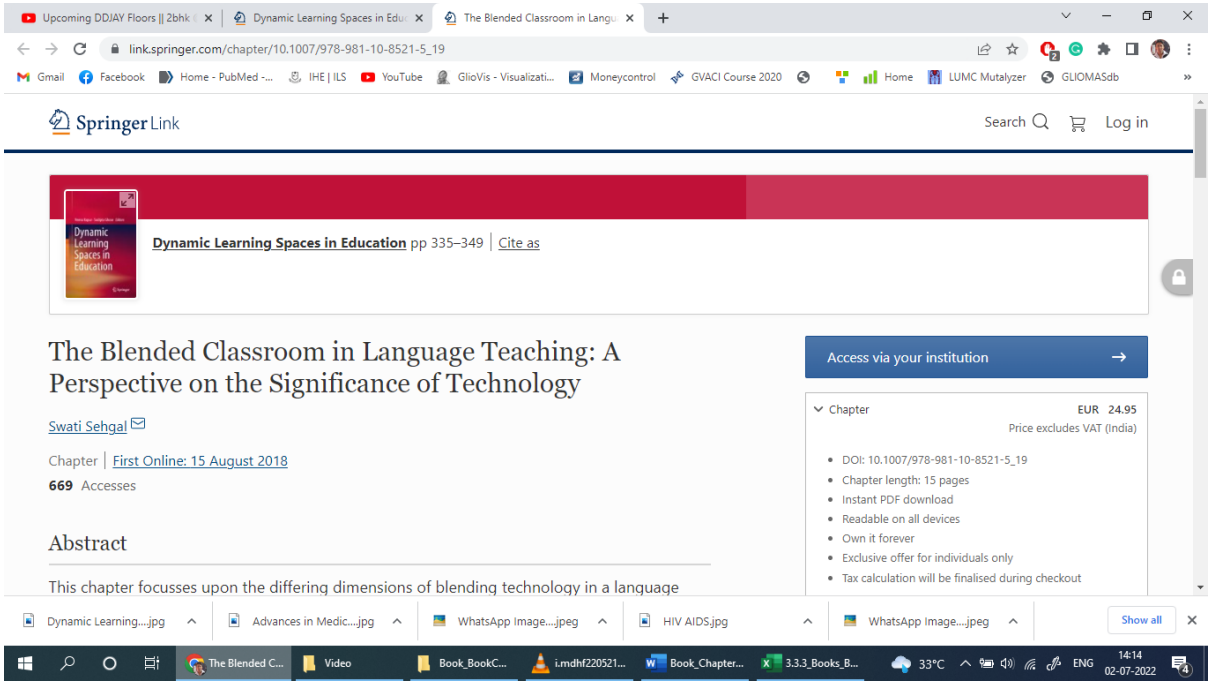


Chaurasia R (Book Chapter) 2018
Entertainment Events **In *Event Coordination and Control***

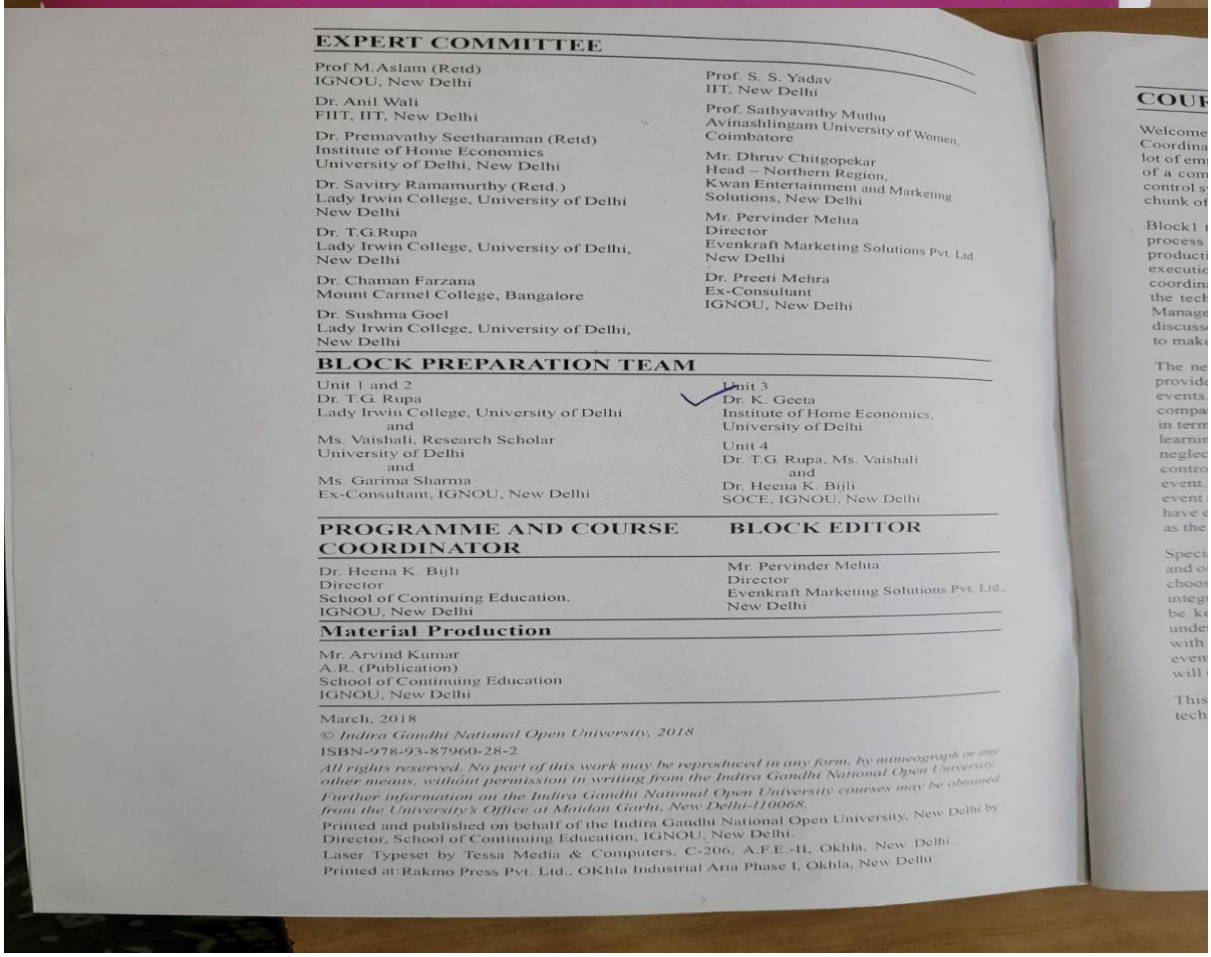
Sehgal S (Book Chapter) 2018

- The Blended Classroom in Language Teaching: A Perspective on the Significance of Technology. **In Dynamic Learning Spaces in Education**





Geeta K (Book Chapter) 2018
Event Catering. **In *Event Coordination and Control***



EXPERT COMMITTEE

Prof M.Aslam (Retd)
IGNOU, New Delhi

Dr. Anil Wali
FIIT, IIT, New Delhi

Dr. Premavathy Seetharaman (Retd)
Institute of Home Economics
University of Delhi, New Delhi

Dr. Savitry Ramamurthy (Retd.)
Lady Irwin College, University of Delhi
New Delhi

Dr. T.G.Rupa
Lady Irwin College, University of Delhi,
New Delhi

Dr. Chaman Farzana
Mount Carmel College, Bangalore

Dr. Sushma Goel
Lady Irwin College, University of Delhi,
New Delhi

Prof. S. S. Yadav
IIT, New Delhi

Prof. Sathyavathy Muthu
Avinashlingam University of Women,
Coimbatore

Mr. Dhruv Chitgopekar
Head – Northern Region,
Kwan Entertainment and Marketing
Solutions, New Delhi

Mr. Pervinder Mehta
Director
Evenkraft Marketing Solutions Pvt. Ltd.
New Delhi

Dr. Preeti Mehra
Ex-Consultant
IGNOU, New Delhi

BLOCK PREPARATION TEAM

Unit 1 and 2
Dr. T.G. Rupa
Lady Irwin College, University of Delhi
and
Ms. Vaishali, Research Scholar
University of Delhi
and
Ms. Garima Sharma
Ex-Consultant, IGNOU, New Delhi

Unit 3
Dr. K. Geeta
Institute of Home Economics,
University of Delhi

Unit 4
Dr. T.G. Rupa, Ms. Vaishali
and
Dr. Heena K. Bijli
SOCE, IGNOU, New Delhi

PROGRAMME AND COURSE COORDINATOR

Dr. Heena K. Bijli
Director
School of Continuing Education,
IGNOU, New Delhi

BLOCK EDITOR

Mr. Pervinder Mehta
Director
Evenkraft Marketing Solutions Pvt. Ltd.,
New Delhi

Material Production

Mr. Arvind Kumar
A.R. (Publication)
School of Continuing Education
IGNOU, New Delhi

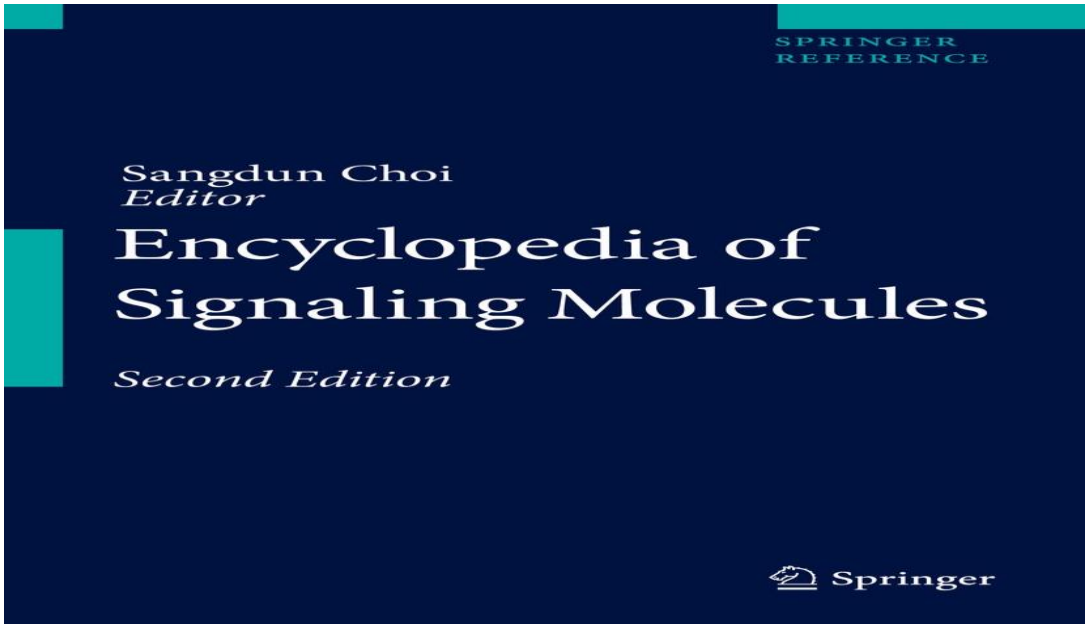
March, 2018

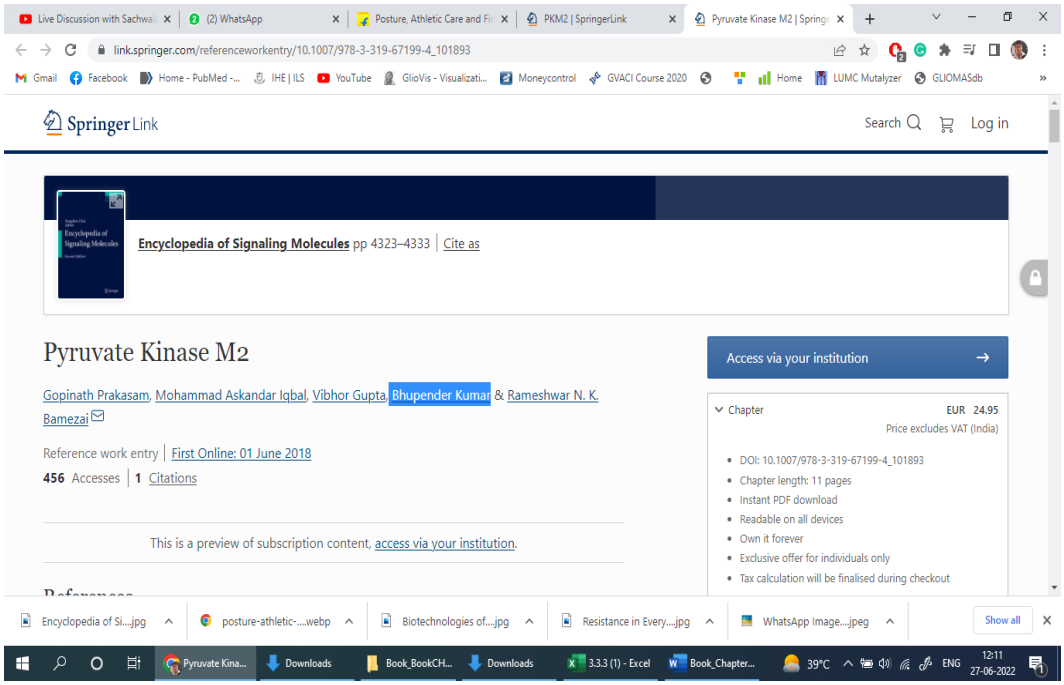
ISBN-978-93-87960-28-2

Printed and published on behalf of the Indira Gandhi National Open University, New Delhi by
Director, School of Continuing Education, IGNOU, New Delhi.
Laser Typeset by Tessa Media & Computers, C-206, A.F.E.-II, Okhla, New Delhi.
Printed at:Rakmo Press Pvt. Ltd., OKhla Industrial Aria Phase I, Okhla, New Delhi

Bhupender Kumar (Book chapter) 2018

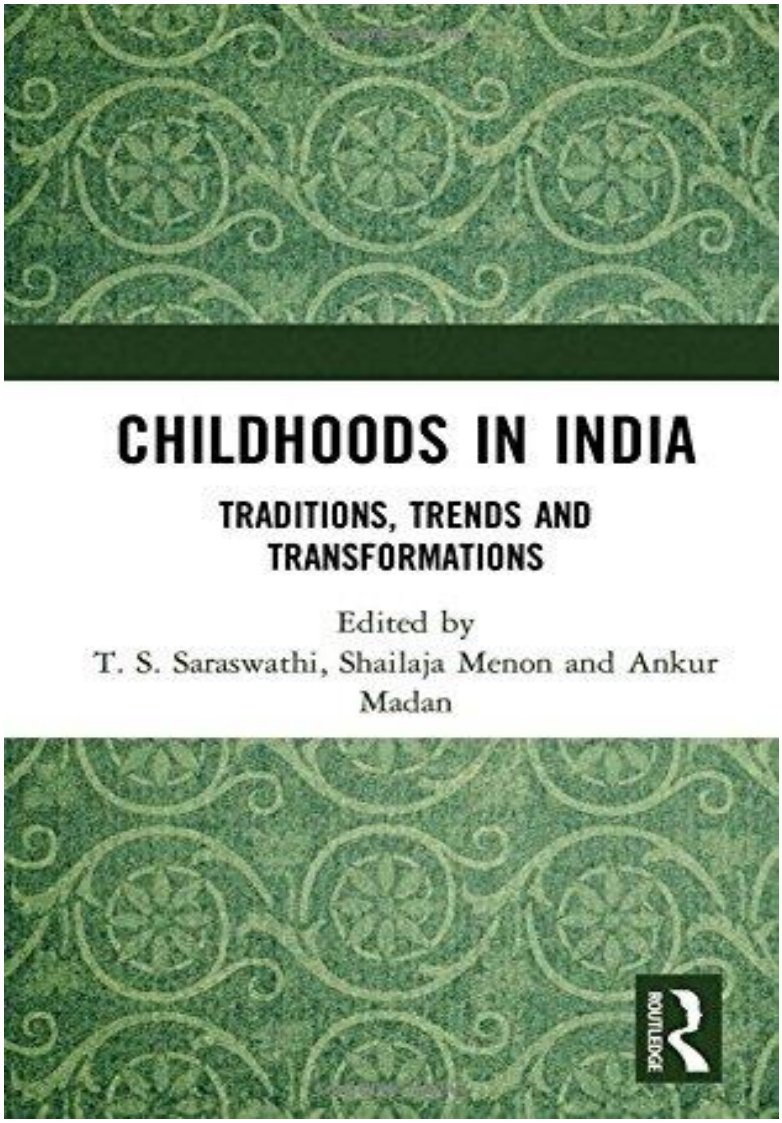
- **Encyclopedia of Signaling Molecules, 2nd Edition (2018)**/Chapter PKM2





Nidhi Gulati (Book chapter) 2018

- Orphans in cinematic imagination **In T.S. Saraswathi, Sailaja Menon, Ankur Madan (eds.) Childhood in India: Traditions, trends and transformations**

