## **Call for Editorial Board Members**

As you are well aware that we are a medical and health sciences publishers; publishing peer-reviewed journals and books since 2004.

We are always looking for dedicated editorial board members for our journals. If you completed your master's degree and must have at least five years experience in teaching and having good publication records in journals and books.

If you are interested to be an editorial board member of the journal; please provide your complete resume and affiliation through e-mail (i.e. info@ rfppl.co.in) or visit our website (i.e. www.rfppl.co.in) to register yourself online.

#### Call for Publication of Conference Papers/Abstracts

We publish pre-conference or post-conference papers and abstracts in our journals, and deliver hard copy and giving online access in a timely fashion to the authors.

For more information, please contact:



#### Free Announcements of your Conferences/Workshops/CMEs

This privilege to all Indian and other countries conferences organizing committee members to publish free announcements of your conferences/ workshops. If you are interested, please send your matter in word formats and images or pictures in JPG/JPEG/Tiff formats through e-mail attachments to sales@rfppl.co.in.

#### Terms & Conditions to publish free announcements:

- 1. Only conference organizers are eligible up to one full black and white page, but not applicable for the front, inside front, inside back and back cover, however, these pages are paid.
- 2. Only five pages in every issue are available for free announcements for different conferences.
- 3. This announcement will come in the next coming issue and no priority will be given.
- 4. All legal disputes subject to Delhi jurisdiction only.
- 5. The executive committee of the Red Flower Publication reserve the right to cancel, revise or modify terms and conditions any time without prior notice.

For more information, please contact: A Lal Publication-in-charge Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi – 110 091 (India) Phone: 91-11-79695648 E-mail: info@rfppl.co.in

#### Win Free Institutional Subscription!

Simply fill out this form and return scanned copy through e-mail or by post to us.

Name of the Institution
Name of the Principal/Chairman
Management (Trust/Society/Govt./Company)
Address 1
Address 2
Address 3
City
Country
PIN Code
Mobile
Email

We are regular subscriber of Red Flower Publication journals.

Year of first subscription\_\_\_\_

List of ordered journals (if you subscribed more than 5 titles, please attach separate sheet)

#### Ordered through

Name of the Vendor	Subscription Year	Direct/subs Yr

#### Name of the journal for which you wish to be free winner

Terms & Conditions to win free institutional subscription

- 1. Only institutions can participate in this scheme
- 2. In group institutions only one institution would be winner
- 3. Only five institutions will be winner for each journal
- 4. An institution will be winner only for one journal
- 5. The free subscription will be valid for one year only (i.e. 1 Jan 31 Dec)
- 6. This free subscription is not renewable, however, can be renewed with payment
- 7. Any institution can again participate after five years
- 8. All legal disputes subject to Delhi jurisdiction only
- 9. This scheme will be available to participate throughout year, but draw will be held in last week of August every year
- 10. The executive committee of the Red Flower Publication reserve the right to cancel, revise or modify terms and conditions any time without prior notice.

I confirm and certify that the above information is true and correct to the best of my knowledge and belief.

Place:

Signature with Seal

Date:

Revised Rates for 2023 (Institutional)		I 1' (INID)		Outside	Outside
	Frequency	India(INK) Print Only	India(INK) Online Only	India(USD)	India(USD)
Title of the Journal		Thin Only	Online Only	Print Only	Online Only
Community and Public Health Nursing	Triannual	6500	6000	507.81	468.75
Indian Journal of Agriculture Business	Semiannual	6500	6000	507.81	468.75
Indian Journal of Anatomy	Quarterly	9500	9000	742.19	703.13
Indian Journal of Ancient Medicine and Yoga	Quarterly	9000	8500	703.13	664.06
Indian Journal of Anesthesia and Analgesia	Bi-monthly	8500	8000	664.06	625
Indian Journal of Biology	Semiannual	6500	6000	507.81	468.75
Indian Journal of Cancer Education and Research	Semiannual	10000	9500	781.25	742.19
Indian Journal of Communicable Diseases	Semiannual	9500	9000	742.19	703.13
Indian Journal of Dental Education	Quarterly	6500	6000	507.81	468.75
Indian Journal of Diabetes and Endocrinology	Ouartorly	9000	8500	1054.60	1015 62
Indian Journal of Energency Medicine and Pathology	Quarterly	13300	16500	1004.09	1289.06
Indian Journal of Forensic Odontology	Semiannual	6500	6000	507.81	468 75
Indian Journal of Genetics and Molecular Research	Semiannual	8000	7500	625	585.94
Indian Journal of Law and Human Behavior	Semiannual	7000	6500	546.88	507.81
Indian Journal of Legal Medicine	Semiannual	9500	9000	742.19	703.13
Indian Journal of Library and Information Science	Triannual	10500	10000	820.31	781.25
Indian Journal of Maternal-Fetal & Neonatal Medicine	Semiannual	10500	10000	820.31	781.25
Indian Journal of Medical and Health Sciences	Semiannual	8000	7500	625	585.94
Indian Journal of Obstetrics and Gynecology	Quarterly	10500	10000	820.31	781.25
Indian Journal of Pathology: Research and Practice	Triannual	13000	12500	1015.63	976.56
Indian Journal of Plant and Soil	Semiannual	7500	7000	585.94	546.88
Indian Journal of Preventive Medicine	Semiannual	8000	7500	625	585.94
Indian Journal of Research in Anthropology	Semiannual	13500	13000	1054.69	1015.63
Indian Journal of Surgical Nursing	Triannual	6500	6000	507.81	468.75
Indian Journal of Trauma and Emergency Pediatrics	Quarterly	10500	10000	820.31	781.25
Indian Journal of Waste Management	Semiannual	10500	10000	820.31	781.25
International Journal of Food, Nutrition & Dietetics	Triannual	6500	6000	507.81	468.75
International Journal of Forensic Science	Semiannual	11000	10500	859.38	820.31
International Journal of Neurology and Neurosurgery	Quarterly	6500	6000	898.44 E07.81	809.68 469.7E
International Journal of Political Science	Semiannual	7000	6500	546.88	400.75
International Journal of Practical Nursing	Triannual	6500	6000	507.81	468 75
International Physiology	Triannual	8500	8000	664.06	625
Journal of Aeronautical Dentistry	Ouarterly	8000	7500	625	585.94
Journal of Animal Feed Science and Technology	Semiannual	9000	8500	703.13	664.06
Journal of Cardiovascular Medicine and Surgery	Quarterly	11000	10500	859.38	820.31
Journal of Emergency and Trauma Nursing	Semiannual	6500	6000	507.81	468.75
Journal of Food Additives and Contaminants	Semiannual	6500	6000	507.81	468.75
Journal of Food Technology and Engineering	Semiannual	6000	5500	468.75	429.69
Journal of Forensic Chemistry and Toxicology	Semiannual	10500	10000	820.31	781.25
Journal of Global Medical Education and Research	Semiannual	7000	6500	546.88	507.81
Journal of Global Public Health	Semiannual	13000	12500	1015.63	976.56
Journal of Microbiology and Related Research	Semiannual	9500	9000	742.19	703.13
Journal of Nurse Midwifery and Maternal Health	Triannual	6500	6000	507.81	468.75
Journal of Orthopedic Education	Triannual	6500	6000	507.81	468.75
Journal of Pharmaceutical and Medicinal Chemistry	Semiannual	17500	17000	1367.19	1328.13
Journal of Plastic Surgery and Transplantation	Semiannual	27500	27000	2148.44	2109.38
Journal of Psychiatric Nursing	Triannual	6500	6000	507.81	468.75
Journal of Radiology	Semiannual	9000	8500	703.13	664.06
Journal of Social Welfare and Management	Quarterly	8500	8000	664.06	625
	Quarterly	7000	6500	703.13	507.81
De distaine E duration and Bernande	Orrententer	2000	8000	340.00	507.81
Pediatrics Education and Research	Quarterly	8500	8000	664.06	625
Physiotherapy and Occupational Therapy Journal	Quarterly	7000	9500	781.25	742.19
RFP Gastroenterology International	Semiannual	12500	6500	346.88	507.81
REP Indian Journal of Modical Parchister	Semiannual	12200	13000	702.12	1013.03
REP Journal of Biochemietry and Biophysics	Semiannual	9000 8000	7500	625	585.94
RFP Journal of Dermatology	Semiannual	6500	6000	507.81	468 75
RFP Journal of ENT and Allied Sciences	Semiannual	6500	6000	507.81	468.75
RFP Journal of Gerontology and Geriatric Nursing	Semiannual	6500	6000	507.81	468.75
RFP Journal of Hospital Administration	Semiannual	8000	7500	625	585.94
Urology, Nephrology and Andrology International	Semiannual	8500	8000	664.06	625

Terms of Supply:

Terms of Supply:
 Agency discount 12.5%. Issues will be sent directly to the end user, otherwise foreign rates will be charged.
 All back volumes of all journals are available at current rates.
 All journals are available free online with print order within the subscription period.
 All journals are not accepted orders once processed.
 Demand draft/cheque should be issued in favour of "Red Flower Publication Pvt. Ltd." payable at Delhi.
 Full pre-payment is required. It can be done through online (http://rfppl.co.in/subscribe.php?mid=7).
 No claims will be entertained if not reported within 6 months of the publishing date.
 Orders and payments are to be sent to our office address as given below.
 Postage & Handling is included in the subscription rates.
 Subscription period is accepted on calendar year basis (i.e. Jan to Dec). However orders may be placed any time throughout the year.

#### Order from

Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India) Mobile: 8130750089, Phone: 91-11-79695648 E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

# International Journal of Food, Nutrition and Dietetics

**Editor-in-Chief** 

Indresh Kumar

All India Institute of Medical Sciences, Bhopal, Madhya Pradesh Former Editor-in-Chief

Balwinder Sadana, Ludhiana, Punjab

#### **International National Editorial Board**

Alaa Jabbar Al-Manhel, Iraq Samrita Dogra, USA Bala Sundaram Muthuvenkatachalam, Malaysia

National Editorial Board

E Lakshmi, Kattankulathur Ajay Desai, Maharashtra K. Silambu Selvi, Chennai Meena Goswami Awasthi, Mathura Ruma Bhattacharyya, Jorhat Keshav Kamaliya, Gujarat TP Mall, Bahraich Vijaya M Nalwade, Prabhani Dt. Swapan Banerjee, West Bengal, India

Managing Editor: A. Lal

Publication Editor: Dinesh kumar kashyap

**International Journal of Food, Nutrition & Dietetics (IJFND) (pISSN 2322-0775; eISSN: 2455-569X),** a broad-based peer-reviewed journal publish the most exciting researches with respect to the subjects of nutrition and food sciences. The journal covers current thinking on food and nutrition emphasizing the practical and social application of ideas. Special editions focusing on topics including micronutrients, special diets for management of health problems and cost sector catering provide readable content that is an invaluable resource for practitioners and academics wishing to inform themselves, their colleagues, or the public on modern thinking, research, and attitudes to food and nutrition.

**Readership:** Academics and researchers in the field, Dietitians, Food company managers, Food research institutes, Health care professionals, Nutritionists.

**Indexing Information:** Index Copernicus, Poland; Genamics JournalSeek; Gaudeamus Academia; Science Library Index; International Committee of Medical Journal Editors (ICMJE).

**For all other quiries** Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091 (India), Phone: 91-11-79695648, Fax: 91-11-22754205, E-mail: info@rfppl.co.in, Web:www.rfppl.co.in

**Disclaimer** The opinion in this publication is those of the authors and is not necessarily those of the International Physiology the Editor-in-Chief and Editorial Board. Appearance of an advertisement does not indicate International Physiology approval of the product or service.

© Red Flower Publication Pvt. Ltd. 2023 All rights reserved. No part of the journal may be reproduce, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of the New Indian Journal of Surgery.

Printed at Saujanya Printing Press, D-47, Okhla Industrial Area, Phase-1, New Delhi - 110 020.

**International Journal of Food, Nutrition & Dietetics (IJFND) (pISSN: 2322-0775, eISSN: 2455-569X),** a broad-based peer-reviewed journal publish the most exciting researches with respect to the subjects of nutrition and food sciences. The journal covers current thinking on food and nutrition emphasizing the practical and social application of ideas. Special editions focusing on topics including micronutrients, special diets for management of health problems and cost sector catering provide readable content that is an invaluable resource for practitioners and academics wishing to inform themselves, their colleagues, or the public on modern thinking, research, and attitudes to food and nutrition.

**Readership:** Academics and researchers in the field, Dietitians, Food company managers, Food research institutes, Health care professionals, Nutritionists.

**Indexing Information:** Genamics JournalSeek Gaudeamus Academia, Science Library Index, International Committee of Medical Journal Editors (ICMJE).

Subscription Information for the year 2023
India
Institutional (1 year) (Print+Online): INR 6500
Rest of the World
Insitutional (1 year) (Print+Online): USD 507.31
Payment instructions
Online payment link:
http://rfppl.co.in/payment.php?mid=15
Chaqua/DD:
Please send the US dellar check from outside India and INR check from India made
Payahla to 'Bod Elayyar Bublication Drivate Limited' Draym on Dolhi branch
Tayable to Keu Flower Fublication Fitvate Linited . Drawn on Denii branch
Wire transfer/NEFT/RTGS:
Complete Bank Account No. 604320110000467
Beneficiary Name: Red Flower Publication Pvt. Ltd.
Bank & Branch Name: Bank of India; Mayur Vihar
MICR Code: 110013045
Branch Code: 6043
IFSC Code: BKID0006043 (used for RTGS and NEFT transactions)
Swift Code: BKIDINBBDOS
Subscription and Marketing Manager
Red Flower Publication Pvt. Ltd.
48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi - 110 091(India),
Phone: 91-11-79695648, E-mail: sales@rfppl.co.in, Website: www.rfppl.co.in

# International Journal of Food, Nutrition and Dietetics

Volume 11 Number 2 May – August 2023

# Contents Review Articles Impact of Late Night Eating Habits on Health: An Illumination Madhulika Gautam, Sneha Pandey 49 Training Needs of Hortipreneurs in UK Arpita S. Kandpal, Kritika Pant 57 The Role of Pulses in Building a Suitable & Sustainable Future Madhu 67 Guidelines for Authors 75