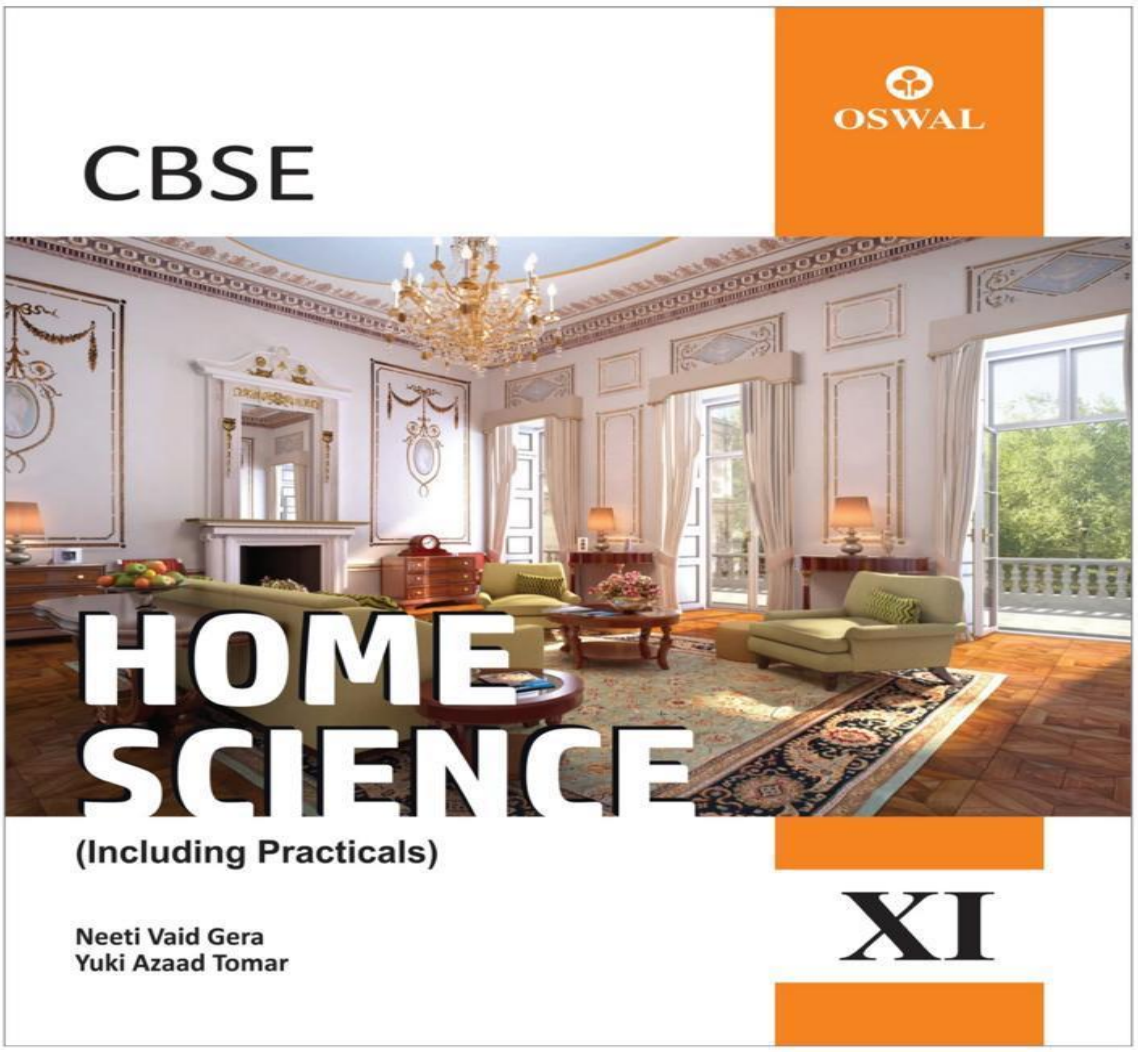


Dr Namita Saini (Book) 2018

- **Posture Athletic Care and First Aid**

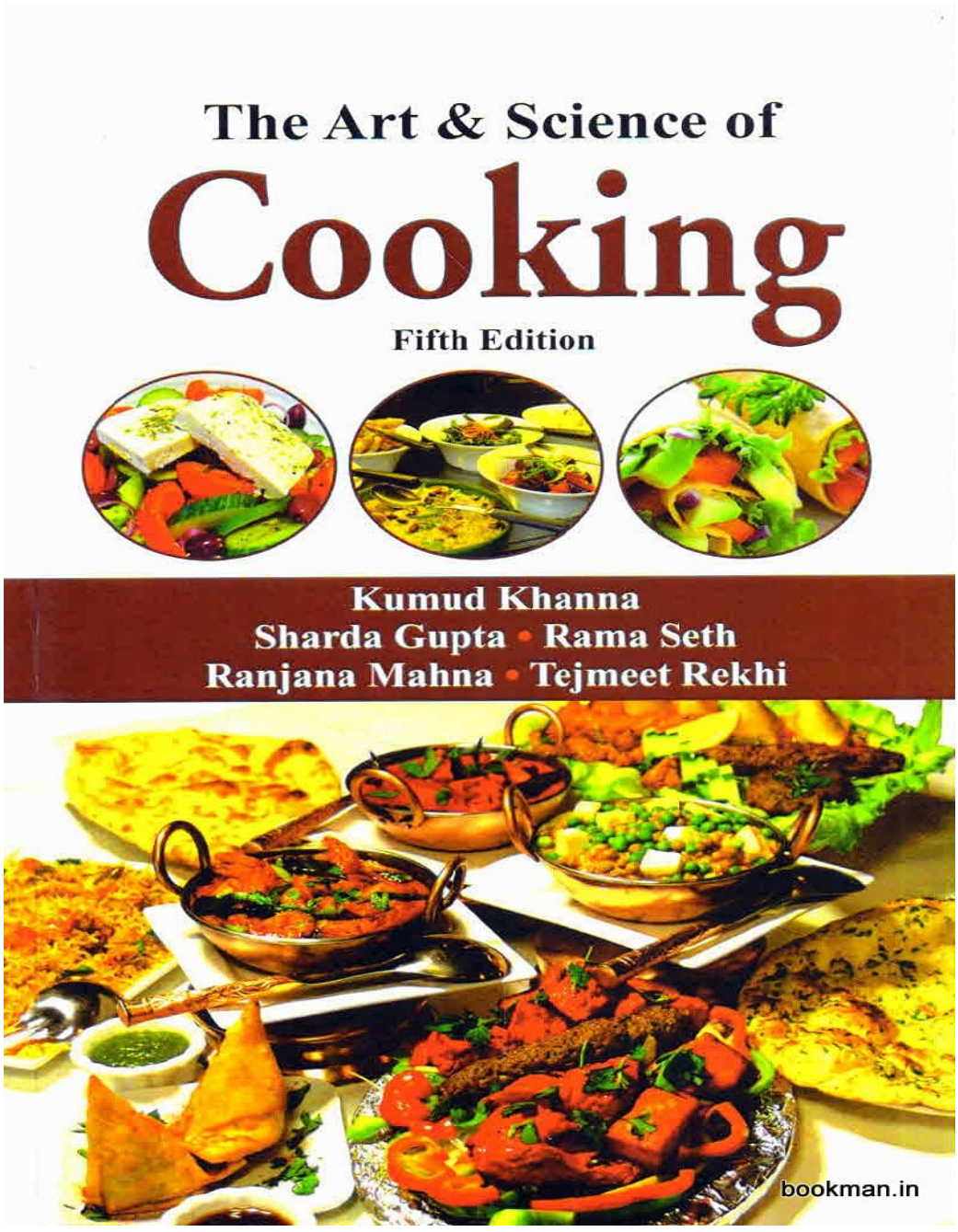
Gera, N.V., Tomar, Y.A. (Book) 2018

- **Home Science XI**



Khanna K, Mahna R, Gupta S, Seth R, Rekhi TK (Book) 2018

- **The Art and Science of Cooking**



Conventional Methods of Degumming of Silk Yarn

[1]Shumaila Naaz, [1]Charu Gupta, [2]Sunita Aggarwal
[1]Department of Fabric and Apparel Science, Institute of Home Economics, University of Delhi, New Delhi, India
[2]Department of Microbiology, Institute of Home Economics, University of Delhi, New Delhi, India
Contact: shumaila.naaz25@gmail.com

ABSTRACT

Degumming with soap and sodium carbonate for 20 mins gives a weight loss of 24%, whereas ezee, sodium silicate and citric acid for 40 mins at 95° C & 98° C gives a weight loss of of 12%, 20% respectively. On comparing whiteness index and K/S value of Mulberry silk yarn degummed with various chemical methods, maximum whiteness Index (82.85) and K/S (38.72) was found to be of yarns degummed with soap and sodium carbonate, indicating it to be an effective degumming method.

1. INTRODUCTION

Silk, the Queen of Textiles is a splendid gift of nature to the mankind known for its elegance, refinement, beauty and luxury. The story of silk is fascinating, romantic and adventurous too. In India no religious ritual is completed without the use of silk cloth. Textile is a vast field ever growing with the improvement in the field of science and technology. Though vast varieties of fabrics is available in the market, silk continues to be the queen of fabrics (Krishnaveni *et al.*, 2007). Silk is a product of long and tedious process starting from production of silk filament by silk worms, spinning of the silk filament from the cultivated or wild cocoons, weaving of the silk fabric and giving the final treatments to get the desired kind of product. Natural silk is a continuous protein-filament spun by the silk worm (Ibrahim *et al.*, 2007). Degumming is the process of cleavage of peptide bonds of sericin either by hydrolytic or enzymatic methods and its subsequent removal from silk fibroin (Trotman, 1984). The fibroin filaments of cocoon silk are naturally gummed with the protein sericin and also small amounts of non proteinaceous impurities like dust, minerals, pigments and waxy matter. Sericin acts as an adhesive for the twin fibroin filaments and conceals the unique luster of fibroin. Thus, there is a need to remove sericin (degum) that covers the fibre surface in order to obtain a luster, soft handle and the other desired properties of silk for further processing (Ministry of Textiles, 2007).

Degumming of silk not only removes sericin but other impurities like fats, waxes, colouring matter and mineral salts as well, so it is very important that the method used for degumming be chosen cautiously since fiber strength, handle properties, luster, crease resistance, smoothness and good dye uptake are all dependent on this basic finishing process.

The sericin content of the silk filament lies in the range of 20-30% of its total cocoon weight and differs in amino acid composition from that of fibroin core. Once the filament is unwound from the cocoon, before carrying out further textile processing, sericin has to be removed. Conventionally it is removed by alkali treatment. Sericin has a glue like effect that can be attributed to the hydrogen bonding between amino acids of Sericin to that of the fibroin. The sericin content of various types of silk varies considerably; it may be around 20-30% for mulberry silk while for tasar, muga and eri, it may be 8.6%, 7.9%, and 4.9%, respectively.

2. MATERIALS AND METHODS

2.1. Material

2.1.1. Selection of yarn

Raw Mulberry silk yarn of 21-25 denier was obtained from Central Silk Board, Varanasi. It was in the form of hanks and creamish in color.

2.2 Experimental Design

2.2.1. Sample Size - Conditioned silk yarn samples of 0.5 g were taken and treated by different methods of degumming.

2.2.2. Conventional methods of degumming - Different reagents were used for degumming of silk yarns by the conventional method to compare their degumming efficiency. The reagents used and the detailed procedure followed given in Table 2.1.

Table 2.1 Chemical methods of degumming

S. No	Treatments	Liquid Ratio	Temp	Time
1.	Soap - 10 g/l Sodium carbonate - 2 g/l pH-9.5	1:30	95°C	20 min
2.	Soap-15% Sodium carbonate-1.5% EDTA-0.05% pH-10.3	1:40	98°C	30 min
3.	Ezee-1% pH-10	1:50	98°C	30 min
4.	Citric acid-25% Nonionic detergent-0.2% pH-6	1:50	98°C	45 min
5.	Soap-4 g/l Sodium silicate-2.5 % pH-6	1:50	98°C	40 min

Sonee Noopur, Arora Chitra and Parmar MS **Conference paper 2017**
Oil and Gas Industry: Review on Fire Hazards and Protective Textiles
3rd International conference on Innovative Trends in Science, Engineering and Management

International Journal of Advance Research in Science and Engineering
Vol. No.6, Issue No. 01 , January 2017
www.ijarse.com
IJARSE
ISSN (O) 2319 - 8354
ISSN (P) 2319 - 8346

OIL AND GAS INDUSTRY: REVIEW ON FIRE HAZARDS AND PROTECTIVE TEXTILES

Noopur Sonee[1], Chitra Arora[2] and M.S. Parmar[3]

[1,2]Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University, India
[3]Northern India Textile Research Association, Ghaziabad, India

ABSTRACT

Oil and Gas industry is one of the riskiest industries when it comes to health and safety of employees. Inherent flash fire hazards are associated with oil and gas well drilling, servicing, refining and production-related operations. A flash fire requires oxygen, an ignition source, and a fuel source such as hydrocarbon or an atmosphere containing combustible. During the production of oil and gas, risk of fire is very high. Catching of fire can affect the clothes and the skin of the workers. As the fire and heat related accidents are very common in this industry, it is required to have proper work-wear which can protect workers from fire and heat related health hazard, especially injuries and death. Keeping this aspect in mind, an attempt has been made in this paper to focus the areas, where there is a potential hazard for petrol/diesel catching fire present and to discuss various types of fibers being used to develop protective work-wear for oil and gas workers.

Keywords: FR fibers, fire hazards, protective textile, oil and gas industry

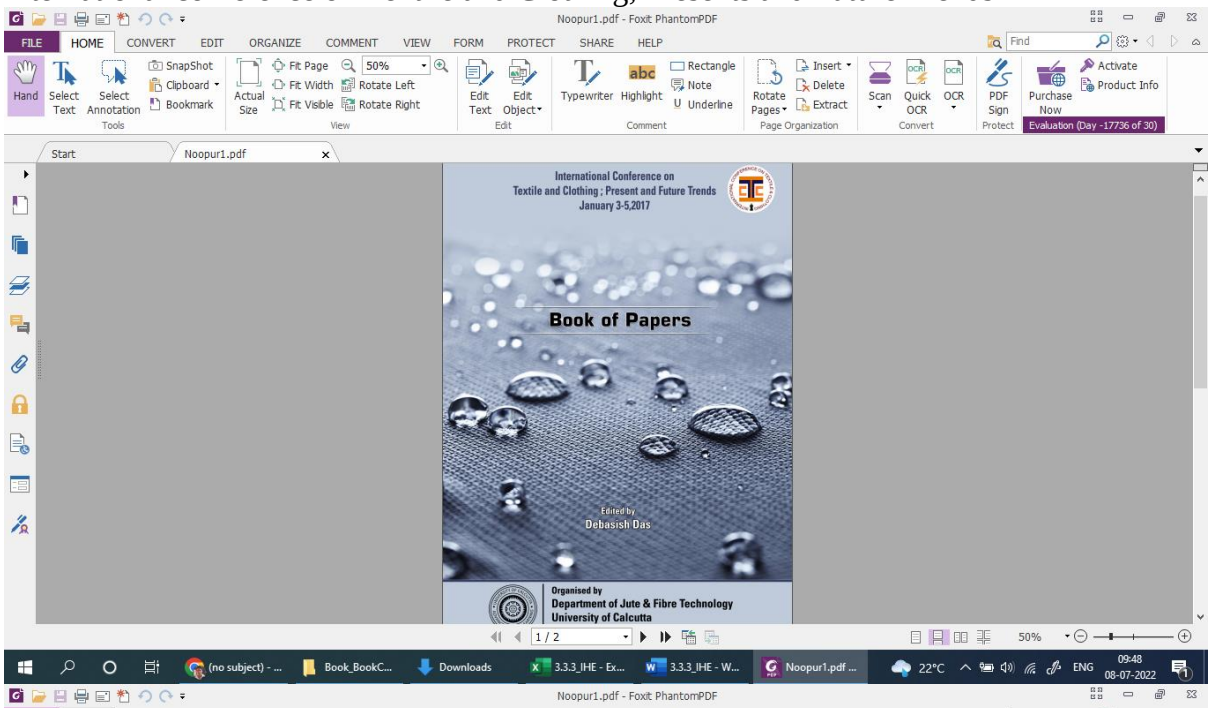
I. INTRODUCTION

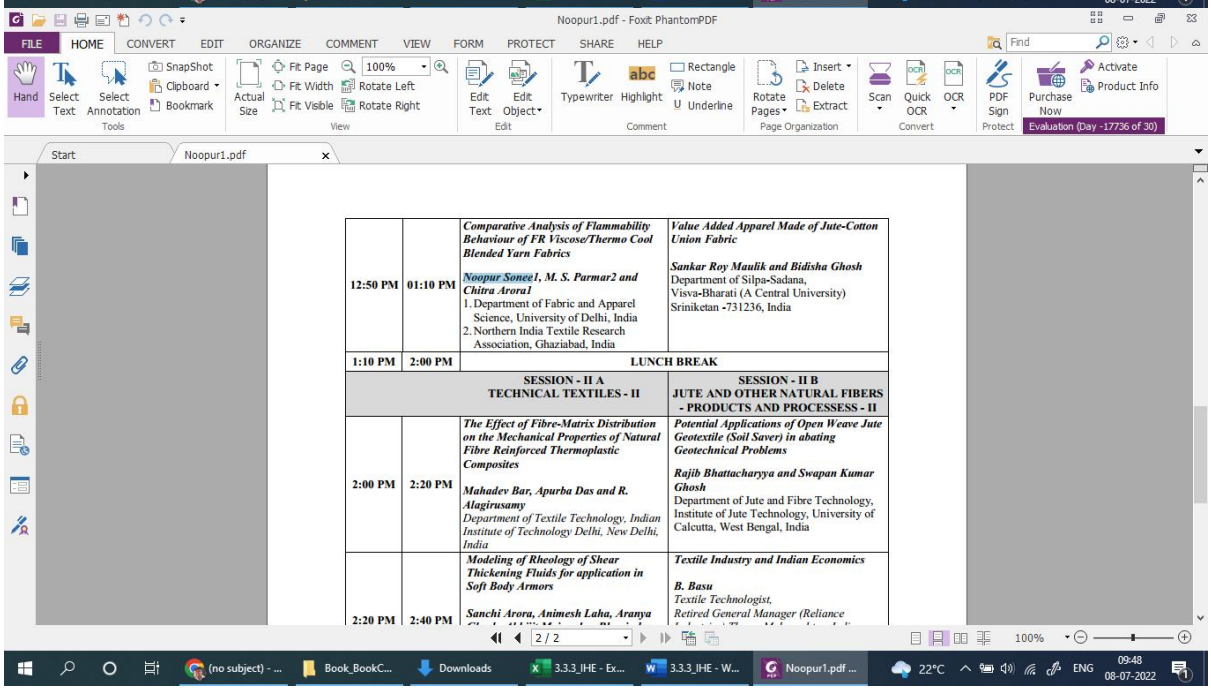
The Oil and Gas industry plays a major role in the economic and political scenario of the world. It is the most important sector in any economy since it caters to a wide range of industries including petrochemicals, fertilizers, automobiles etc. It is one of the highly regulated sectors in India. It has very significant forward linkages with the entire economy.

Oil and Gas industry is one of the riskiest industries when it comes to health and safety of employees. Inherent flash fire hazards are associated with oil and gas well drilling, servicing, refining and production-related operations. A flash fire requires oxygen, an ignition source and a fuel source such as hydrocarbon or an atmosphere containing combustible. It finely divided particles with a concentration greater than the lower explosive limit of the chemical. Exposure to flash fires can result in devastating burns and death – 16 per cent of fatalities in the oil fields result from fire and explosions.

It is estimated that unsafe work conditions is one of the leading causes of death and disability among India's working population. These deaths are needless and preventable. It is estimated that around 500,000 workers are employed in Oil and Gas industries in India. The workplace environment can be a hazardous place to work. Workers are exposed to numerous potential hazards including physical such as fire, fluctuating temperature, flying sparks, electrical, moving objects or sharp edges. They also suffered health hazard problems caused by

Sonee Noopur, Arora Chitra and Parmar MS
Comparative Analysis of Flammability Behaviour of FR Viscose/Thermo Cool Blended Yarn Fabrics
International conference on Textile and Clothing; Presents and Future Trends

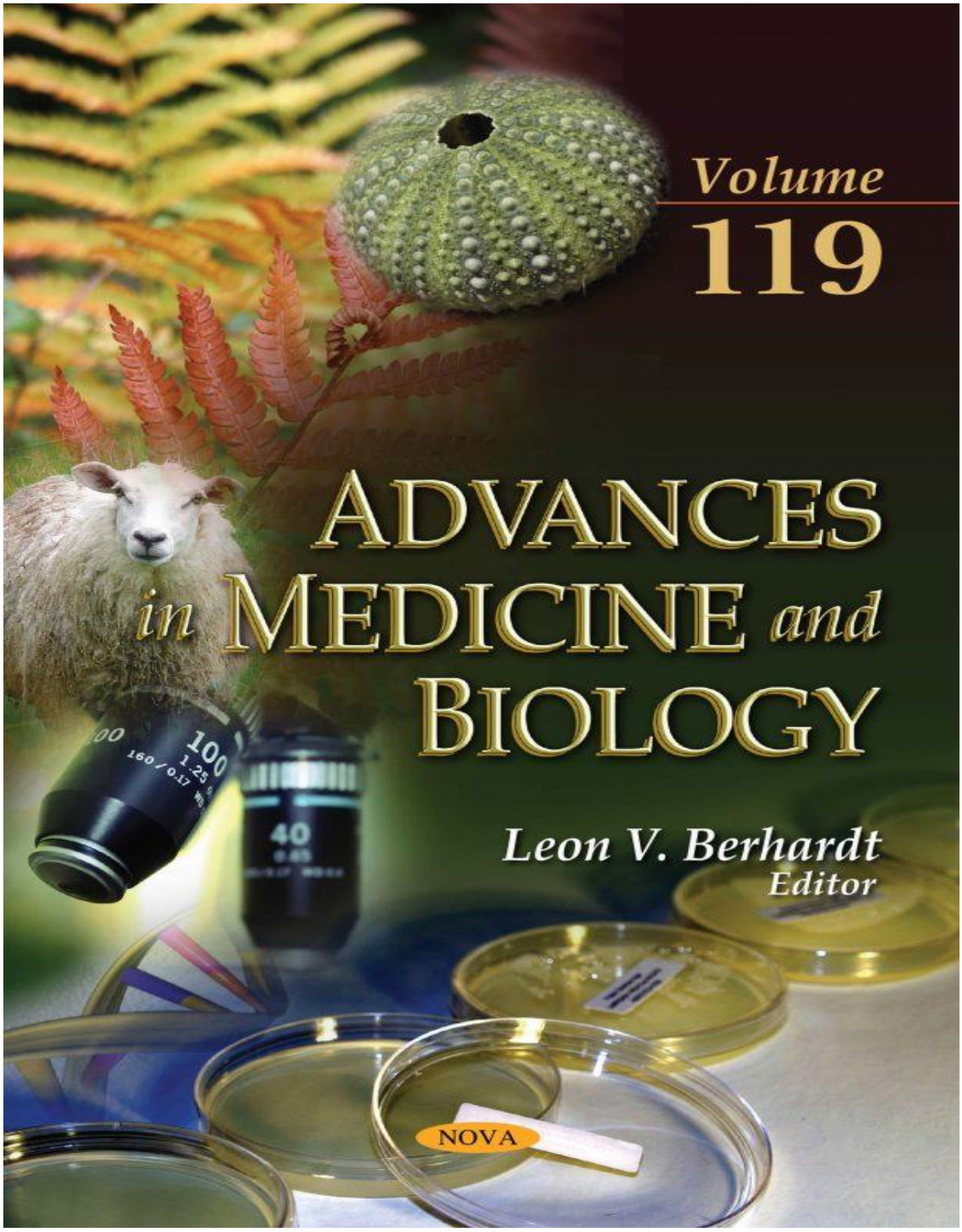




12:50 PM	01:10 PM	***Comparative Analysis of Flammability Behaviour of FR Viscose/Thermo Cool Blended Yarn Fabrics*** ***Noopur Sonee1, M. S. Parmar2 and Chitra Arora1*** 1. Department of Fabric and Apparel Science, University of Delhi, India 2. Northern India Textile Research Association, Ghaziabad, India	***Value Added Apparel Made of Jute-Cotton Union Fabric*** ***Sankar Roy Maulik and Bidisha Ghosh*** Department of Silpa-Sadana, Visva-Bharati (A Central University) Sriniketan -731236, India
1:10 PM	2:00 PM	**LUNCH BREAK**	
		SESSION - II A TECHNICAL TEXTILES - II	**SESSION - II B JUTE AND OTHER NATURAL FIBERS - PRODUCTS AND PROCESSESS - II**
2:00 PM	2:20 PM	***The Effect of Fibre-Matrix Distribution on the Mechanical Properties of Natural Fibre Reinforced Thermoplastic Composites*** ***Mahadev Bar, Apurba Das and R. Alagirusamy*** *Department of Textile Technology, Indian Institute of Technology Delhi, New Delhi, India*	***Potential Applications of Open Weave Jute Geotextile (Soil Saver) in abating Geotechnical Problems*** ***Rajib Bhattacharyya and Swapan Kumar Ghosh*** Department of Jute and Fibre Technology, Institute of Jute Technology, University of Calcutta, West Bengal, India
2:20 PM	2:40 PM	***Modeling of Rheology of Shear Thickening Fluids for application in Soft Body Armors*** ***Sanchi Arora, Animesh Laha, Aranya***	***Textile Industry and Indian Economics*** ***B. Basu*** *Textile Technologist, Retired General Manager (Reliance*

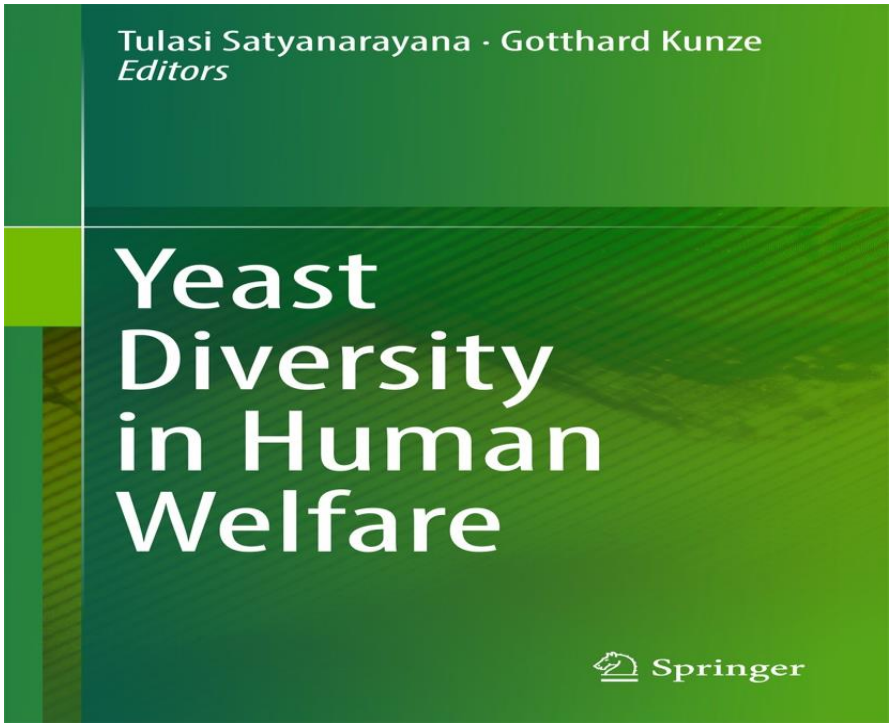
Bansal S, Kare PK, Tripathi AK, Madhu SV **(Book Chapter) 2017**

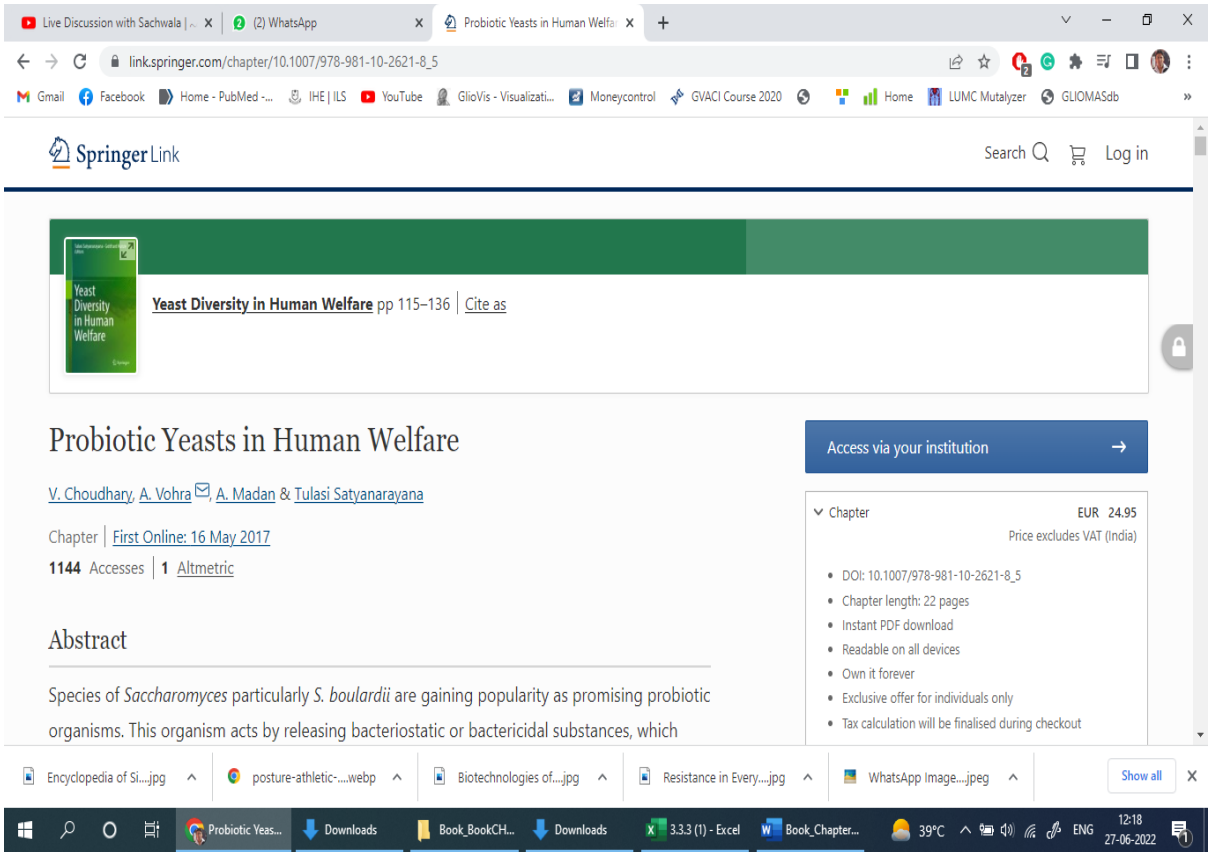
- Advanced glycation end products: formation, metabolism and role in diabetic vascular complication. In **Advances in Medicine and Biology volume 119 NOVA**



Ashima Vohra (Book chapter) 2017

- Probiotic yeasts in human welfare. Pages:115-136 **In: Yeast Diversity in Human Welfare edited by (T.Satyanarayana and G. Kuenze)**





Chaudhary N., Kapoor S., **Negi B. (Book Chapter) 2017**

- Individual achievement and social progress: Mending the broken alliance between school and community in India In **Alterity, Values and Socialization Springer Vol 6**

Sharma D (Book Chapter) 2017
Weaving In ***Fibre to Fabric***

Acknowledgement

Advisory Committee	
Chairman, National Institute of Open Schooling, NOIDA, Uttar Pradesh	Director (Vocational Department) National Institute of Open Schooling NOIDA, Uttar Pradesh

Course Curriculum Committee			
Dr. Swapna Mishra Director, Sector Skill Council, Textiles, New Delhi	**Ms. Jyotsna Kapur** Secretary, All India, Women's Educational Fund Association (AIWEFA), New Delhi	**Prof. Promil Pande** Prof. and Dean, School of Fashion and Design, GD Goenka University	**Mr. Vikash Kumar** Assistant Director Weaver Service Centre, New Delhi
Dr. Swarnima Singh Lecturer, Satyam Fashion Institute, NOIDA	**Ms. Navya Agarwal** Entrepreneur, Product and Graphic Designer, Sitapur Uttar Pradesh	**Dr. Bhupinder Kaur** Assistant Professor, Institute of Home Economics, University of Delhi	**Ms. Vandana Jaglan** Assistant Professor, Satyam Fashion Institute, NOIDA
Dr. Amita Walia Assistant Professor& HOD, Department of Fabric & Apparel Science, Institute of Home Economics, University of Delhi		**Dr. Simmi Bhagat** Associate Professor, Department of Fabric and Apparel Science Lady Irwin College, University of Delhi	
Dr. Mamta Srivastava Deputy Director Vocational Department, NIOS	**Dr. Sandhya Kumar** Dy. Director (Academic Department), NIOS	**Ms. Anitha Nair** Deputy Director Vocational Department, NIOS	
Dr. Praveen Chauhan Assistant Director (Academic) Vocational Department, NIOS		**Ms. Asheema Singh** Project Coordinator AEP, UNFPA, NIOS	

Lesson Writers	
Dr. Bhupinder Kaur Assistant Professor **Ms. Deepti Sethi** Assistant Professor **Ms. Simran Kaur** Assistant Professor	**Dr. Harshita Chaudhary** Assistant Professor **Ms. Shumaila Naaz** Assistant Professor **Ms. Divyansha Sharma** Research Scholar
(All experts from Department of Fabric and Apparel Science, Institute of Home Economics, University of Delhi.) **Dr. Anjana Agarwal** Senior Executive Officer, NIOS	

Editor	Course Coordinator
Dr. Amita Walia Assistant Professor & HoD, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.	**Dr. Sandhya Kumar** Deputy Director National Institute of Open Schooling, NOIDA, UP

Graphic Artist

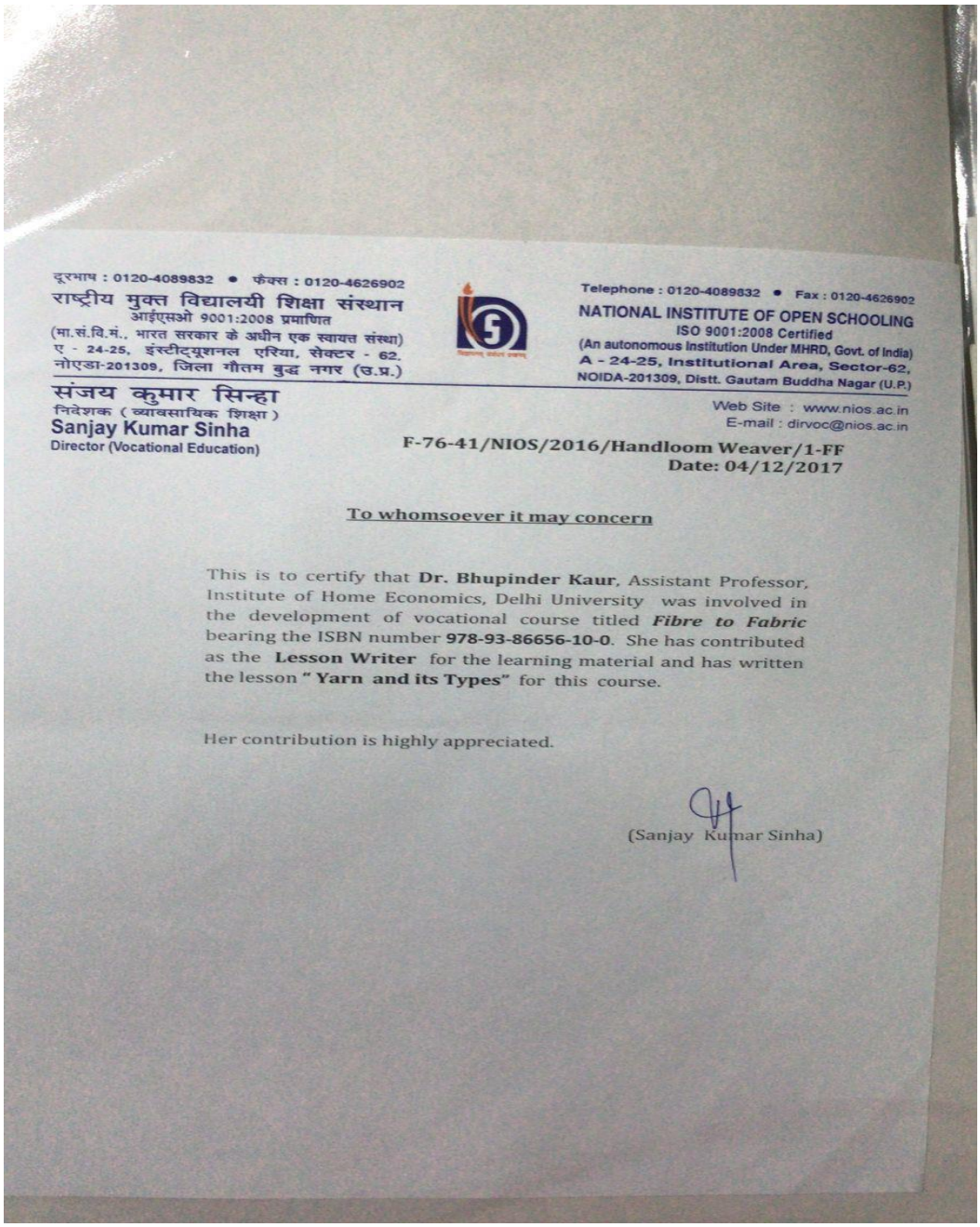
Ms. Deepti Sethi, Assistant Professor, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.