Red Flower Publication (P) Ltd.		21. Recent Advances in Neonatology (2020) Dr. T.M. Ananda Kesman	INR 845/USD66
Presents its Book Publications for sale		22. Shipping Economics (2018) $D_{F}$ $D$ $A_{midded}$	INR347/ISD45
<b>1. Beyond Medicine: A to E for Medical Professionals) (2020)</b> <i>Kalidas Chavan</i>		23. Skeletal and Structural Organizations of Human Body (2019)	INR659/USD51
INR390/USD31		24. Statistics In Genetic Data Analysis (2020)	
2. Diostatistical Methous For Inteutoal Research (2019) Sanjeev Sarmukaddam	INR549/USD44	S. Venkatasubramanian 25. Symmets of A meetheeia (2019)	INR299/USD23
<b>3. Breast Cancer: Biology, Prevention And Treatment (2015)</b> Dr. A. Ramesh Rao	INR 395/USD31	Dr. Lalit Gupta	INR1195/USD75
4. Chhotanagpur A Hinterland of Tribes (2020)		26. A Handbook of Outline of Plastic Surgery Exit Examination (2022) Prof Ravi Kumar Chiltoria & Dr. Saurabh Gupta	INR 498/USD 38
Ambrish Gautam 5. Child Intelligence (2004)	NZCIEN /NEZNINI	27. An Introductory Approach to Human Physiology (2021) Satuaiit Tripathu, Barsha Dasssarma, Motlalpula Gibert Matsabisa	INR 599/USD 46
Dr. Rajesh Shukla, Md, Dch. 6. Clinical Applied Physiology and Solutions (2020)	INR100/ USD50	28. Biochemical and Pharmacological Variations in Venomous Secretion of Toad (Bufo melanostictus)(2021)	
Varun Malhotra	INK263/USD21	Dr. Thirupathi Koila & Dr. Venkaiah Yanamala	INR 325/USD26
7. Comprehensive Medical Pharmacology (2019) Dr. Ahmad Najmi	INR599/USD47	29. Climate, Prey & Predator Insect Poupulation in Bt Cotton and Non-Bt Cotton Agriculture Feilds of Warangal District (2022)	
8. Critical Care Nursing in Emergency Toxicology (2019) Virekanshu Verma	INR460/USD34	Dr. Peesari Laxman, Ch. Sammaiah	INR 325/USD26
9. Digital Payment (Blue Print For Shining India) (2020)		30. Community Health Nursing Record Book Volume – 1 & 11 (2022) Ritika Rocque	1NR 999/USD 79
Dr. Bishnu Prasad Patro	INR329/USD26	31. Handbook of Forest Terminologies (Volume I & II) (2022)	
10. Drugs in Anesthesia (2020) R. Varaprasad	INR449/USD35	Dr. C.N.Hari Prasath, Dr. A. Balasubramanian, Dr. M. Stoaprakash, V. Manimaran, Dr. G. Stoathiga	NR 1325/USD 104
11. Drugs In Anesthesia and Critical Care (2020) Dr. Bhavna Gupta	INR595/USD46	32. MCQs of Biochemistry(2022) Sachin C. Narwadiwa. Dr. Irfana Beeum	INR 399/USD 49
12. MCQs in Medical Physiology (2019)		33. Newborn Care in the State of Uttar Pradesh(2022)	
Dr. Bharati Mehta	INR300/ USD29	Dr. Tridibesh Tripathy	INR 545/USD 42
<ol> <li>MCQs in Microbiology, Biotechnology and Genetics (2020) Biswajit Batabyal</li> </ol>	INR285/USD22	34. Osteoporosis: Weak Bone Disease(2022) Dr. Dondeti Uday Kumar & Dr. R. B. Uppin	INR 399/USD49
<ol> <li>MCQs In Minimal Access and Bariatric Surgery (2nd Edition) (2020) Anshuman Kaushal</li> </ol>	INR545/USD42	35. Quick Updates in Anesthesia(2022) Dr. Rupinder Kaur Kaiche, Dr. Vidhnadhar Modak, Dr. Shilpa Sannakki	
15. Patient Care Management (2019)	of Col Monordina	& Dr. Vivek Gupta	INR 599/USD 44
A.N. Monuuuni 6 Dedistrice Comnanion (2001)	orden keennit	36. Lextbook of Practice of Medicine with Homoeopathic Theraneutics(2023)	
Rajesh Shukla	INR 250/USD50	Dr. Pramod Kumar	NR 1325/USD104
17. Pharmaceutics-1 (A Comprehensive Hand Book) (2021) V. Sandhiya	INR525/ USD50	37. Trends in Anthropological Research(2022) Dr. Jyoti Ratan Ghosh,Dr. Rangya Gachui	INR 399/USD 49
18. Poultry Eggs of India (2020)			;
Frightin K. Mohanty 0 Besetisch Emersons Transce Traisofters Corre World Encl. (2010)	nerren haennit	Order from: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocke	t-II,
Dr. Vractical Entergency Italuna Toxicology Cases VOIRMOUN (2017) Dr. Vivekanshu Verma, Dr. Shiv Rattan Kochar, Dr. Devendra Richhariya	INR395/USD31	Mayur Vinar Friase-1, Deuri - 110 021(1101a), Mioure: 0100/0005/ Phone: 91-11-79695648, E-mail: info@rfppl.co.in, Website: www.rfppl.cc	ui
20. Practical Record Book of Forensic Medicine & Toxicology (2019) Dr. Akhilesh K. Pathak	INR299/USD23		
LT: INHILESH IN: I WHIMIN			

#### Impact of Late Night Eating Habits on Health: An Illumination

Madhulika Gautam<sup>1</sup>, Sneha Pandey<sup>2</sup>

#### How to cite this article:

Madhulika Gautam, Sneha Pandey/Impact of Late Night Eating Habits on Health: An Illumination/Int J Food Nutr Diet. 2023;11(2):49–53.

#### Abstract

The time of food intake and its implications on health have recently been studied by several researchers. This implies that eating habits and health may depend on both when and what people consume. Although there isn't a set time for when you should stop eating at night, several studiestry to find better food habits. The objectives of the present study are to find the impact of late light eating through secondary data. Thisnarrative review based study has included research papers published from September 2017 to August 2022 (the previous 5 years). The English language articles were retrieved from NCBI electronic library. Overall 26 research articles are included in the study out of the articles 86 were fully studied. The findings of the current study indicate that eating late at night may cause acid reflux and have a detrimental impact on the control of blood sugar, blood pressure, and weight. Poor eating choices could be one of several possible causes of this. There is conflicting evidence on the ideal time to cease eating at night. Others contend that eating according to the body clock is preferable to intermittent fasting, which is used as a guide in some research.

**Keywords:** Late night eating; Healthy eating; Eating schedule; Healthy practices; Health & food.

Corresponding Author: Madhulika Gautam, Associate Professor, Department of Home Science, Dayalbagh Educational Institute (Deemed University), Agra 282005, Uttar Pradesh, India. E-mail: malika1204@hotmail.com Received on: 24.02.2023

Accepted on: 03.03.2023

#### **INTRODUCTION**

Many people eat late at night due to their hectic lifestyle and coming from the office late at night. There are many disadvantages of eating food late at night. Its effect is visible on weight, apart from this, this routine is also not good for heart health.<sup>1</sup> Eating late at night can lead to many health related risks like increased blood sugar levels, obesity, and heart disease. Let us tell what are the disadvantages of eating late night food and if it is a compulsion to do so then what should be taken care of.<sup>2</sup>

In today's lifestyle, most people are victims of

Author Affiliation: <sup>1</sup>Associate Professor, Department of Home Science, Dayalbagh Educational Institute (Deemed University), Agra 282005, Uttar Pradesh, India, <sup>2</sup>Department of Home Science, Gangotri Devi Mahila Mahavidyala, Gorakhpur 273010, Uttar Pradesh, India.

some disease, the biggest reason for which is the habit of eating late at night.<sup>3</sup> Eating late at night can make a victim of many diseases. Because eating food late at night weakens the digestive power. Due to this, the food is not digested properly and an excess amount of fat starts accumulating in the body.<sup>2</sup> Which invites many diseases. Please tell us that it takes 3-4 hours for the food to be digested. But at night most people go to sleep immediately after the meal, due to which they become victims of many diseases. Let us know what are the disadvantages of eating late night food.<sup>4</sup>

It is said that dinner should be light, that is, those things should be eaten at night which are digestible. But that does not mean that should not eat dinner only. Many times weight conscious and health conscious people stop eating dinner. If also do this, then handle this habit from now on. Even if eat something light at the place of dinner, do not go hungry. Skipping dinner not only makes you weak but can also disturb other health related problems.<sup>5</sup>

According to author Courtney Peterson of the Pennington Biomedical Research Center in the US, if people eat something in small amounts for a long time, then it can help them in losing weight. According to him, by adopting such a routine, the human body's metabolism is also fine. Apart from this, Dale Scholar of the Research Center also claims that a new study has revealed that eating food early in the morning is good for metabolism. The new research was brought up at the Obesity Society's annual convention in the US city of Louisiana.

Because the late-night eating habit is increasing in most families, therefore it is necessary to study at the time of eating. The main objective of this study finds the published study related to late-night eating and its health impact.

#### METHODOLOGY

This article is based on narrativereview methods and articles were selected from NCBI electronic library. Only the English language and peer review refereed journal articles were included in this study. Thisnarrative review based study has included research papers published from September 2017 to August 2022 (the previous 5 years) and the study was carried out from September to October 2022.