Typesetting and Cover Design

Multi Graphics

Kaur B (Book Chapter) 2017

- Yarn and its Types In ***Fibre to Fabric***



दूरभाष : 0120-4089832 • फैक्स : 0120-4626902
राष्ट्रीय मुक्त विद्यालयी शिक्षा संस्थान
आईएसओ 9001:2008 प्रमाणित
(मा.सं.वि.मं., भारत सरकार के अधीन एक स्वायत्त संस्था)
ए - 24-25, इंस्टीट्यूशनल एरिया, सेक्टर - 62,
नोएडा-201309, जिला गौतम बुद्ध नगर (उ.प्र.)

संजय कुमार सिन्हा
निदेशक (व्यावसायिक शिक्षा)
Sanjay Kumar Sinha
Director (Vocational Education)

Telephone : 0120-4089832 • Fax : 0120-4626902
NATIONAL INSTITUTE OF OPEN SCHOOLING
ISO 9001:2008 Certified
(An autonomous Institution Under MHRD, Govt. of India)
A - 24-25, Institutional Area, Sector-62,
NOIDA-201309, Distt. Gautam Buddha Nagar (U.P.)

Web Site : www.nios.ac.in
E-mail : dirvoc@nios.ac.in

F-76-41/NIOS/2016/Handloom Weaver/1-FF
Date: 04/12/2017

To whomsoever it may concern

This is to certify that **Dr. Bhupinder Kaur**, Assistant Professor, Institute of Home Economics, Delhi University was involved in the development of vocational course titled ***Fibre to Fabric*** bearing the ISBN number **978-93-86656-10-0**. She has contributed as the **Lesson Writer** for the learning material and has written the lesson **" Yarn and its Types"** for this course.

Her contribution is highly appreciated.

(Sanjay Kumar Sinha)

Acknowledgement

Advisory Committee	
Chairman, National Institute of Open Schooling, NOIDA, Uttar Pradesh	Director (Vocational Department) National Institute of Open Schooling NOIDA, Uttar Pradesh

Course Curriculum Committee			
Dr. Swapna Mishra Director, Sector Skill Council, Textiles, New Delhi	**Ms. Jyotsna Kapur** Secretary, All India, Women's Educational Fund Association (AIWEFA), New Delhi	**Prof. Promil Pande** Prof. and Dean, School of Fashion and Design, GD Goenka University	**Mr. Vikash Kumar** Assistant Director Weaver Service Centre, New Delhi
Dr. Swarnima Singh Lecturer, Satyam Fashion Institute, NOIDA	**Ms. Navya Agarwal** Entrepreneur, Product and Graphic Designer, Sitapur Uttar Pradesh	**Dr. Bhupinder Kaur** Assistant Professor, Institute of Home Economics, University of Delhi	**Ms. Vandana Jaglan** Assistant Professor, Satyam Fashion Institute, NOIDA
Dr. Amita Walia Assistant Professor& HOD, Department of Fabric & Apparel Science, Institute of Home Economics, University of Delhi		**Dr. Simmi Bhagat** Associate Professor, Department of Fabric and Apparel Science Lady Irwin College, University of Delhi	
Dr. Mamta Srivastava Deputy Director Vocational Department, NIOS	**Dr. Sandhya Kumar** Dy. Director (Academic Department), NIOS	**Ms. Anitha Nair** Deputy Director Vocational Department, NIOS	
Dr. Praveen Chauhan Assistant Director (Academic) Vocational Department, NIOS		**Ms. Asheema Singh** Project Coordinator AEP, UNFPA, NIOS	

Lesson Writers	
Dr. Bhupinder Kaur Assistant Professor **Ms. Deepti Sethi** Assistant Professor **Ms. Simran Kaur** Assistant Professor	**Dr. Harshita Chaudhary** Assistant Professor **Ms. Shumaila Naaz** Assistant Professor **Ms. Divyansha Sharma** Research Scholar
(All experts from Department of Fabric and Apparel Science, Institute of Home Economics, University of Delhi.) **Dr. Anjana Agarwal** Senior Executive Officer, NIOS	

Editor	Course Coordinator
Dr. Amita Walia Assistant Professor & HoD, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.	**Dr. Sandhya Kumar** Deputy Director National Institute of Open Schooling, NOIDA, UP

Graphic Artist

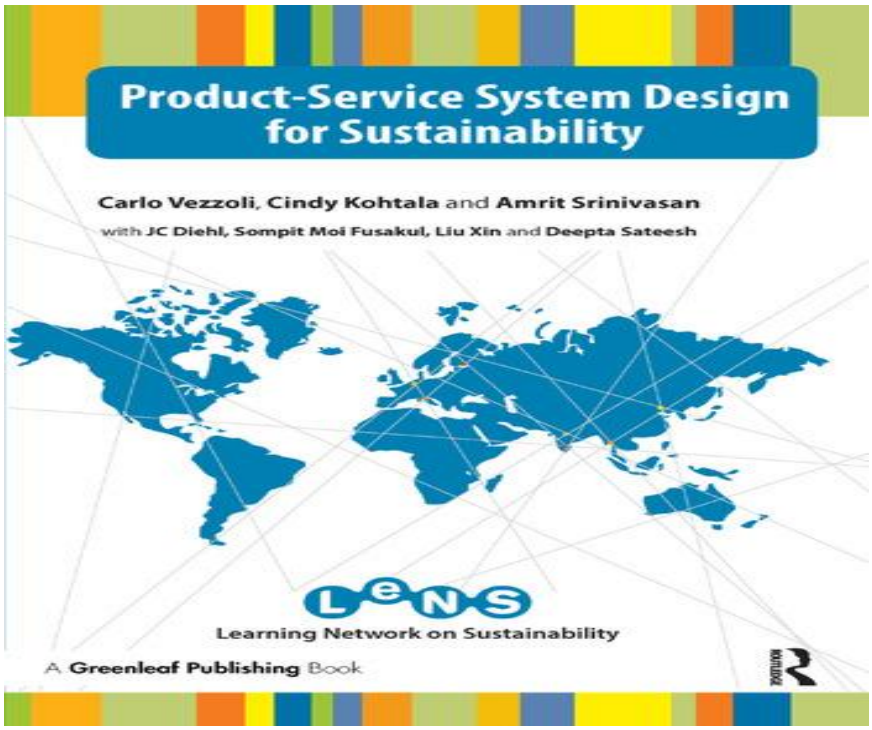
Ms. Deepti Sethi, Assistant Professor, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.

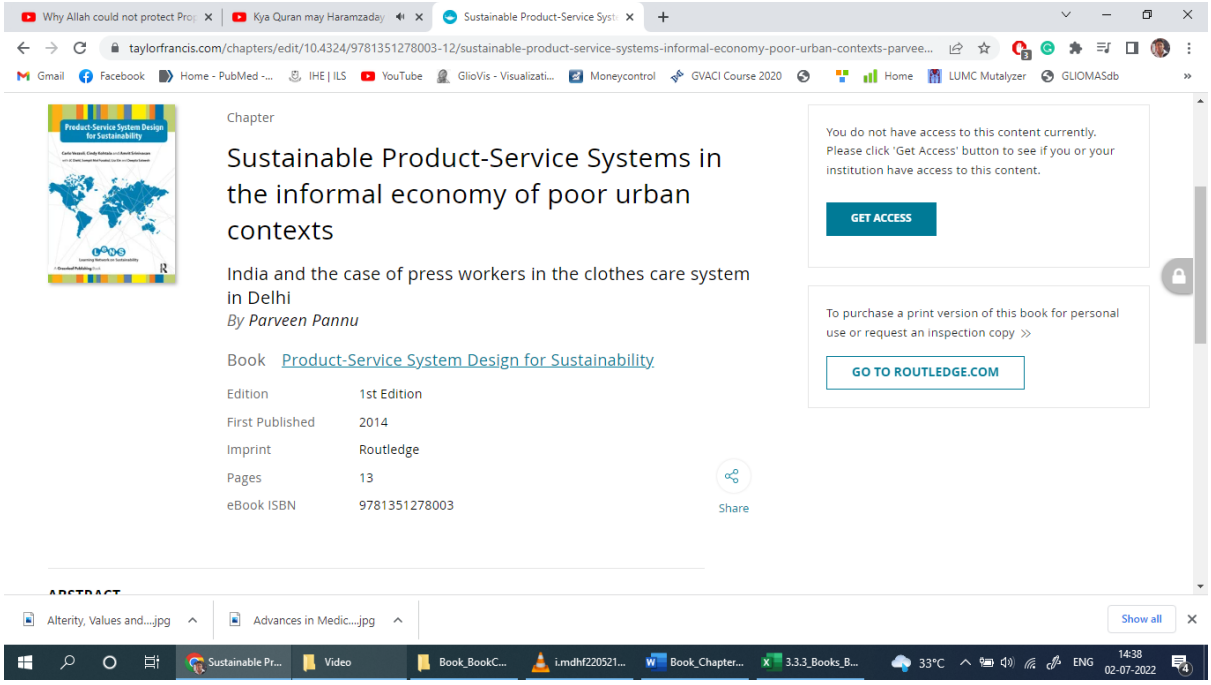
Typesetting and Cover Design

Multi Graphics

Pannu P (Book Chapter) 2017

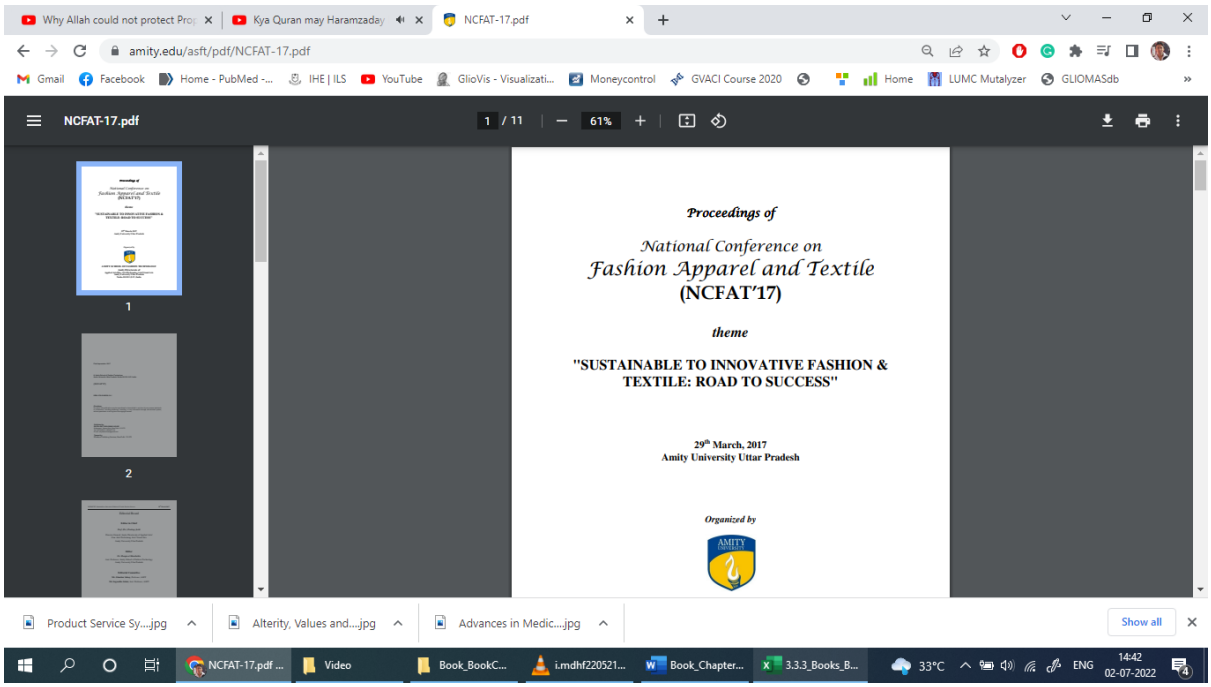
- Sustainable Product-Service Systems in the informal economy of poor urban contexts: India and the case of press workers in clothes care system in Delhi **In ProductService System Design for Sustainability**





Verma, V., **Aggarwal, J. (Book Chapter) 2017**

- Interrelationship of Identity Formation and Clothing Preferences: An Exploratory Study amongst College Going Girls **In Sustainable to Innovative Fashion and Textile : Road to Success**



Proceedings of

National Conference on

Fashion Apparel and Textile

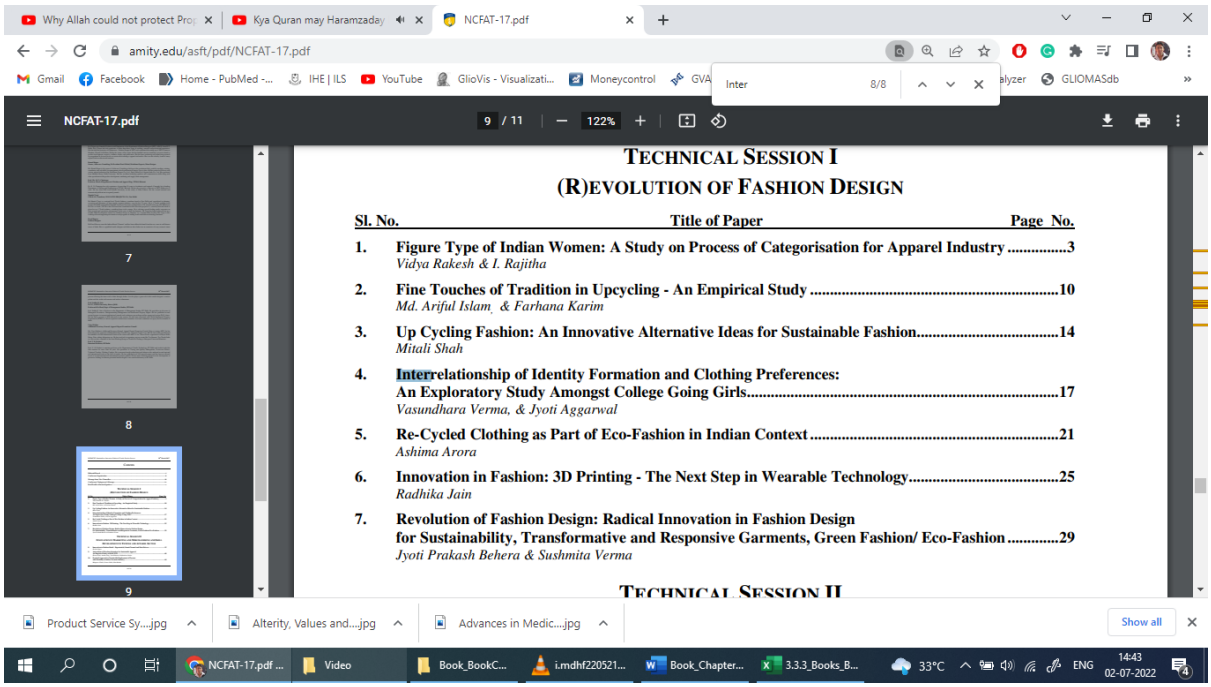
(NCFAT'17)

theme

"SUSTAINABLE TO INNOVATIVE FASHION & TEXTILE: ROAD TO SUCCESS"

29th March, 2017
Amity University Uttar Pradesh

Organized by



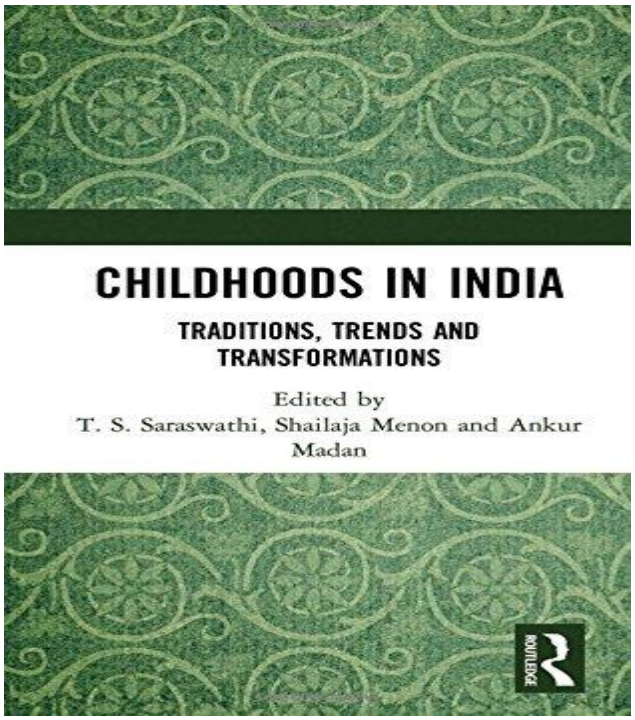
TECHNICAL SESSION I

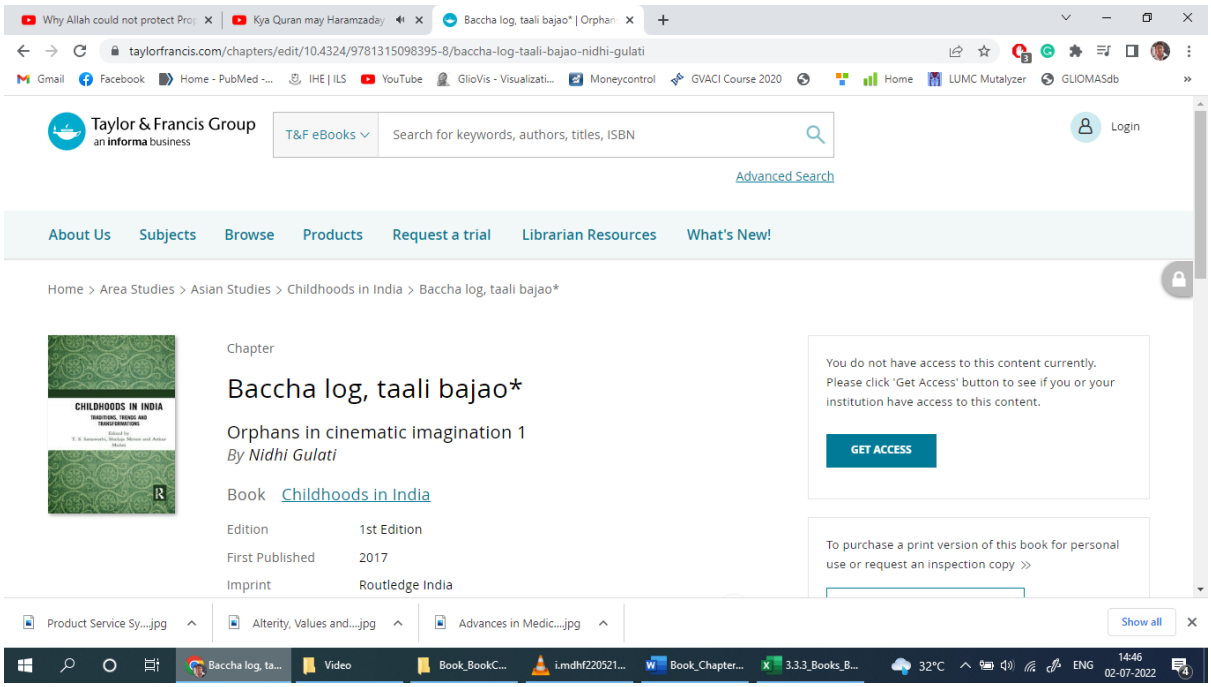
(R)EVOLUTION OF FASHION DESIGN

TECHNICAL SESSION II

Gulati N (Book Chapter) 2017

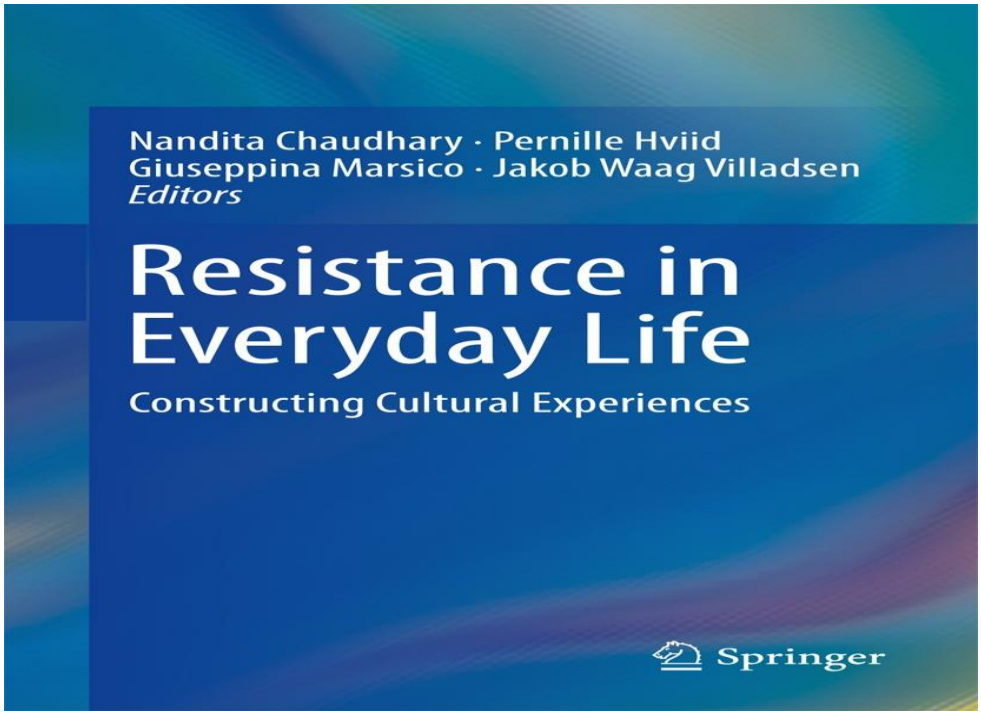
- Baccha log: taali bajao. Orphans in cinematic imagination. In **Childhood in India: Traditions, trends and transformations**

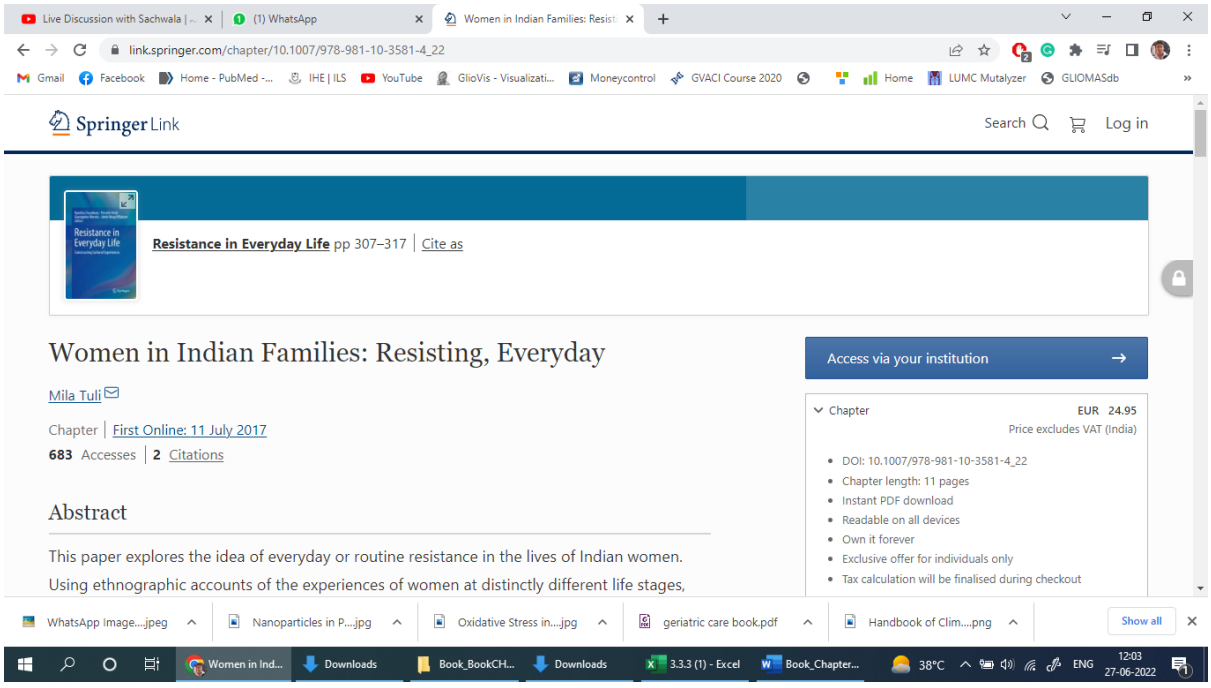




Mila Tuli (Book Chapter) 2017

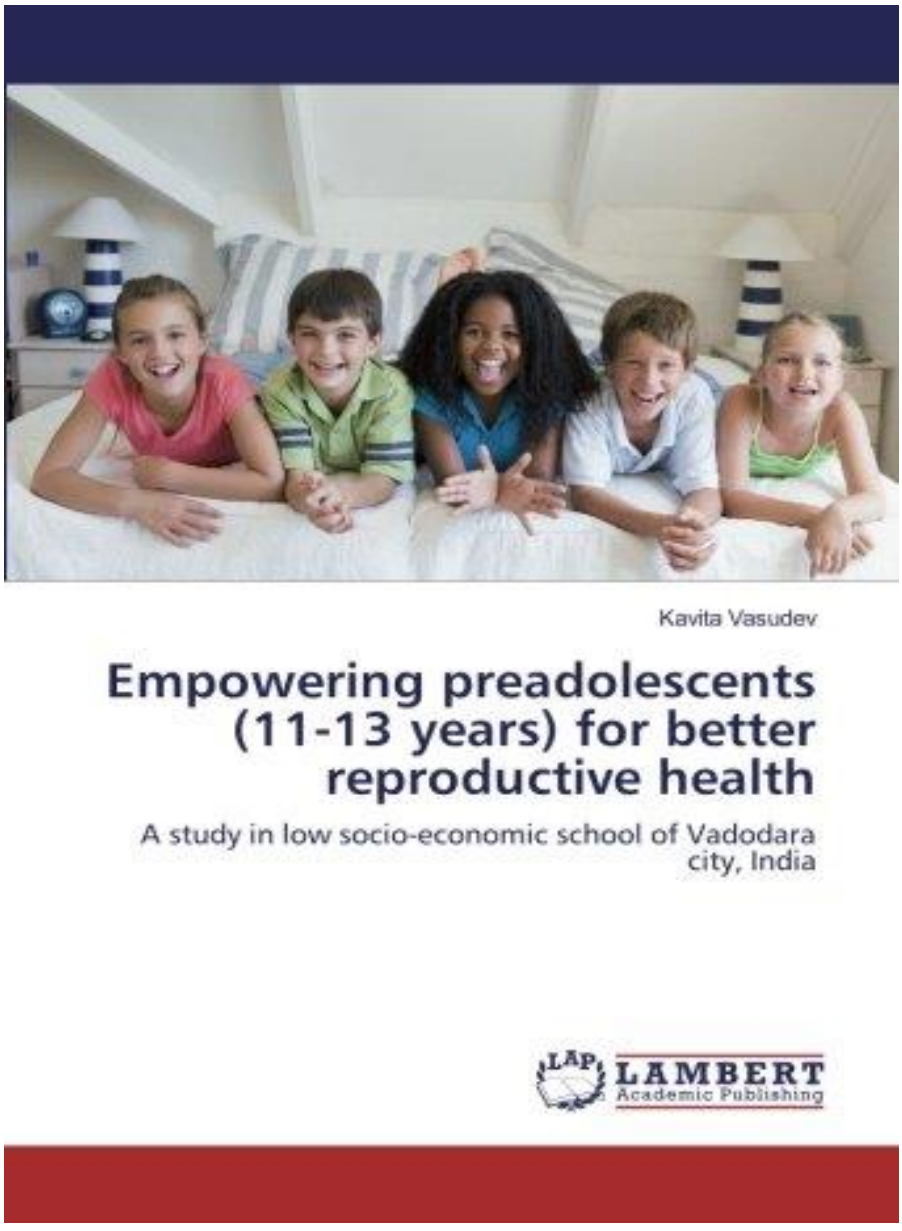
- **In Chaudhary, N., Haviid, P., Marsico, G. and Villadsen, J.W., (eds.) Resistance in Everyday Lives: Constructing Cultural Experiences/** Women in Indian Families: Resisting everyday





Vasudev K (Book) 2017

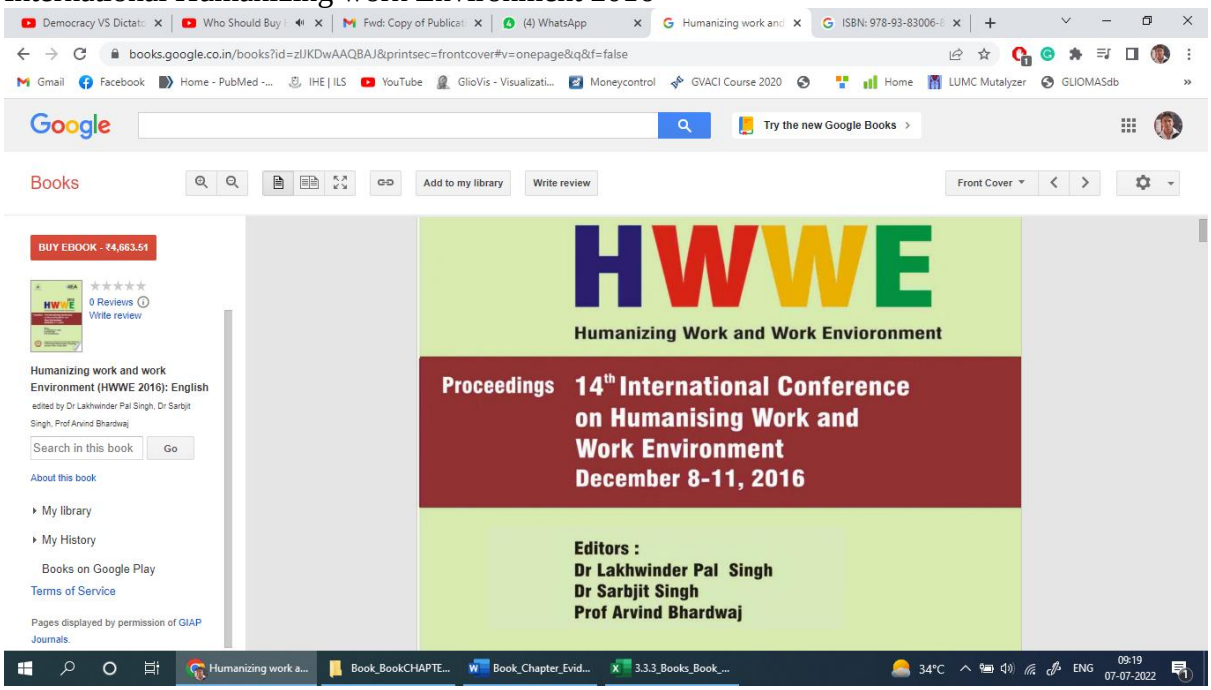
- **Empowering preadolescents (11-13years) for better reproductive health: A study in low socio-economic school of Vadodara city, India (E – Book)**

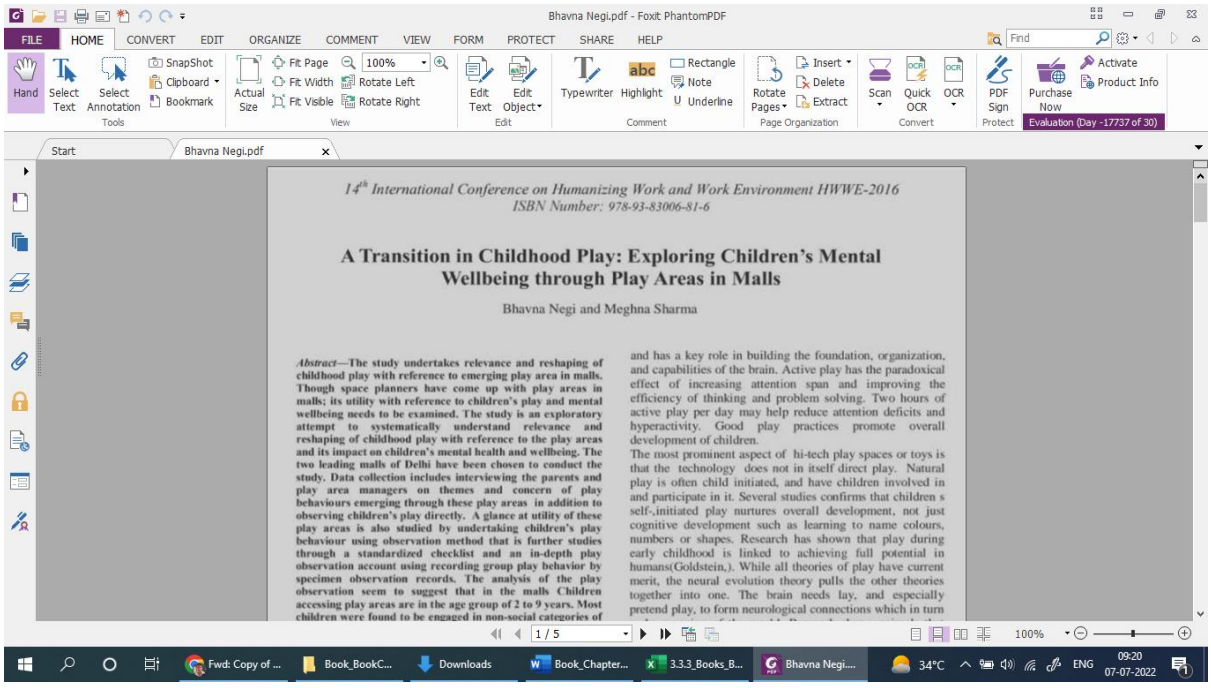


Bhavna Negi and Megna (Conference paper) 2016

A transition in childhood play: Exploring Children's Mental Wellbeing through Play areas in Malls

International Humanizing work Environment 2016





Bhupinder Kaur, Chanchal and Renu Arora (Conference Paper) 2016
Protective Clothing: Requirement for wet processing of textiles
International conference on Recent Innovations in Science, Engineering and Management'

8th International Conference on Recent Innovations in Science, Engineering and Management
Indian Federation of United Nations Associations, New Delhi, India ICRISEM - 16
21st October 2016, www.conferenceworld.in ISBN : 978-93-86171-14-6

PROTECTIVE CLOTHING: REQUIREMENT FOR WET PROCESSING OF TEXTILES

Dr. Bhupinder Kaur[1], Dr. Chanchal[2], Dr. Renu Arora[3]

[1.2] Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University.
[3]Department of Resource Management, Institute of Home Economics, Delhi University

ABSTRACT

In textile wet processing, handling of chemicals and dyestuff is involved. Therefore, it required that protective clothing should be provided to workers involved for their safety. In present research, an attempt was made to know whether workers of the textile units were using Personal protective equipment/clothing or not. Protective equipment clothing provides skin protection against chemical splashes, vapour and particulate exposures and other physical hazards.