#### **RESULT AND DISCUSSION**

There has been discussion on when to finish eating during the day for a while.<sup>5</sup> When someone stops eating is influenced by a variety of factors, including appetite, habits, culture, work schedules, individual preferences, and social contexts.<sup>6</sup> For the majority of people, the main worry is that eating late can lead to weight gain. Everyone has an opinion about when to stop eating, but you might be wondering if any of these opinions are supported by studies. The health repercussions of eating late at night are discussed in this article along with the ideal time to cease eating.<sup>7</sup>

#### Circadian rhythm

The 24 hours frame clock, additionally referred to as circadian rhythm, may also impact the first class time to consume primarily based totally on its consequences on starvation, nutrient absorption, insulin sensitivity, and metabolism.<sup>6</sup>

To a healthy frame clock, the advocated ingesting window is much less than or identical to eight 12 hours an afternoon, for the duration of daylight hours. Eating out of doors of this window may also lead frame to method energy much less efficiently, which may also make contributions to weight gain. One takes a look at observed that once mice had been fed an excessive fats meal consistent with their circadian rhythm, they'd substantially decrease weights than mice fed the equal excessive fats meal out of doors in their circadian rhythm.<sup>8</sup>

Furthermore, ingesting over a duration extra than 12 hours an afternoon may also boom the threat of obesity, diabetes, and coronary heart sickness. A small take look at which include eight guys with prediabetes, ingesting inside a 6-hour window from eight a.m. to two p.m. ended in upgrades in blood sugar stages, blood pressure, and appetite.<sup>9</sup>

In any other take a look at, fasting blood sugar stages adults in adults with prediabetes had been decreasing after they ate inside an eight a.m. five p.m. window than from 12 nine p.m. This can be why shift workers whose hours are possibly to be abnormal can be at an extra threat of continual situations like excessive (Low Density Lipoprotein) LDL cholesterol and diabetes. However, those claims are inconclusive. However, the related multiplied threat of continual sickness can be because of an aggregate of negative exceptional sleep, abnormal ingesting patterns, and different factors.<sup>9</sup>

#### Intermittent fasting

Intermittent fasting entails ingesting inside a particular window regularly eight 12 hours over any time of the day. Thus, it differs barely from ingesting consistent with the frame clock.

Intermittent fasting has been connected to

progressed stages of blood sugar, LDL cholesterol, frame fats, and inflammation. Many intermittent fasting regimens endorse skipping breakfast and having a maximum of food later withinside the day.<sup>7</sup>

However, a few researchers are aware that ingesting a larger breakfast and smaller nighttime meal may also result in higher blood sugar control, reduced frame fats, and decrease starvation stages. Reducingingesting window to twelve hours or fewer may also decrease senseless snacking, accordingly reducing ordinary calorie consumption and stopping weight gain.<sup>10</sup>

#### Harms of late-night eating

*Fear of weight gain:* If eat late every night then will find that are gaining weight. Weight gain can cause many health related problems, so dinner should always be taken at the right time. Especially if are trying to lose weight, then should have dinner at the right time, it can help in keeping digestion right.<sup>11</sup>

Many people worry that eating late can lead to weight gain, but research is inconclusive. One theory that might support this claim is that the food eaten is burned. The idea is that the body's ability to thrive (also called food induced thermogenesis) varies throughout the day.<sup>12</sup> High in the morning and low in the evening. Restricting meals late at night can also indirectly reduce calorie intake and prevent weight gain. Still, more research is needed.<sup>13</sup>

*Harmful for the brain:* Eating late-night food can also prove to be very harmful to the brain. According to research, if eat food late at night, then many of its effects can be revealed. It can also affect concentration and memory.<sup>14</sup>

*Effect on digestion:* Eating late at night and then falling asleep immediately can cause problems like acidity, bloating, and pain in the middle chest. Digestion can be badly affected by sleeping late. Eating dinner late can be harmful to health. That's why about 40 percent of Americans suffer from acid reflux, an epidemic that includes symptoms heartburn, indigestion, runny nose, hoarseness, difficulty swallowing, chronic clearing of the throat, cough, and asthma.<sup>15</sup>

Depending on the amount and quality of the meal, eating late, especially if going to bed immediately after eating, can increase the risk of acid reflux. Reflux occurs when stomach acid begins to irritate the lining of the esophagus. In the long term, Gastroesophageal Reflux Disease (GERD) can occur.<sup>17</sup> In one study, the study compared the effects of 6 p.m. to 9:00 PM Meal Early dinners have been shown to reduce symptoms of acid reflux in healthy adults.

*Metabolic Syndrome:* Numerous studies have shown that eating late or over a wide period increases the risk of metabolic syndrome. Metabolic syndrome is a series of disorders that include insulin resistance, obesity, hypertension, and high cholesterol.<sup>6</sup> One study evaluated the metabolic effects of a late dinner (9 pm) versus a regular dinner (6 pm) in 20 adults. A late dinner will result in higher blood sugar levels the next morning and less fat breakdown from the meal compared to a regular dinner. In the long term, this can contribute to obesity.

*Poor choice of food:* Eating late can lead to overeating and choosing quick and easy foods that can be unhealthy, such as chips, candy, and ice cream. In a survey of 104 obese people, 45% chose sweets as their night and night snack.<sup>18</sup>

If don't eat enough throughout the day, may end up overeating at night. Reviews found that people who averaged less than three meals a day felt less full than those who ate three or more. Choosing less satisfying meals can also increase appetite. A study of 35 obese men found that eating a substantial diet high in protein and fiber reduced appetite.

#### The ways for the betterment

If it is a compulsion to eat late, then keep in mind thattake such food which can be easily digested. Keep more amount of fiber dinner. Include vegetables and salad in dinner so that there is no problem in digesting food.<sup>19</sup>

Avoid eating junk food late at night. Many times it also happens thatcome from the office and do not feel like cooking, otherwiseeat junk food found in the market. Instead of doing this, opt for more healthy nuts or other healthy food.<sup>20,21</sup> Even if are late eating at night, should note that walk for some time after eating. Even if walking a few steps, do not go straight to bed after eating.<sup>8,22</sup>

#### CONCLUSION

Eating late at night can makea victim of obesity, and as we all know, obesity is the root of many diseases. Eating food late at night creates the problem of indigestion, this is because the digestive power works very slowly during the night. I eat food late at night, then it can also cause acidity ie gas problems. Because after eating late at night, the food is not digested by sleeping immediately. It takes a lot of time to digest food at night than in the afternoon. Also, the body does not feel light. Due to this one does not sleep easily. For this reason, the problem of insomnia gradually starts after eating late at night. Eating late at night can also cause high blood pressure disease, and high blood pressure proves to be very dangerous for the heart. By eating food late at night, the sugar level can also increase rapidly. Especially those who are diabetic patients should avoid eating late night food. Eating late at night can increase the level of cholesterol, due to which the risk of heart attack also increases to a great extent.

#### REFERENCES

- Okada C, Imano H, Muraki I, Yamada K, Iso H. The Association of Having a Late Dinner or Bedtime Snack and Skipping Breakfast with Overweight in Japanese Women. J Obes. 2019 Mar 3;2019:2439571. DOI: 10.1155/2019/2439571. PMID: 30944735; PMCID: PMC6421799.
- Basdeki ED, Koumi K, Tsirimiagkou C, Argyris A, Chrysostomou S, Sfikakis PP, Protogerou AD, Karatzi K. Late-Night Overeating or Low-Quality Food Choices Late at Night Are Associated with Subclinical Vascular Damage in Patients at Increased Cardiovascular Risk. Nutrients. 2022 Jan 21;14(3):470. doi: 10.3390/ nu14030470. PMID: 35276835; PMCID: PMC8840219.
- Kinsey AW, Ormsbee MJ. The health impact of nighttime eating: old and new perspectives. Nutrients. 2015 Apr 9;7(4):2648-62. doi: 10.3390/nu7042648. PMID: 25859885; PMCID: PMC4425165.
- Mirghani H. The Effect of Breakfast Skipping and Late Night Eating on Body Mass Index and Glycemic Control Among Patients With Type 2 Diabetes Mellitus. Cureus. 2021 Jun 23;13(6):e15853. doi: 10.7759/cureus.15853. PMID: 34322341; PMCID: PMC8299536.
- Yoshida J, Eguchi E, Nagaoka K, Ito T, Ogino K. Association of night eating habits with metabolic syndrome and its components: a longitudinal study. BMC Public Health. 2018 Dec 11;18(1):1366. DOI: 10.1186/s12889-018-6262-3. PMID: 30537972; PMCID: PMC6288903.
- Dashti HS, Gómez-Abellán P, Qian J, Esteban A, Morales E, Scheer FAJL, Garaulet M. Late eating is associated with cardiometabolic risk traits, obesogenic behaviors, and impaired weight loss. Am J Clin Nutr. 2021 Jan 4;113(1):154-161. doi: 10.1093/ajcn/nqaa264. PMID: 33022698; PMCID: PMC7779221.
- 7. Indresh Kumar, Priya Yadav, Madhulika

Gautam, et al./Impact of Heat on Naturally Present Digestive Enzymes in Food/Int J Food Nutr Diet. 2022;10(2):57–63.