KEYWORDS: *Clothing, Dyestuff, Protective.*

I. INTRODUCTION

Textile wet processing enhances the appearance, durability and serviceability of fabrics by converting undyed and unfinished goods, known as gray or greige goods, into finished consumers' goods. Also collectively known as finishing, wet processing has been broken down into four stages -fabric preparation, dyeing, printing and finishing. These stages involve treating gray goods with chemical baths and often require additional washing, rinsing and drying (Fig. 1 and Table 1) (DPPEA, n.d.;Gupta et al., 2000).

TABLE 1 – PROCESSES INVOLVED IN THE WET PROCESSING OF TEXTILES

Process step	Description
1. Desizing	Chemical treatment to remove the size.
2. Scouring	Remove fabric impurities
3. Bleaching	Enhance whiteness of the textiles
4. Mercerizing	Chemical treatment for enhancing textile appearance. Colouring effect
5. Dyeing and finishing	Physical and chemical finishing to furnish the textile's quality.

Source: (Gupta et al., 2000)

Bhupinder Kaur, Chanchal and Renu Arora (Conference Paper) 2016
An Ecofriendly Approach for Wet Processing of Textiles
Innovative Trends in Science, Engineering and Management'

2nd International Conference on "Innovative Trends in Science, Engineering and Management"
YMCA, Connaught Place, New Delhi
05 November 2016, www.conferenceworld.in
ICITSEM-16
ISBN : 978-93-86171-10-8

AN ECOFRIENDLY APPROACH FOR WET PROCESSING OF TEXTILES

Dr. Bhupinder Kaur[1], Dr. Chanchal[2], Dr. Renu Arora[3]

[1] *Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University.*

[2] *Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University.*

[3] *Department of Resource Management, Institute of Home Economics, Delhi University.*

ABSTRACT

Textile wet processes causes severe environmental pollution and health problems. It is important for the textile industry to adopt pollution preventive approach. Recycling, reusing of chemicals and dyes helps in eliminating disposal costs and reducing raw material costs. In present research, an attempt was made to study whether the units were practicing recycling techniques or not. It was found that textile wet processing units were not having awareness and proper infrastructure to implement and adopt a pollution preventive approach.

KEYWORDS: *Pollution, Recovery, Recycle, Reuse, Wet Processing*

I. INTRODUCTION

The textile industry is comprised of a diverse, fragmented group of establishments that produce and process textile-related products (fiber, yarn, fabric) for further processing into apparel, home furnishing and industrial goods. Textile establishments receive and prepare fibers; transform fibers into yarn, thread or webbing; convert the yarn into fabric or related products; and dye and finish the materials at various stages of production. The process of converting raw fibers into finished apparel and non-apparel textile products is complex one. Little overlap occurs between knitting and weaving or among production of manmade, cotton and wool fabrics. Textiles generally go through three to four stages of production that may include, yarn formation, fabric formation, wet processing, textile fabrication. The general steps in which fibers are processed to manufacturing of textile goods (DPPEA, n.d.). The textile wet processing industries are those units, which take gray fabrics as raw materials and process it to obtain finished fabrics (Kharat et al., 2000). These various wet processes are shown in Table 1 (Gupta et al., 2000).

The Indian textile industry has its importance in the national economy, but at the same time it is responsible for disastrous environmental impacts (Bunning et al., 1993). These impacts start with the use of pesticides during the cultivation of plants, from which natural fibers are obtained and with the erosion caused by sheep farming or with the emissions during the production of synthetic fibers. From that moment, a number of processes are applied using thousands of chemicals to process the fibers and to reach the final stage of textile end product. The industry in India including mill sector, handloom, powerloom, process houses and khadi village industries are

Bhupinder Kaur, Renu Arora and Chanchal (Conference Paper) 2016
Wet processing of Textiles: An Ecofriendly Approach
International conference on Innovative research in Chemical, Environmental, Bioprocess, Textile, Mining, Material and Metallurgical Engineering

Journal of Basic and Applied Engineering Research
p-ISSN: 2350-0077; e-ISSN: 2350-0255; Volume 4, Issue 1; January-March, 2017, pp. 13-15
© Krishi Sanskriti Publications
http://www.krishisanskriti.org/Publication.html

Wet Processing of Textiles: An Eco Friendly Approach

Bhupinder Kaur[1], Renu Arora[2] and Chanchal[3]

[1,3]*Department of Fabric and Apparel Science, Institute of Home Economics, Delhi University*
[2]*Department of Resource Management, Institute of Home Economics, Delhi University*

Abstract—*The textile industry consumes large quantities of water, dyes and chemicals besides utilising significant quantities of coal, natural gas and electricity as sources of energy. Further, textile wet processes like desizing, bleaching, mercerizing, dyeing and printing are using toxic dyes and chemicals which come in contact with the skin and cause a direct damage to the health in the form of skin cancer and allergies etc. It is important to adopt waste minimisation, which basically means to avoid the formation of waste at source i.e minimise the use of resources like water and substances that are exhausting. Wherever possible, to reuse and recycle the wastes those are generated. Waste minimisation is possible by increasing the process efficiency, reducing the amount of raw material needed for production and using clean technology. Further, care has to be taken to either eliminate or optimize the use of unsafe chemicals/auxiliaries/dyestuffs during the wet processing of textiles.*

Keywords: *(Waste Minimisation, Textile Industry, Wet Processing, Ecofriendly)*

1. INTRODUCTION

The textile industry is the single largest industry in the country. It fully meets the growing needs of the increasing population for one of the basic necessities of life i.e. clothing. Being agro- base, the textile industry enjoys strong links with a vast army of farmers, rural artisans, craftsman and numerous allied trades and industry personnel. Most of the raw materials, items of capital goods, skilled workers, technicians and supervisory personnel needed by the textile industry are available within the country (Saxena et al., 1998). The textile industry offers immense scope for employment. It provides direct employment to about 35 million people and indirect employment to millions engaged in cotton growing and ginning, manufacturing man-made fibers / yarns, textile machinery, spares, dyes, chemicals, trade, transport, banking, insurance and so on. As far as exports are concerned, India commands a worldwide reputation as a reliable supplier, and the industry has a huge potential for earning foreign exchange (Ministry of Textiles, 2010).

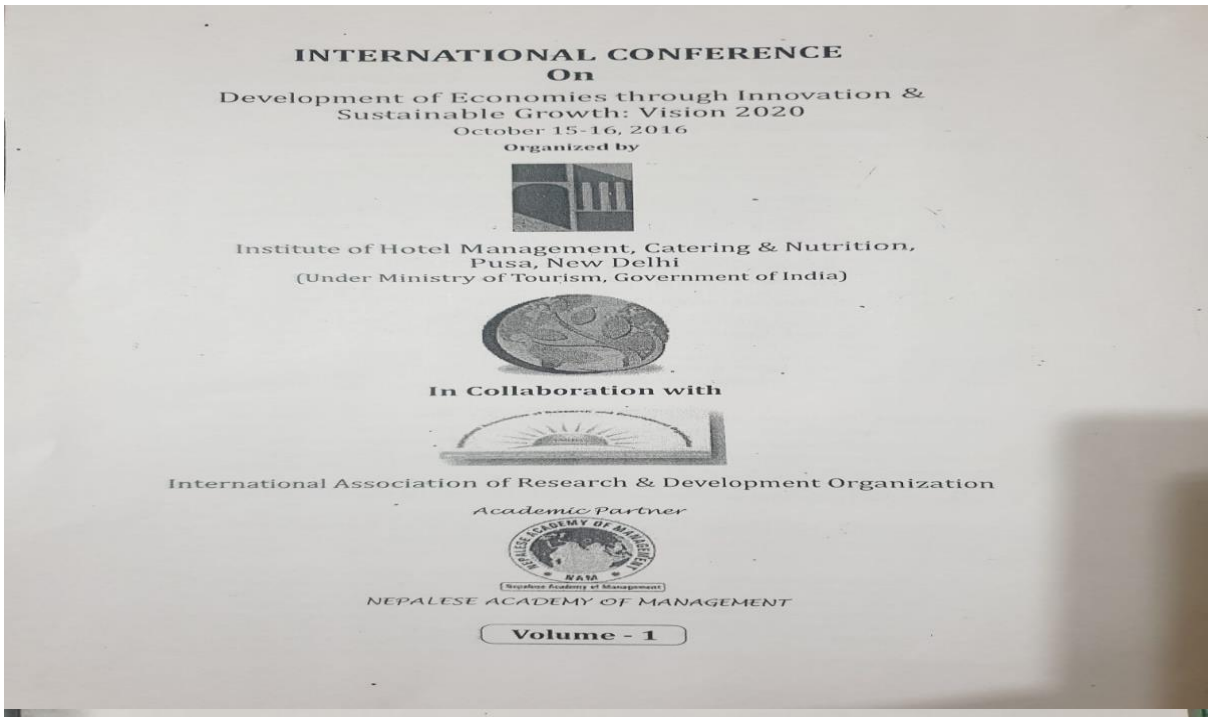
Though the Indian textile industry has its importance in the national economy, but at the same time it is responsible for disastrous environmental impacts (Bunning et al., 1993). A textile-processing unit consumes between 10-70 m^3 of water and 350-500 kg of dyes/chemicals per ton of fabric processed. Only about 15-20% of input is utilized in making the finished product and the rest goes waste. Not only these waste streams contain toxic constitutes, but they also represent valuable resources loss (Saxena et al., 1998). The problem is, therefore, not only associated with the toxicity of metal ions released but also the toxic effluent flowing through the sewerage. Such a large quantity of effluent from a dyeing unit and its extent of pollution, it is bound to deteriorate the aquatic life (Gupta, 1998).

The human health impacts are also caused due to the release of the various pollutants. A number of diseases like cholera, typhoid, hepatitis, gastroenteritis, bladder cancer, others respiratory and skin diseases are caused among workers (ITUT, 2003). Most of the dyes remain in and on the finished products and come into direct contact with the skin of the wearer and it has been found that certain dye on absorption by the skin releases carcinogenic amines (Chakraborty et al., 2001). Therefore, it can be ascertained that textile processing does have the capacity to pollute the environment and causes harmful impacts to the human life. Thus, there is a need to use the process technologies that are energy efficient, which produces less waste, require fewer resources such as chemicals, water and lastly they should be easy to handle.

Janakiraman (1998) discussed that waste minimisation is the preventative approach, the cost of the waste treatment system may get substantially reduced since wastes are inherently reduced in this approach, and the overall resource utilisation factor improves. Wet processing is a water intensive industry. The practice of water conservation can be achieved by good housekeeping and rationalising the use of water by the reuse of the cooling water, counter current washings, recovery of heat from steam condensate, heat exchangers, recycle of waste streams for toilets etc., are examples of resource recovery and give a substantial saving in the long term. The 'clean technology' may be defined as the manufacturing process or technique, which helps in conserving the resources and reduces waste, energy etc.

Lal (2000) stated that clean technologies help in decreasing waste liability, waste collection, handling and treatment cost as well as it recovers value of waste. Lal (1998) reviewed that waste minimisation basically means to avoid the formation of waste at source and where possible, to reuse and recycle the wastes that are generated. Waste minimisation is possible by:

Deepshikha Kataria (Conference Paper) 2016
Innovations in development of Value Added Foods: A sustainable approach
International Conference on 'Development of Economies through Innovation & sustainable Growth: Vision 2020



INTERNATIONAL CONFERENCE
On
Development of Economies through Innovation & Sustainable Growth: Vision 2020
October 15-16, 2016
Organized by

Institute of Hotel Management, Catering & Nutrition, Pusa, New Delhi
(Under Ministry of Tourism, Government of India)

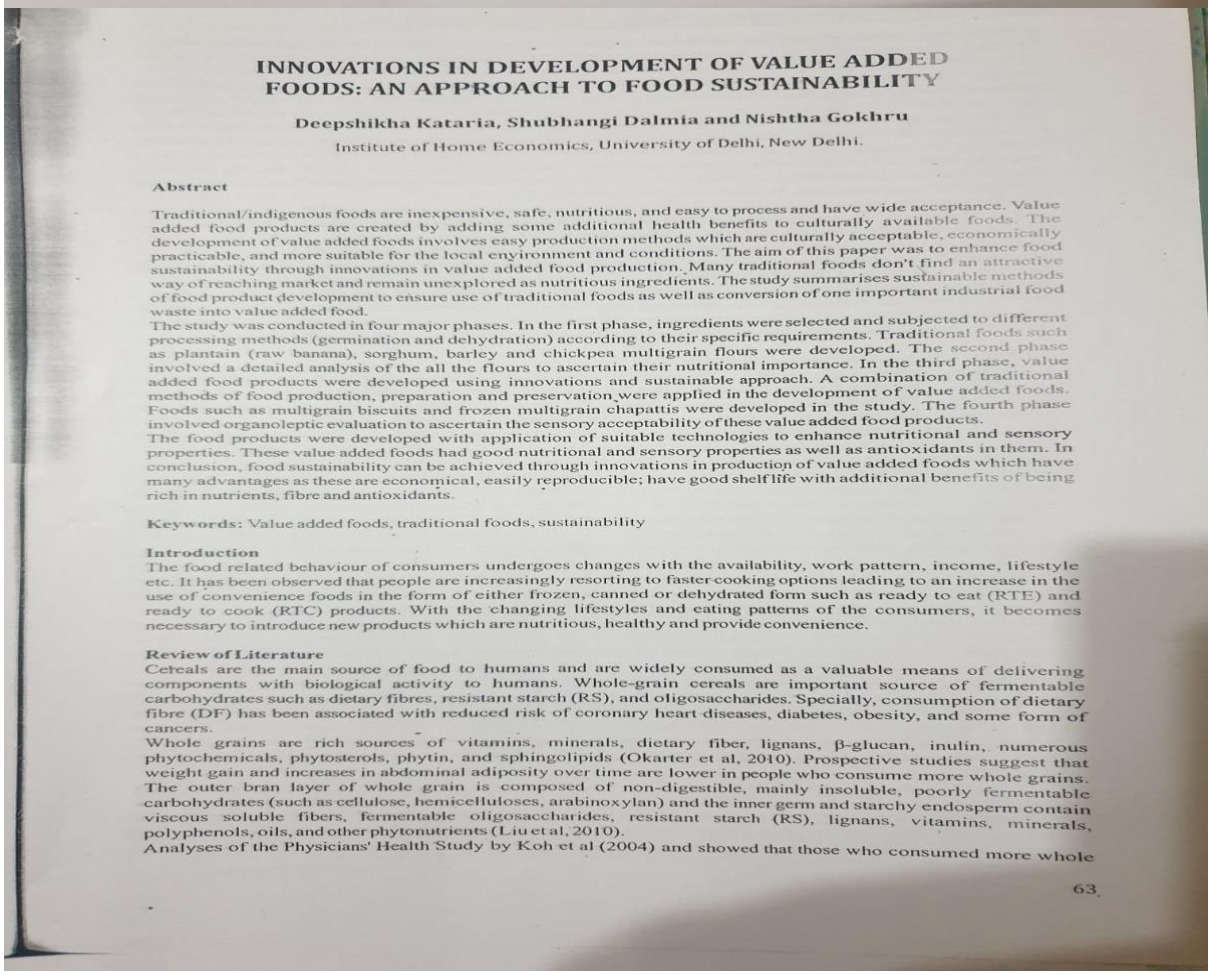
In Collaboration with

International Association of Research & Development Organization

Academic Partner

NEPALESE ACADEMY OF MANAGEMENT

Volume - 1



INNOVATIONS IN DEVELOPMENT OF VALUE ADDED FOODS: AN APPROACH TO FOOD SUSTAINABILITY

Deepshikha Kataria, Shubhangi Dalmia and Nishtha Gokhru
Institute of Home Economics, University of Delhi, New Delhi.

Abstract

Traditional/indigenous foods are inexpensive, safe, nutritious, and easy to process and have wide acceptance. Value added food products are created by adding some additional health benefits to culturally available foods. The development of value added foods involves easy production methods which are culturally acceptable, economically practicable, and more suitable for the local environment and conditions. The aim of this paper was to enhance food sustainability through innovations in value added food production. Many traditional foods don't find an attractive way of reaching market and remain unexplored as nutritious ingredients. The study summarises sustainable methods of food product development to ensure use of traditional foods as well as conversion of one important industrial food waste into value added food.

The study was conducted in four major phases. In the first phase, ingredients were selected and subjected to different processing methods (germination and dehydration) according to their specific requirements. Traditional foods such as plantain (raw banana), sorghum, barley and chickpea multigrain flours were developed. The second phase involved a detailed analysis of the all the flours to ascertain their nutritional importance. In the third phase, value added food products were developed using innovations and sustainable approach. A combination of traditional methods of food production, preparation and preservation were applied in the development of value added foods. Foods such as multigrain biscuits and frozen multigrain chapattis were developed in the study. The fourth phase involved organoleptic evaluation to ascertain the sensory acceptability of these value added food products.

The food products were developed with application of suitable technologies to enhance nutritional and sensory properties. These value added foods had good nutritional and sensory properties as well as antioxidants in them. In conclusion, food sustainability can be achieved through innovations in production of value added foods which have many advantages as these are economical, easily reproducible; have good shelf life with additional benefits of being rich in nutrients, fibre and antioxidants.

Keywords: Value added foods, traditional foods, sustainability

Introduction

The food related behaviour of consumers undergoes changes with the availability, work pattern, income, lifestyle etc. It has been observed that people are increasingly resorting to faster cooking options leading to an increase in the use of convenience foods in the form of either frozen, canned or dehydrated form such as ready to eat (RTE) and ready to cook (RTC) products. With the changing lifestyles and eating patterns of the consumers, it becomes necessary to introduce new products which are nutritious, healthy and provide convenience.

Review of Literature

Cereals are the main source of food to humans and are widely consumed as a valuable means of delivering components with biological activity to humans. Whole-grain cereals are important source of fermentable carbohydrates such as dietary fibres, resistant starch (RS), and oligosaccharides. Specially, consumption of dietary fibre (DF) has been associated with reduced risk of coronary heart diseases, diabetes, obesity, and some form of cancers.