- Chung, N., Bin, Y. S., Cistulli, P. A., & Chow, C. M. Does the Proximity of Meals to Bedtime Influence the Sleep of Adults? A Cross-Sectional Survey of University Students. International journal of environmental research and public health, 17 2021(8), 2677. https://doi. org/10.3390/ijerph17082677.
- 9. Indresh Kumar, Madhulika Gautam/ Determinants of Dietary Diversity Score for the Rural Households of Uttar Pradesh State/Int J Food Nutr Diet. 2022;10(1):9–16.
- Nogueira LFR, Pellegrino P, Cipolla-Neto J, Moreno CRC, Marqueze EC. Timing and Composition of Last Meal before Bedtime Affect Sleep Parameters of Night Workers. Clocks Sleep. 2021 Oct 14;3(4):536-546. doi: 10.3390/clockssleep3040038. PMID: 34698111; PMCID: PMC8544593.
- Chung N, Bin YS, Cistulli PA, Chow CM. Does the Proximity of Meals to Bedtime Influence the Sleep of Adults? A Cross-Sectional Survey of University Students. Int J Environ Res Public Health. 2020 Apr 14;17(8):2677. doi: 10.3390/ ijerph17082677. PMID: 32295235; PMCID: PMC7215804.
- Nogueira, L., Pellegrino, P., Cipolla-Neto, J., Moreno, C., &Marqueze, E. C. Timing and Composition of Last Meal before Bedtime Affect Sleep Parameters of Night Workers. Clocks & sleep, 2021/3(4), 536–546. https:// doi.org/10.3390/clockssleep3040038.
- St-Onge MP, Mikic A, Pietrolungo CE. Effects of Diet on Sleep Quality. Adv Nutr. 2016 Sep 15;7(5):938-49. doi: 10.3945/an.116.012336. PMID: 27633109; PMCID: PMC5015038.
- Duan D, Gu C, Polotsky VY, Jun JC, Pham LV. Effects of Dinner Timing on Sleep Stage Distribution and EEG Power Spectrum in Healthy Volunteers. Nat Sci Sleep. 2021 May 14;13:601-612. doi: 10.2147/NSS.S301113. PMID: 34017207; PMCID: PMC8131073.
- 15. Kim S, Kim J, Chang H. Do types of snacks, sleep hours, and eating places affect nutritional intake and its adequacy in adolescents? Nutr Res Pract. 2021 Jun;15(3):396-410. doi: 10.4162/ nrp.2021.15.3.396. Epub 2021 Feb 9. PMID: 34093979; PMCID: PMC8155224.
- Iao SI, Jansen E, Shedden K, O'Brien LM, Chervin RD, Knutson KL, Dunietz GL. Associations between bedtime eating or drinking, sleep duration and wake after sleep onset: findings from the American time use survey. Br J Nutr. 2021 Sep 13;127(12):1-10. doi: 10.1017/S0007114521003597. Epub ahead of print. PMID: 34511160; PMCID: PMC9092657.

- Binks H, E Vincent G, Gupta C, Irwin C, Khalesi S. Effects of Diet on Sleep: A Narrative Review. Nutrients. 2020 Mar 27;12(4):936. doi: 10.3390/nu12040936. PMID: 32230944; PMCID: PMC7230229.
- Kelly KP, McGuinness OP, Buchowski M, Hughey JJ, Chen H, Powers J, Page T, Johnson CH. Eating breakfast and avoiding late-evening snacking sustains lipid oxidation. PLoS Biol. 2020 Feb 27;18(2):e3000622. doi: 10.1371/ journal.bio.3000622. PMID: 32108181; PMCID: PMC7046182.
- Thomas EA, Zaman A, Cornier MA, Catenacci VA, Tussey EJ, Grau L, Arbet J, Broussard JL, Rynders CA. Later Meal and Sleep Timing Predict Higher Percent Body Fat. Nutrients. 2020 Dec 29;13(1):73. doi: 10.3390/nu13010073. PMID: 33383648; PMCID: PMC7823810.
- 20. Lopez-Minguez J, Gómez-Abellán P, Garaulet

M. Timing of Breakfast, Lunch, and Dinner. Effects on Obesity and Metabolic Risk. Nutrients. 2019 Nov 1;11(11):2624. doi: 10.3390/nu11112624. PMID: 31684003; PMCID: PMC6893547.

- 21. Grummon AH, Sokol RL, Lytle LA. Is late bedtime an overlooked sleep behavior? Investigating associations between sleep timing, sleep duration, and eating behaviors in adolescence and adulthood. Public Health Nutr. 2021 May;24(7):1671-1677. doi: 10.1017/ S1368980020002050. Epub 2020 Aug 10. PMID: 32772984; PMCID: PMC7873138.
- 22. Nakajima K. Unhealthy eating habits around sleep and sleep duration: To eat or fast? World J Diabetes. 2018 Nov 15;9(11):190-194. doi: 10.4239/wjd.v9.i11.190. PMID: 30479684; PMCID: PMC6242722.

#### SUBSCRIPTION FORM

I want to renew/subscribe international class journal "**International Journal of Food**, **Nutrition and Dietetics**" of Red Flower Publication Pvt. Ltd.

#### Subscription Rates:

• Institutional: INR 6500 / USD 507.31

Name and complete address (in capitals):\_\_\_\_

#### Payment detail:

Online payment link: http://rfppl.co.in/payment.php?mid=15

Cheque/DD: Please send the US dollar check from outside India and INR check from India made payable to 'Red Flower Publication Private Limited'. Drawn on Delhi branch.

#### Wire transfer/NEFT/RTGS:

Complete Bank Account No. 604320110000467 Beneficiary Name: Red Flower Publication Pvt. Ltd. Bank & Branch Name: Bank of India; Mayur Vihar MICR Code: 110013045 Branch Code: 6043 IFSC Code: BKID0006043 (used for RTGS and NEFT transactions) Swift Code: BKIDINBBDOS

#### Term and condition for supply of journals

- 1. Advance payment required by Demand Draft payable to **Red Flower Publication Pvt. Ltd**. payable at **Delhi**.
- 2. Cancellation not allowed except for duplicate payment.
- 3. Agents allowed 12.5% discount.
- 4. Claim must be made within six months from issue date.

#### Mail all orders to

Subscription and Marketing Manager Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India). Phone: 91-11-79695648 Cell: +91-9821671871 E-mail: sales@rfppl.co.in SCAN HERE TO PAY WITH ANY BHIM UPI APP



RED FLOWER PUBLICATIONS PRIVATE LIMITED

# **Instructions to Authors**

Submission to the journal must comply with the Guidelines for Authors. Non-compliant submission will be returned to the author for correction.

To access the online submission system and for the most up-to-date version of the Guide for Authors please visit:

http://www.rfppl.co.in

Technical problems or general questions on publishing with **IJFND** are supported by Red Flower Publication Pvt. Ltd.'s Author Support team (http://rfppl.co.in/article\_ submission\_system.php?mid=5#)

Alternatively, please contact the Journal's Editorial Office for further assistance.

Editorial Manager Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India). Mobile: 9821671871, Phone: 91-11-79695648 E-mail: author@rfppl.co.in

# REDKART.NET

(A product of Red Flower Publication (P) Limited) (Publications available for purchase: Journals, Books, Articles and Single issues) (Date range: 1967 to till date)

The Red Kart is an e-commerce and is a product of Red Flower Publication (P) Limited. It covers a broad range of journals, Books, Articles, Single issues (print & Online-PDF) in English and Hindi languages. All these publications are in stock for immediate shipping and online access in case of online.

#### Benefits of shopping online are better than conventional way of buying.

- 1. Convenience.
- 2. Better prices.
- 3. More variety.
- 4. Fewer expenses.
- 5. No crowds.
- 6. Less compulsive shopping.
- 7. Buying old or unused items at lower prices.
- 8. Discreet purchases are easier.