Whole grains are rich sources of vitamins, minerals, dietary fiber, lignans, β-glucan, inulin, numerous phytochemicals, phytosterols, phytin, and sphingolipids (Okarter et al, 2010). Prospective studies suggest that weight gain and increases in abdominal adiposity over time are lower in people who consume more whole grains. The outer bran layer of whole grain is composed of non-digestible, mainly insoluble, poorly fermentable carbohydrates (such as cellulose, hemicelluloses, arabinoxylan) and the inner germ and starchy endosperm contain viscous soluble fibers, fermentable oligosaccharides, resistant starch (RS), lignans, vitamins, minerals, polyphenols, oils, and other phytonutrients (Liu et al, 2010).

Analyses of the Physicians' Health Study by Koh et al (2004) and showed that those who consumed more whole

Divya Puri, **Deepshikha Kataria and Vandana Sabharwal (Conference paper) 2016**
Enhancing Stability of Soybean Oil by Addition of Curcumin
International conference on Development of Economies through Innovation and Sustainable Growth: Vision 2020

ENHANCING STABILITY OF SOYBEAN OIL BY ADDITION OF CURCUMIN

Divya Puri, Deepshikha Kataria and Dr. Vandana Sabharwal

Institute of Home Economics, University of Delhi,
New Delhi.

Introduction

Turmeric (*Curcuma longa*) belongs to the family Zingiberaceae and is also known as the golden spice (Jyothi et al, 2003). India is the largest producer, consumer and exporter of turmeric in the world (Anandaraj et al, 2014). The yellow orange coloration of turmeric powder is due to the presence of curcuminoids present in them (Siviero et al, 2015). The curcuminoids are a mixture of curcumin, mixed with its two derivatives demethoxy-curcumin (DMC) and bis-demethoxy-curcumin (BDMC) (Joshi et al, 2009). Curcumin is highly stable in acidic solutions and hence remains stable throughout the process of digestion.

Frying is a common and popular cooking method, which gives food its palatability, because of fat absorption, crust formation and desired flavor. The major concern in frying oils is the lipid oxidation. The most preferable way to inhibit the lipid oxidation mechanism is by the use of antioxidants. Curcumin has shown to inhibit lipid oxidation by 82% (Priyadarsini et al, 2003). In vitro studies, curcumin has shown to be at least 10 times more active as an antioxidant than alpha-tocopherol (Khopde et al, 2000). Curcumin can be used as powerful antioxidant and can be added in small amounts to the frying oils to prevent rancidity.

The medicinal and antioxidative properties of turmeric are based on its curcumin content. Owing to the phenol hydrogen and enol structures, curcumin exhibits free radical scavenging properties and antioxidant effects (Siviero et al, 2015). The curcumin is an oil soluble pigment. Oils have been used extensively in Indian culinary and subjected to repeat heating and vigorous frying cycles. Furthermore, storage of such frying oils for long periods and environmental factors affect its stability and make the oil rancid. Free radicals are produced as a result of heating, exposure to oxygen. There are methods to prevent rancidity of oils. Curcumin, the major pigment of turmeric, is potential antioxidant and can be added to cooking oils for better stability by reducing oxidation.

Antioxidants have been used extensively to prevent rancidity of fats and oils. Mostly synthetic antioxidants like Butylated Hydroxy Toluene (BHT), Butylated Hydroxy Anisole (BHA), and Tertiary Butylated Hydroxy Quinone (TBHQ) are used to prevent rancidity of oils in food processing industries. However, use of natural ingredients is always preferred because they pose no side- effects, have many functional properties and therapeutic value. Curcumin is the major component in turmeric, which has functional value. It has antioxidative properties and can be used as antioxidant in food products particularly fats and oils to prevent rancidity and auto-oxidation. Many studies have been done to extract the curcumin from turmeric and to study its effects as antioxidant. A collection of all such research information has lead the present study to extract curcumin from turmeric using experimental methods and incorporation into oil to reduce rancidity after repeated frying. Hence, the present study aims at analyzing the effect of curcumin as a potential antioxidant for oils.

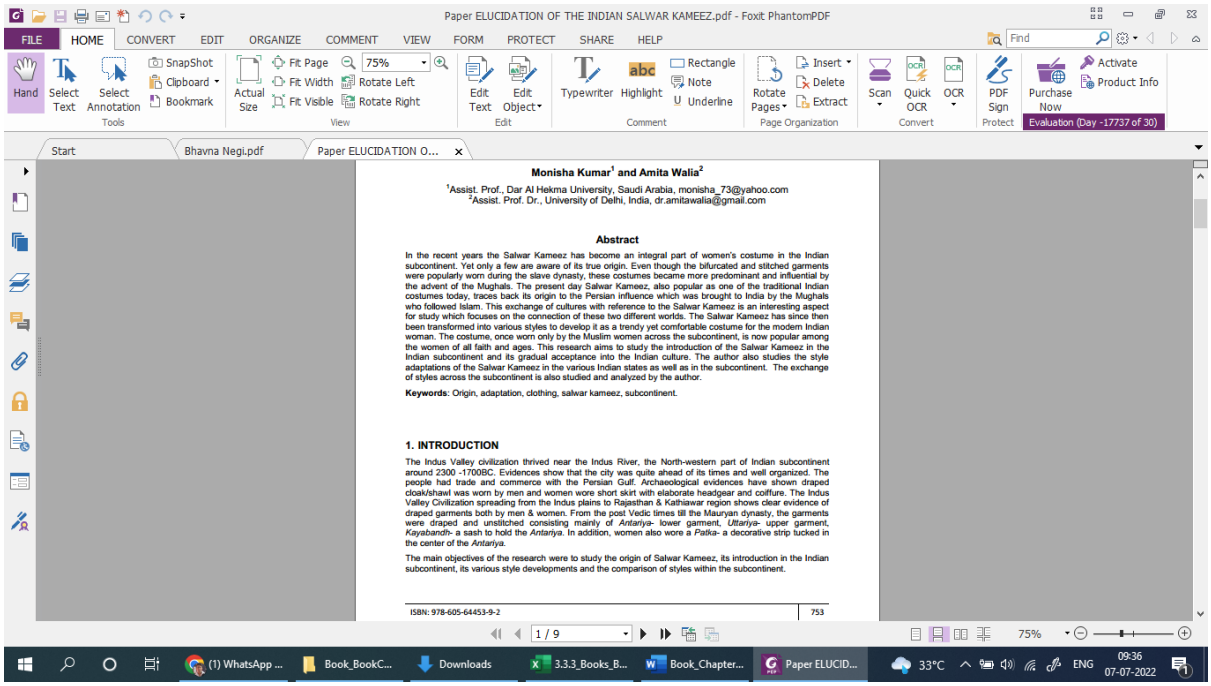
Literature Review

2.1. Turmeric -

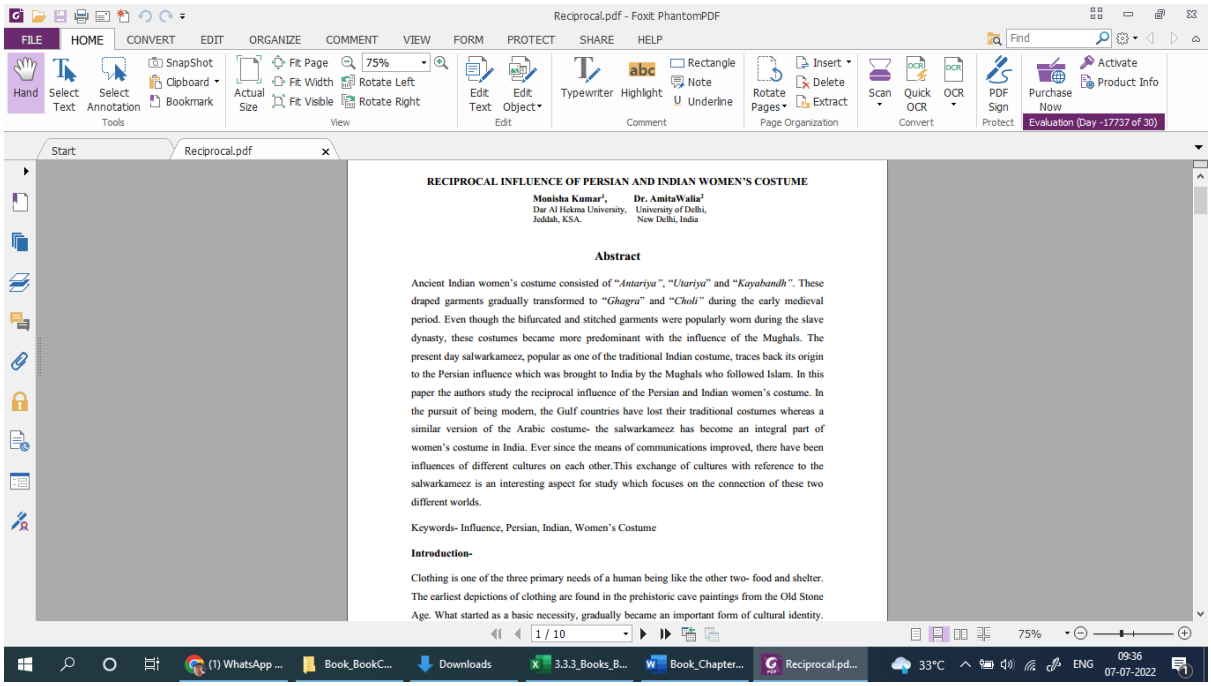
The turmeric (Curcuma longa) belongs to Zingiberaceae family and is distributed throughout tropical and subtropical region of the world. India is the world's largest producer of turmeric, contributing nearly 90% of the total production. The many different traditional healing systems, such as Ayurveda, Sidha, Unani and Tibetan have incorporated the use of turmeric in their practices (Ravindran et al, 2007).

Two active components of turmeric are the volatile oil and the curcuminoids (pigments) and both are present in oleoresin extracted from the turmeric root. The aroma of this spice is principally derived from α- and β- turmerones and ar-turmerone (Ravindran et al, 2007 and Siviero et al, 2015).

Monisha Kumar **and Amita Walia** **(Conference paper) 2016**
Elucidation of the Indian Salwar Kameez
2nd International Conference on Advances in Education & Social Sciences



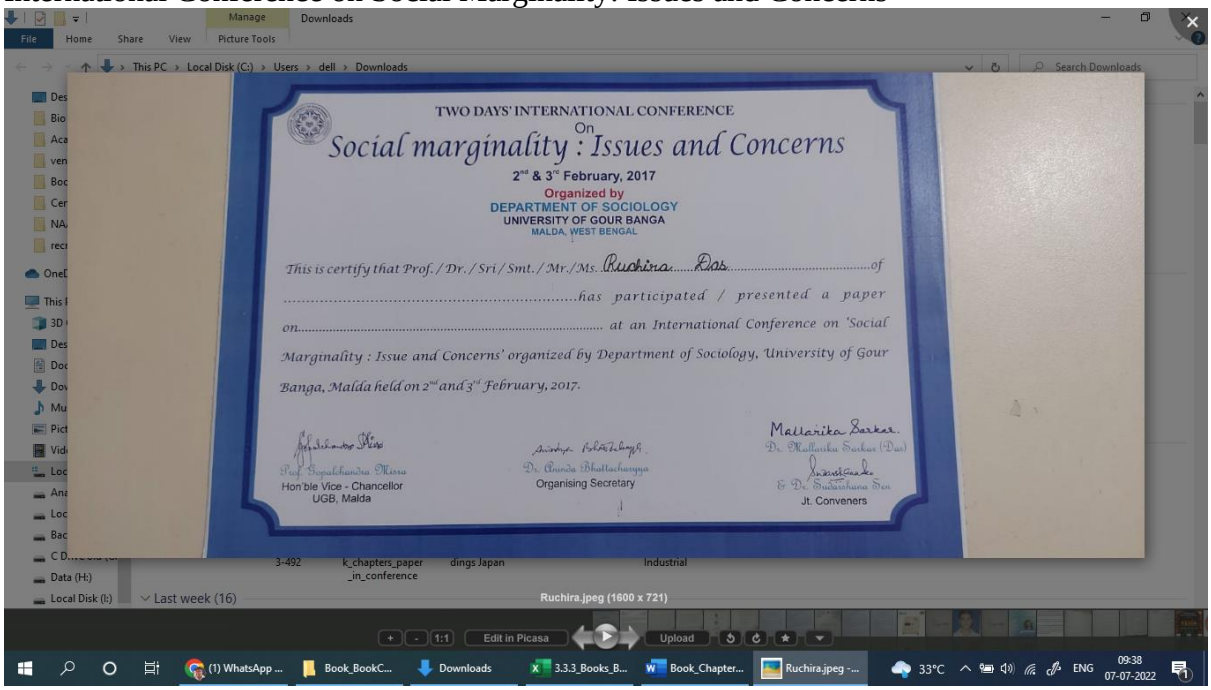
Monisha Kumar **and Amita Walia** **(Conference paper) 2016**
Reciprocal Influence of Persian & Indian Women's Costume'
2nd International Conference on Advances in Education & Social Sciences



Ruchira Das (Conference paper) 2016

'Education as a Mediator of Identity in the City: Dilemmas of Aspirations and Choices among the Migrant Santals of Kolkata'

International Conference on Social Marginality: Issues and Concerns



Shumaila Naaz, Verma V, **Jyoti Dalal and Jyoti Aggarwal (Conference Paper) 2016**
Deconstructing gender: Examining stereotypes woven around clothing amongst Indian women
1st International Conference VIGYA 2016 on women and gender studies

St. Xavier's College

Deconstructing Gender: Examining Stereotypes Woven around Clothing amongst Indian Women

Ms. Shumaila Naaz
Assistant Professor
Department of Fabric and Apparel Science (Home Science)
Institute of Home Economics

Ms. Vasundhara Verma
M.Sc Research Scholar
Department of Fabric and Apparel Science
Institute of Home Economics

Dr. Jyoti Dalal
Assistant Professor
Department of Elementary Education
Institute of Home Economics

Dr. Jyoti Aggarwal
Associate Professor
Department of Fabric and Apparel Science (Home Science)
Institute of Home Economics

ABSTRACT

Clothes are very important element of human life which is an integral part allied with our feeling and characters in day to day life. The study of dress has always been considered a very complex, area of clothing, and fashion has always been of great interest to the researchers. This study aims to understand how gender, identity and society affect our clothing perception associated with the clothes worn by the girls. The difference in the way younger and older people perceive clothes has been explored in the study.Gender does not stand in vacuum and shares an intricate linkage with the other identities that can traced on caste, class, religion and region. Stereotypes are woven around clothing. Clothing is symbolic and has whole lot of connotations around various social identities.

Keywords: Gender, Society, Elderly, Young girls, Clothes

INTRODUCTION

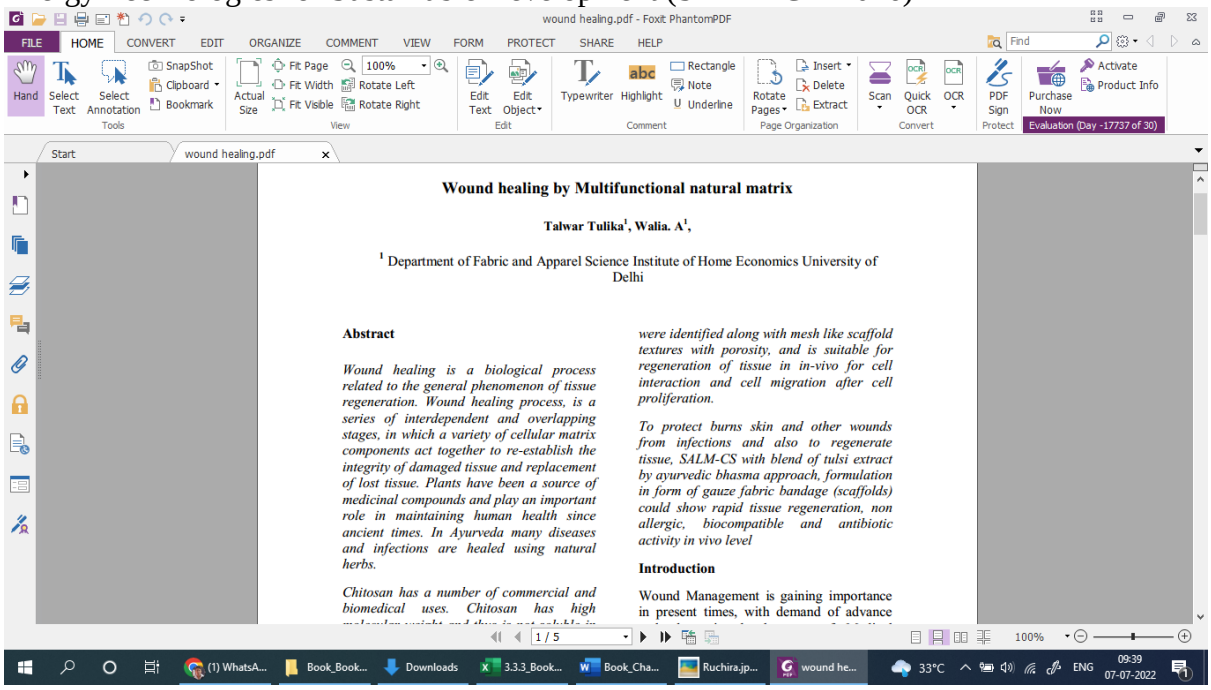
Gender is a social, psychological, and cultural construct. Our reason to polarize gender is influenced by sex, that is, the biological dichotomy of male and female. The biological continuum of genes, chromosomes, hormones, and reproductive physiology helps produce a script for appearing and behaving male and female. Viewing gender as a fluid concept allows scholars studying clothing and appearance to understand gender relations as more than men and women "dressing their parts" (Michelman and Kaiser 2000). Gendered dressing is more than complementary role-playing; power relations are inextricably involved. Otherwise, women's adoption of trousers represents an important readjustment of the definition of femininity, but not necessarily a change in the existing balance of power (Paoletti and Kregloh 1989). Clothing is one of the most personal components of our daily life, and at the same time it is an expression of social activities deeply embedded in the cultural background of the wearer. People perceive a clothing stimulus in different ways and they interpret its meaning according to associations they have learned to make with it over a period of time (Horn, 1981). The way we perceive clothes for self or others is depended upon our psychological makeup. And this psychological makeup differs from individual to individual and depends upon values, interest, conformity, location and most importantly self concept. In psychological terms, clothing is both stimulus and response.