URL: www.redkart.net

### **Training Needs of Hortipreneurs in UK**

Arpita S. Kandpal<sup>1</sup>, Kritika Pant<sup>2</sup>

How to cite this article: Arpita S. Kandpal, Kritika Pant/Training Needs of Hortipreneurs in UK/Int J Food Nutr Diet. 2023;11(2):57–64.

#### Abstract

India is the world's second largest producer of fruits and vegetables. Besides, large quantities of spices, condiments, medicinal and aromatic plant products and flowers are produced in the country. Horticulture deals with the production and processing of fruit crops, vegetables, ornamentals, medicinal, aromatic plants, mushrooms, spices, plantations and tuber crops. Uttarakhand faces numerous hurdles in agriculture sector like marginal and scattered land holdings, tough geographic and topographic conditions, rainfed agriculture, and lack of proper infrastructure and market linkages, lower level of productivity and input usage, migration and lack of entrepreneurship. Present paper aim is to discuss the training needs of hortipreneurs.

Keywords: Training needs; Hortipreneur; horticulture.

#### INTRODUCTION

"A griculture was the first occupation of man, and as it embraces the whole earth, it is the foundation of all other industries". Edward W. Stewart. The history of agriculture in India dates back to the neolithic period where new techniques were developed to improve the method of agriculture system. These improved techniques of production then transferred to the next generation and the series

**Author Affiliation:** <sup>1</sup>Assistant Professor, <sup>2</sup>M.Sc Student, Department of Agricultural Communication, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar 263145, Uttarakhand, India.

**Corresponding Author: Kritika Pant,** M.Sc Student, Department of Agricultural Communication, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar 263145, Uttarakhand, India.

E-mail: sharmaarpita615@gmail.com

Received on: 12.04.2023

Accepted on: 24.04.2023

continued. This transformation of knowledge was the base of further development of agriculture in India (ICAR, 2019). In India, more than half of rural households depend on agriculture as the principle means of livelihood. Indian agriculture is primarily governed by soil, water and weather conditions, and is largest private enterprise that has been and will continue to the lifeline of the country's economy and employment in the foreseen future (The Financial Express, 2018). The economic security of Indian rural households depends up on agriculture and allied activities. Many of the industries are getting their raw materials from agricultural sector. The share of this sector has gone three times since independence yet more than half of the population continues to depend over it (IBEF, 2022). A worker in the non-agricultural sector earns more than five times of the income of agriculture worker. Still in comparison to other industries, it is the only sector that has shown resilience in any economic crisis. A study shows that 70% agripreneurs are from non-agri field as they find greater opportunities of business and impact in agriculture and allied

# activities **(Agriculture Census, 2016).** These agripreneurs are coming with thorough knowledge and business acumen to deal with the challenges of agriculture to maximize the farmer impact as well as profitability.

In Uttarakhand, horticulture sector contributes to nutrition security and acts as a steady medium of income generation. In case of horticulture crops, marginal fragmented lands are utilized which otherwise cannot be used for other demanding crops. The state holds a unique advantage of producing off-season vegetables and fruits in hilly areas, which fetches a good price in the market. (State Horticulture Mission, 2022). The important cash crops are potato, ginger and offseason fruits and vegetables. Hence, it holds a great potential of generating employment opportunities through various profitable endeavors as well as allied horticultural processing units. Earnings from different horticulture products with their value addition, noticeably contribute to the income of farmers and budding entrepreneurs. Yet technological interventions, proper skills and knowledge sometimes fails to reach the commoners and they are unable to exploit the opportunities of sector at its fullest. Amongst the horticulture sector, enterprises are suffering from glut and the direct marketing channels are yet to be structured. Despite tremendous scope and opportunities in the field, established industries are still limited. The poor support infrastructure and lack of skilled training for budding entrepreneurs leads to underperformance and sometimes ultimate failures. These factors raise an issue of sustainability of hortipreneurs with their ventures in spite of the high demand for horticultural products. There is a need emerging to identify and understand the training needs of hortipreneurs for enhancing their skill and productivity in the region, which would further promote employment generation and development of the sector.

#### Scenario of Indian Horticulture

India is the world's second largest producer of fruits and vegetables. Besides, large quantities of spices, condiments, medicinal and aromatic plant products and flowers are produced in the country. However, processing of fruits and vegetables is estimated to be around 2.2% of the total production in the country (Mohapatra, 2016). Horticulture is an area of agriculture dealing with garden plant cultivation. It is the science and art of growing fruits, vegetables, spices, ornamental trees, bushes and flowers. There have been some fundamental changes happening in the last few decades, which have impacted the horticultural growth and development (APEDA, 2022). Consumer preferences have shifted away from cereals towards high-value agricultural crops due to higher incomes and urbanization in India. With integrated global value chain and these changing lifestyles, the demand for horticultural products is expected to increase further (Gulati, 2022). Comprehensively, horticulture can be promoted as a means of agro diversification for the upcoming evergreen revolution to provide much needed impetus to the growth and development of agricultural sector, through increase in income, trade and employment.

#### Status of Horticulture in India

Thepractice of producing fruits and vegetables at a subsistence level is centuries old in the Indian subcontinent. However, large scale commercial production has emerged after the introduction of experimental agriculture (APEDA, 2022). There is a strong association between the development of agricultural information systems and the expansion of horticultural industries. The importance of horticulture in improving the land productivity, employment generation, improving economic conditions of farmers, entrepreneurs, enhancing exports and above all, providing nutritional security to the people can hardly be overemphasized. In India, horticultural crops have high export potential, with fruits and vegetables fetching 20-30 times more foreign exchange per unit area than cereals due to high value and higher prices available in the foreign market (ICAR, 2022). After the world wars, especially the economic depression, circumstances changed. Urbanization, industrialization, and increasing population are the factors promoting transition from pleasure gardening by the rich and subsistence production by village people on small farms to commercial fruit and vegetable production. Economic pressures are acute and farmers are very aware of the necessity for increasing production (APEDA 2022). Out of total cultivated area in the country, only 6 percent is under horticultural crops, which is more than 20% in the USA (FAO, 2020).

#### **Rising Opportunities in Horticulture**

Fruits and vegetables are an important source of foreign exchange. We have been exporting potatoes, mangoes, onions, and other vegetables for a long time with a steady increase in quantity and value of horticultural exports (APEDA, 2022). The green revolution led the creation of surplus food economy in the initial stages, resulting in adverse consequences of unplanned growth where we did not have sufficient plans to dispose of the surplus stock in the international markets. Neither have we had plans of processing which could convert such surplus into high value products. In the present scenario of declining land and increasing unemployment, traditional farming cannot be the sole viable medium of livelihood generation. Market liberalization and entry of private sector in agriculture has made it more challenging for the farmers in the sector to survive (FAO 2022). The prevailing conditions have resulted in imperative situations for the farmers to compete in thecurrent situation. Hence, the need of commercialization and diversification of agriculture market arises so as to achieve more gain per unit of land for income and employment generation by converting agriculture to agribusiness (Sharma & Sharma, 2011). The cropbased horticulture ventures that can be operated in the sector includes Medicinal and Aromatic Plant based enterprises, Value Added Products, Seed Producers and Commercial Nurseries, Floriculture and Landscaping, Beekeeping, Mushroom, Fruit Producers and Vegetable Growers, Cold storage, Plant protection as well as Consulting and Renting agents.

#### Challenges Emerging in the field of Hortipreneurs

There are, however, many constraints for development of horticulture products as succinctly recorded in the 10th Five Year Plan which are as follows:

- 1. Poor quality of seeds and planting materials and their weak assessment mechanism.
- Preponderance of old and senile orchards and their poor management practices.
- 3. Small and uneconomic average farm size of the orchards.
- 4. High order of perishability of horticulture produces, leading to high degree of losses.
- Lack of modern and efficient infrastructure facilities, poor technological support and poor post-harvest management practices.
- Under developed and exploitative marketing structures.
- Absence of adequate standards for quality produce.

- 8. Inadequate research and extension support to address specific problems of horticulture crops and their linkages with farming community and industry.
- 9. Large scale variations in credit support and tax structures for diverse commodities.
- 10. Instability of prices.
- 11. Poor risk management, lack of authentic upto-date database and poor data collection and information system.

#### Horticulture in Uttarakhand

Being a hill state, Uttarakhand faces numerous hurdles in agriculture sector like marginal and scattered land holdings, tough geographic and conditions, rainfed topographic agriculture, and lack of proper infrastructure and market linkages, lower level of productivity and input usage, migration and lack of entrepreneurship (Qureshi & Ahmed, 2021). Out of the total area of Uttarakhand, (86.15%) of the area is under forests and wastelands, contributing a small area for agricultural practicing. The majority of Uttarakhand agriculture is rainfed and there is not much surplus for the market. As a result, most of the able-bodied men have migrated to other places in search of employment. Only women are left in the hills and they have started looking after the farms. The challenge is to change this structure and create employment through agriculture. This could be done by diversifying the agricultural pattern so as to create alternative income and better living standards (Mittal et. al, 2008). The alternative areas of diversification are towards horticulture crops, spices and condiments, tea plantations, and herbal and medicinal plants. Development of organic farming is another option for agriculture based hill regions. Horticulture is one of the prominent economic activities in rural areas of this state with a great potential to generate employment restoring the fragile ecosystem. The creditability of horticultural crops (fruits, vegetables, floriculture, mushroom, etc.) contributes towards generation of income, improving economic conditions of farmers and entrepreneurs. Marketing of the produce creates employment prospects for the urban poor which in turn ensure better livelihood security. Important cash crops of the state include potato, ginger and off-season fruits and vegetables. (State Horticulture Mission, 2022). Though there is a lot of potential in cultivating off-season, exotic and organic vegetables with their value addition

and processing, the prevailing conditions act as a hindrance for the state. As a result, majority of producers fall under medium to low socio -economic status.

Rank	Crop	Production in 000 tonnes
1.	Pear	73.78
1.	Peach	52.86
1.	Plum	34.84
1	Apricot	28.2
2.	Walnut	18.93
3.	Apple	62.00
8.	Cut Flower	14.70 Spikes (in crores)
9.	Pea	102.98
13.	Potato	367.31
19.	Tomato	110.68

Source: National Horticulture Board (NHB), 2021-22

#### Status of Uttarakhand in National Context

Uttarakhand ranks eighteenth in the country with reference of establishing food processing units. Along with that, the state holds highest rank in the productivity of spices (7.21MT/ha) against the National average of 1.8 MT/ha.

#### Agripreneurship vs Hortipreneurship

The word entrepreneur appeared for the first time in the French language 'Entrepredre' meaning 'to undertake'. According to Schumpeter (1954), an entrepreneur is an innovator who works out new combinations of the factors of production and distribution. Activities like diversification, value addition, precision farming, high tech agriculture, organic farming etc. are gradually getting due attention of people involved in redefining agriculture. An agripreneur is an entrepreneur who undertakes a variety of activities in agriculture. Nagalakshmi and Sudhakar (2013) reported agripreneurship as generally sustainable community oriented, directly marketed agriculture. They defined an agripreneur as an entrepreneur whose main business is agriculture or agriculture related. According to Bhattacharya and Hassan (2021), the concept of hortipreneur is interpreted from the word "agripreneur" which means an entrepreneur whose primary business is horticulture. Hortipreneurship is a community oriented, environmentally sustainable and market led development of horticultural business. The development of hortipreneur includes inculcation of entrepreneurial skills like technical, financial and managerial expertise in the horticultural sector to

establish an entrepreneurial approach in the sector.

#### Hortipreneurship: An emerging venture

Horticultural products are referred to as protective foods and assume great importance in nutritional security of people. The importance of horticulture in improving the land productivity, employment generation, improving economic conditions of farmers, entrepreneurs, enhancing exports and above all, providing nutritional security to the people can hardly be overemphasized. Horticulture deals with the production and processing of fruit crops, vegetables, ornamentals, medicinal, aromatic plants, mushrooms, spices, plantations and tuber crops (Ravichandra, 2014). Considering the potential for development of horticulture for generation of employment opportunities, economic development of the tribal, rural and hilly areas and to step up the availability of fruits and vegetables for nutritional requirements, increased export opportunities, the main future thrust should be in the area expansion programmes for various horticultural crops. This needs to be undertaken in two different ways- by bringing new and non-traditional areas ideally suitable for growing different crops as well as by rejuvenating old orchards, removing senile plants and replanting gaps. (ICAR, 2022).

The interest in horticultural crops continues to grow in view of the change in food habits owing to urbanization and their increasing importance in food, nutrition and health. It has emerged as an important sector for the diversification of agriculture, making it more profitable venture through efficient land use, optimum utilization of natural resources and employment provider for the rural mass. Sonkar and Mishra (2015) revealed that vegetable growers need training in cultivation of pumpkin followed by the cultivation of bottle gourd and radish. Javed et al. (2011) revealed that financial resources, marketing facilities, technological resources', government support, information access are the most important factor in the success of business perceived by small and medium enterprises. Olabisi et al. (2011) reported the main entrepreneurs factors affecting their business include: friends (70.00%), government support (80.00%), adequate training (68.00%), innovativeness (72.00%), risk taking (84.00%), retraining (60.00%) and business premises (66.00%). Robitasorokhaibam and Nandita (2011) revealed that the motivating factors for starting business are desire to be independent, earning more money, to prove oneself, better status in

the society, to utilize own skill, to contribute to employment and influenced by success stories. Frank (2012) revealed that major pull factors for women entrepreneurs are need for self-fulfillment, work flexibility and a challenge. Dissatisfaction with salaried jobs or general lack of employment opportunities and insufficient family income were among the factors that pushed them into selfemployment. Stephan et al. (2012) stated that need for independence, self-fulfillment, work flexibility and a need for a challenge to self-employment as the pull factors while dissatisfaction with salaried jobs and insufficient family income pushed them into self-employment. Amarendrapratap (2013) influencing agripreneurship opined factors are mainly by right environment, economic situation, education, culture, good infrastructure, technological support and timely availability of credit. Emanuel (2013) concluded with the study that the need for achievement is the principal motivation of entrepreneurial behaviour of rubber growers. Lalhunthara (2015) reported with the study that ambition to contribute to the family, need for independent living, consciousness of their existence, rights and work situation and the desire to do something new and positive often acted as motivational factors.

#### Emergence of Training Needs in Hortipreneurship

In order to deliver effective training, it is necessary to understand the training needs of the community. Training is one of the important methods for developing and enhancing the individual's capacities to enhance their knowledge. There is a need to identify the points of dissatisfaction with the current situation and the desire to change. Training needs refers to the gap between 'what is' and 'what should be' in terms of trainees' knowledge, skills, attitude and behaviour in a given situation and time. It is based on adult learning principles that requires a clear analysis of situation and providing need-demand based knowledge. (Knowles, **1950).** The green revolution led to the creation of surplus food economy in the initial stages. It has also resulted in the adverse consequence of such unplanned growth where we did not have sufficient plans either to dispose of the surplus stock in the international market or have plans of processing which could convert such surplus into high value products. Horticulture has gained late commercial importance with a very significant share in the country's economy. The importance of horticulture in improving the land productivity, generating employment, improving economic conditions of farmers and entrepreneurs, enhancing exports

and above all, providing nutritional security to the people widely acknowledged. Sajeev and Singha (2010) revealed that training on integrated farming was the most sought after by farmer (45 percent ) in Arunachal Pradesh followed by water conventional and irrigation management (36 percent) of the field crops and training on production of organic inputs. Training on weed management in field crops, training on nursery management in field crops, integrated crop management and cropping system and agro-forestry based integrated farming system also closely followed. Lal and Tondon (2011) revealed that 91.78 percent respondents said that they like to be trained in vermi-composting and medicinal plants (57.07 percent), poultry farming (56.16 percent), candle making (19.63 percent) toy making (9.58 percent) and mat making. Sajeev et al. (2012) reported that 49 percent of respondents needed training on cultivation of off-season vegetables followed by low volume and high value crops (45 percent), plant propagation techniques (30 percent), production and management technology of tubers and spices (26 percent). The training needs on nursery raising (41.25 percent) were also required by the respondents. Thaker and Ahlawat (2012) concluded that training needs were expressed in accordance with the entrepreneurial interests. Among agri-based enterprises, training needs were expressed in floriculture, vermicompost and nursery raising enterprises. Rokonuzzaman (2013) through a study on training needs of tribal people engaged in income generating activities in Bangladesh revealed that majority of respondents (55 percent) need training on livestock and poultry rearing, 52 percent needed training on vegetable production and 49.47 percent on nursery establishment. Kumar et. al, (2014) concluded that flower growers needed training in plant protection measures, post-harvest processing of flowers, post-harvest storage, processing, grading, standardisation and use of biproducts.