A person's sex is determined on the basis of primary sex characteristics, the anatomical traits essential to reproduction. This is a generic term used by the medical profession to classify people with some mixture of male and female biological characteristics (Newman 2002). Parents, with the help of professionals in the medical field, make the decision to assign their child to be recognized as either male or female. One of the critical cues that these parents would use is dressing the baby in clothing appropriate to its assigned gender.

Color is a cue that effects how people interact with a child. The response of others to gender-specific colors of attire encourage what is socially designated as gender-appropriate behavior by that child (Stone 1962). Stone observed that dressing a newborn in either blue or pink begins a series of interactions. Gender-specific attire enhances the internalization of expectations for gender-specific behavior. Through the subtle and frequently nonverbal interactions with children regarding both their appearance and behavior, parents either encourage or discourage certain behaviors often related to dress that lead to a child's development of their gender identity. When a boy decides he wants to play dress-up in skirts or makeup or a daughter chooses to play aggressive sports only with the boys, it would not be surprising to find the parents redirecting the child's behavior into a more socially "acceptable" and gender-specific activity. Even the most liberal and open-minded parents can be threatened by their child not conforming to appropriate gender behaviors. Research has shown that children as young as two years of age classify people into gender categories based on their appearance (Weinraub et al. 1984).

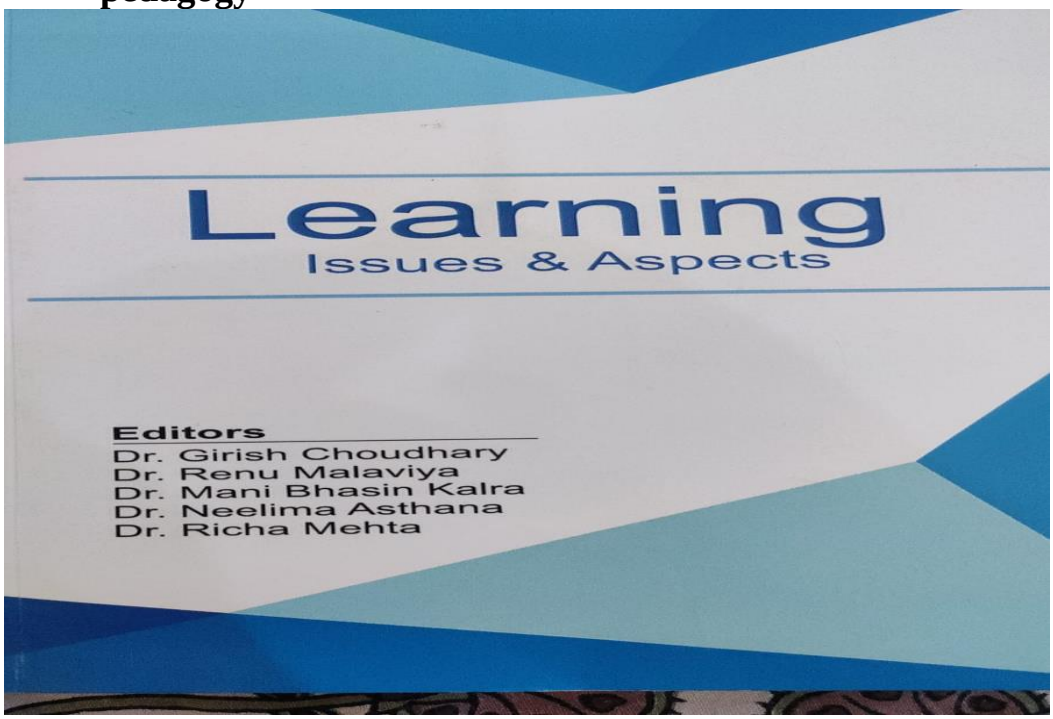
Feinberg R. et al., in a study carried out in 1992, tried to find out a correlation between the ideas with which a person wear clothes and how they are perceived by others. It was found out that clothing may have meaning, but the relationship between clothing, its meaning,

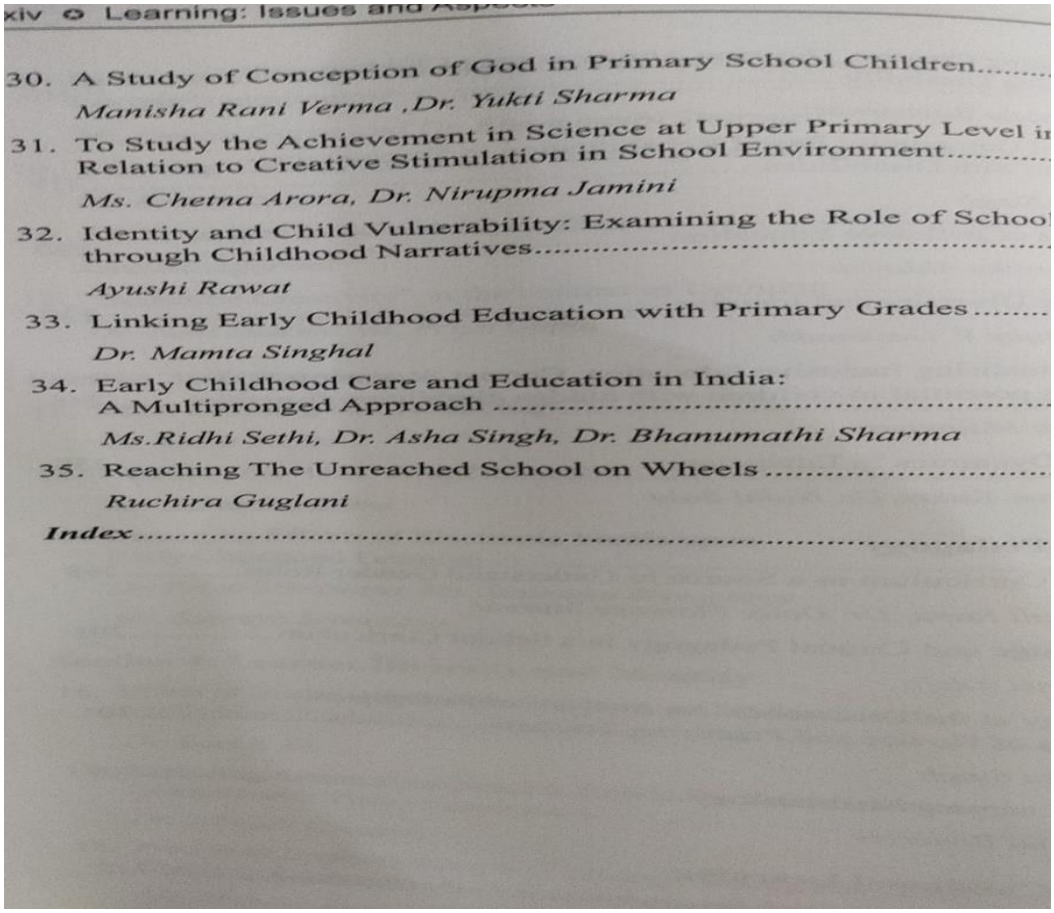
Tulika Talwar and **Amita Walia** **(Conference paper) 2016**
Wound Healing by Multifunctional Natural Matrix
International Conference on Natural/Applied Sciences, Environmental Engineering & Clean Energy Technologies for Sustainable Development (SYNERGY-2016)



Singhal, M (Book Chapter) 2016

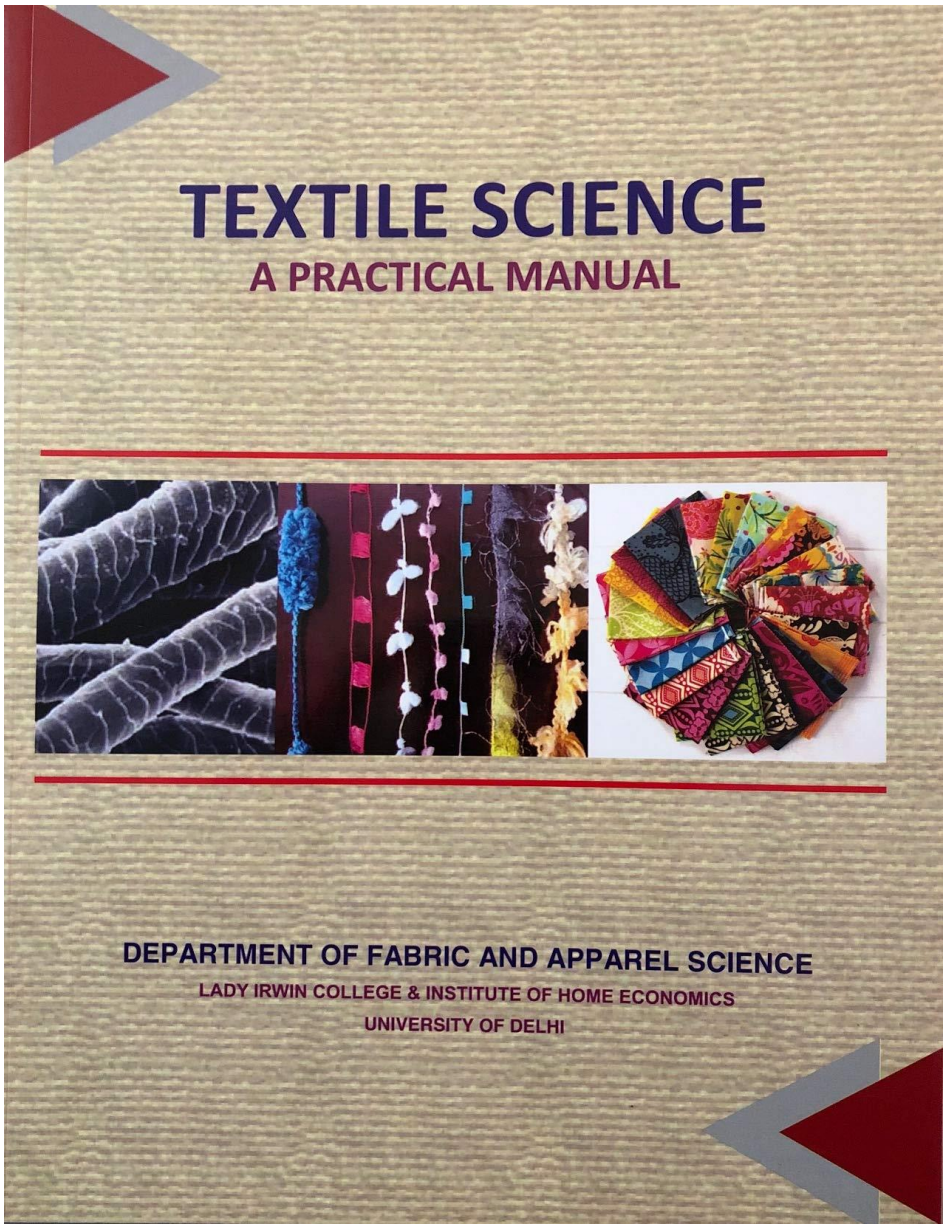
- Linking Early Childhood Education with primary grades **In learning and pedagogy**





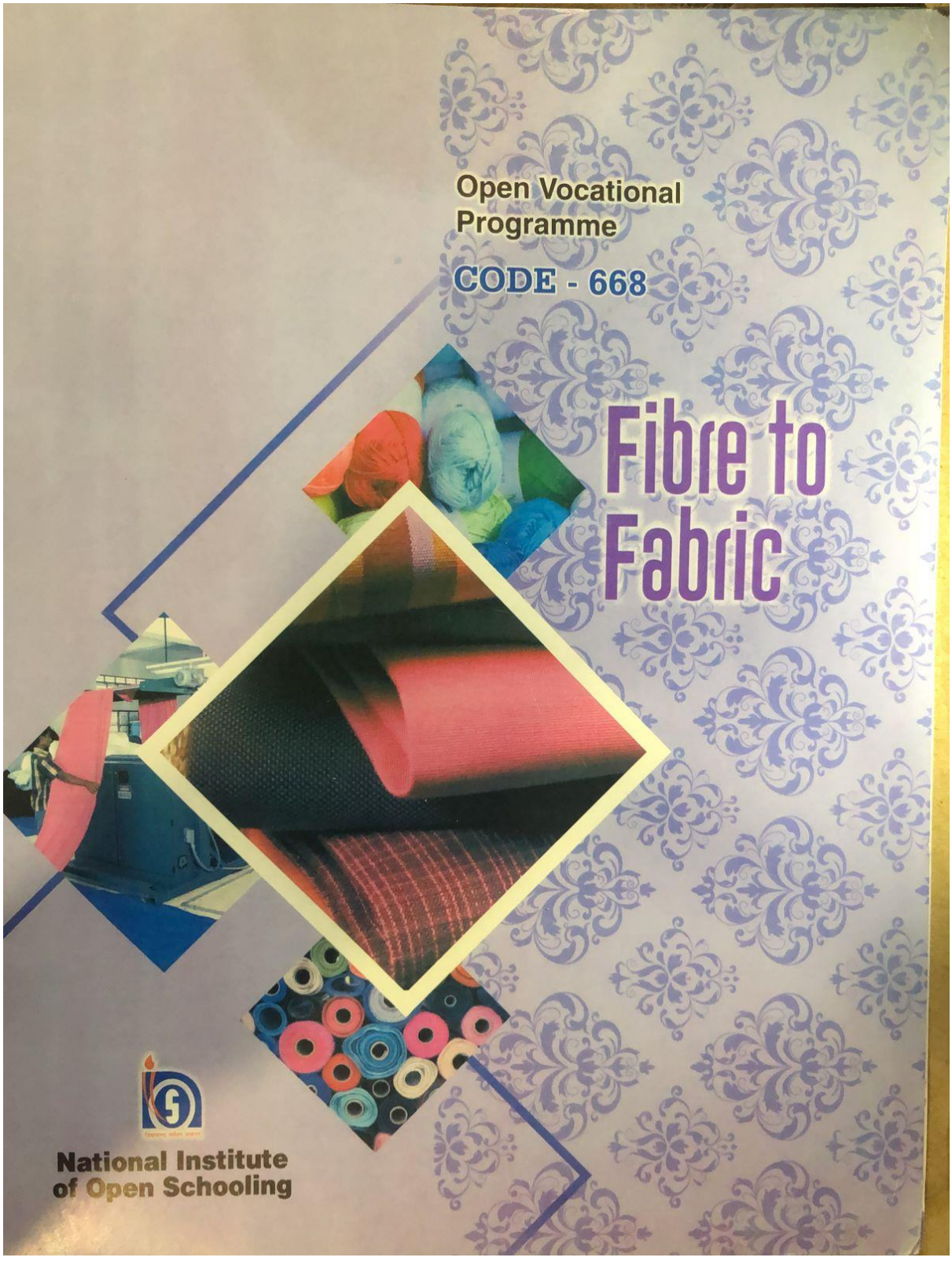
Rastogi, D, **Chanchal,** Chopra, S. Arora, C **(Book) 2016**

- **Textile Science A Practical Manual**



Walia A (Book) 2016

- **Fibre to Fabric**



Acknowledgement

Advisory Committee	
Chairman, National Institute of Open Schooling, NOIDA, Uttar Pradesh	Director (Vocational Department) National Institute of Open Schooling NOIDA, Uttar Pradesh

Course Curriculum Committee			
Dr. Swapna Mishra Director, Sector Skill Council, Textiles, New Delhi	**Ms. Jyotsna Kapur** Secretary, All India, Women's Educational Fund Association (AIWEFA), New Delhi	**Prof. Promil Pande** Prof. and Dean, School of Fashion and Design, GD Goenka University	**Mr. Vikash Kumar** Assistant Director Weaver Service Centre, New Delhi
Dr. Swarnima Singh Lecturer, Satyam Fashion Institute, NOIDA	**Ms. Navya Agarwal** Entrepreneur, Product and Graphic Designer, Sitapur Uttar Pradesh	**Dr. Bhupinder Kaur** Assistant Professor, Institute of Home Economics, University of Delhi	**Ms. Vandana Jaglan** Assistant Professor, Satyam Fashion Institute, NOIDA
Dr. Amita Walia Assistant Professor& HOD, Department of Fabric & Apparel Science, Institute of Home Economics, University of Delhi		**Dr. Simmi Bhagat** Associate Professor, Department of Fabric and Apparel Science Lady Irwin College, University of Delhi	
Dr. Mamta Srivastava Deputy Director Vocational Department, NIOS	**Dr. Sandhya Kumar** Dy. Director (Academic Department), NIOS	**Ms. Anitha Nair** Deputy Director Vocational Department, NIOS	
Dr. Praveen Chauhan Assistant Director (Academic) Vocational Department, NIOS		**Ms. Asheema Singh** Project Coordinator AEP, UNFPA, NIOS	

Lesson Writers	
Dr. Bhupinder Kaur Assistant Professor **Ms. Deepti Sethi** Assistant Professor **Ms. Simran Kaur** Assistant Professor	**Dr. Harshita Chaudhary** Assistant Professor **Ms. Shumaila Naaz** Assistant Professor **Ms. Divyansha Sharma** Research Scholar
(All experts from Department of Fabric and Apparel Science, Institute of Home Economics, University of Delhi.) **Dr. Anjana Agarwal** Senior Executive Officer, NIOS	

Editor	Course Coordinator
Dr. Amita Walia Assistant Professor & HoD, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.	**Dr. Sandhya Kumar** Deputy Director National Institute of Open Schooling, NOIDA, UP

Graphic Artist

Ms. Deepti Sethi, Assistant Professor, Department of Fabric and Apparel Science Institute of Home Economics, University of Delhi.

Typesetting and Cover Design

Multi Graphics

Vaid N, Tomar YA Puri N **(Book) 2016**

- **Home Science Class XII**