#### Constraints faced by the Hortipreneurs

Unemployment is one of the basic problems the world is faced with and is the key link in the food security issues in the society these days. Unless a person is employed, he or she may not have the purchasing power to buy enough food for family though the food supplies may be abundant in society and market (Global Development Commons, UNICEF, 2022). Promotion of hortientreprises, is generally regarded as part of an employment and intensive industrialization strategy. Microenterprises based on horticulture can help in poverty reduction, employment generation,

enterprise empowerment and development regardless of stage of economic development. The small and medium enterprises are generally considered as major sources of employment generation for the developing nations (World Bank, **2022).** Horticulture value chains in India are facing growing consumer expectations for variety, food safety, and security. The region of Uttarakhand, on the other hand, holds a good potential for budding enterprises and acts as a basket of raw materials of export quality for the country. Being a hill state, there lies immense potential to excel in production of temperate fruits and off-season vegetation, as state ranks first in the production of temperate fruits like pear, plum, apricot and peach in the country, second in walnut and third in apple production in the country (Department of Horticulture, India, **2018**). It is blessed with a rare bio-diversity, interalia, 175 rare species of aromatic & medicinal plants are found in the State. It has almost all major climatic zones, making it amenable to a variety of commercial opportunities in horticulture, floriculture and agriculture (State Profile 2023, Uttarakhand Govt.). Despite having numerous policies and facilities for the development of hortipreneurship in the state, yet entrepreneurship fails to develop in the area. People are migrating to urban sectors for employment leaving their farm dwellings behind. The constraints on improving horticulture crops in the hills include poor orchard management practices, quality planting material, seeds and other inputs, little access to extension services and marketing. Across the Himalayan region, producers face problems in accessing market information, postharvest processing and value adding skills. Lack of regular markets and reliable marketing, hills farmers in many areas are finding it too risky to diversify into more lucrative high value crops. Number of industries in horticulture are somewhat limited and emerging ones are facing number of challenges and wide gaps in marketing, establishing, and running their enterprises. The technological interventions and market knowledge sometimes fails to reach the commoners and hence they are unable to exploit the opportunities at its fullest. The poor support infrastructure and lack of skilled training for budding entrepreneurs leads to underperformance and sometimes ultimate failures in the sector. These factors raise an issue of sustainability of hortipreneurs with their ventures in spite of the high demand for horticultural products. Therefore, a need emerges to identify and understand the training needs of hortipreneurs for enhancing their skill and productivity in the region, which would further promote employment

generation and development of the sector. Tiwari and Pathak (2011) reported some of the constraints experienced by farmers in availing training were lack of awareness about training programme, unavailability of travelling and dearness allowances, complicated procedure of training, unavailability of skill oriented training, understanding problem of language, inefficient trainers to solve the complicated problems, unsuitable training contents for small and marginal farmers, need less content, unavailability of training staff, inappropriate time of training, poor time management, biased selection for training and inadequate boarding and lodging facilities for beneficiaries. Anju and Raju (2014) observed that more than one-third (40.00 percent) of the rural women entrepreneurs are encountered with market related issues (25.00 percent) followed by lack of funds (23.00 percent) and problems related to family support (12.00 percent) during their business activities. Gupta (2014) reported that due to lack of resources, inputs, motivation and recognition, the farmwomen didn't participate in the effective implementation of training programmes. Lack of interpersonal relationships coupled with lack of transport and training facilities, lack or leadership and emphasis on table work led to ineffective programme implementation. Swathy and Benazir (2014) explained through a study on constraints faced by entrepreneurs in starting their business that the major constraints faced by entrepreneurs were financial problem, production problem, labour and government laws. Finance was significant constraint faced by entrepreneur due to lack of personal saving, & problem in getting loan from bank and government subsides. Mualuko et al. (2016) found that nearly half (46.00 percent) of the members lacked relevant training followed by poor family support to the women (40.00 percent) and lack of good management (14.00 percent). Negi and Anand (2016) revealed that inadequate infrastructural support, lack of market information and training, involvement of large number of intermediaries, fragmented market channel, inappropriate storage and handling of the harvest were the major factors that leads to post harvest losses that ultimately was primarily borne by the respondent. In brief, the major constraints identified in the field of developing agro enterprises were based on several systems including poor market knowledge and limited finances, institutional support and subsidies. Majority of the enterprises shut due to the financial constraints and poor idea about the potential consumers. Both push and pull factors play a key role in developing these enterprises where availability of the resources is a

key area of concern. These constraints give rise to the felt needs for proper trainings in different areas related to the field that could protect the enterprises against exploitation and loss.

#### CONCLUSION

The horticultural sector in the country is experiencing phenomenal growth as far as increase in area, production and productivity are concerned. However, there is a lot of opportunities for enhancing productivity, post-harvest processing, value addition, hi-tech horticulture, precision farming, etc. Uttarakhand, by every means, holds great potential and capability to satisfy the rising demands and needs in the horticulture sector. Though the geographical attributes and climatic conditions of the state are ideal for production of temperate and subtropical fruit crops, yet horticulture enterprisesfail to emerge in the area. Across the Himalayan region, producers face problems in accessing market information, postharvest processing and value adding skills. Lack of regular markets and reliable marketing, hills farmers in many areas are finding it too risky to diversify into more lucrative high value crops. Despite spending huge resources on farmer training, farming is increasingly turning out to be an unprofitable venture with youth quitting agriculture and migrating to urban areas since 1999. Therefore, hortipreneurship can emerge as an employment strategy that can lead to economic self-sufficiency of rural people. Its development through training could become a key element for promoting micro, small and medium enterprises, particularly the first generation agri-entrepreneurs. The identification of training needs, would result in good opportunities to develop this sector, especially among the marginal and small farmers, so that that it will help them double their income from the farming sector.

#### REFERENCES

- 1. Amarendrapratap, M. 2013. Factors influencing entrepreneurship among farming community in Uttar Pradesh. Journal of Arts, Science and Commerce., 4(3): 114-121.
- Anju, G. S. and Raju, J. K. 2014. Challenges of SHG's rural women entrepreneurship with special reference to Davangere district. Glob. j. commer. manag. perspect., 3(5): 133-135.
- Bhattacharya, M., Hassan, B. and Wani, S. 2021. Hortipreneurship Challenges and Opportunities-The Way Forward to Doubling

farmers' Income. 'In: International Conference on Market Led Extension Management' at Jaipur. pp 5-8.

- Emmanuel, M. 2013. Entrepreneurship and motivation in small business sector of Kerala-A study of rubber products and manufacturing industry, Cochin University of Science and Technology.
- Frank, S. 2012. Transforming Ugandan Women's Livelihoods through Entrepreneurship. M. Sc. (Cultures and Development) Thesis. Katholieke University Leuven, Belgium.
- Gulati, A., Wardhan, H. and Ganguly, K. 2022. Agricultural Value Chain in India. Springers Nature publishing house, New Delhi, 298p.
- Gupta, S. 2014. Constraints in Effective Transfer of Technology to the Farmwomen through KVKs. International J. of Ext. Edu., 10: 131-135.
- https://www.fao.org/3/Y4358E/y4358e04. htm/ Chapter 1. Fruits And Vegetables: An Overview on Socio-Economical and Technical Issues, 22/03/2023.
- https://www.icar.org.in/content/ horticultural\_division/ Horticultural Division, 20/12/ 2022.
- https://www.financialexpress.com/industry/ farm-to-peel-embracing-digital-technologyand-sustainable-farming/3030163/ Farm to peel: Embracing digital technology and sustainable farming, 02/04/2023.
- https://www.ibef.org/blogs/india-s-fruitsand-vegetables-industry/ India's Fruits and Vegetables Industry, 01/01,2023.
- 12. https://agcensus.nic.in/acindia.html/ Agriculture Census in India, 22/01/2023.
- 13. https://www.shm.uk.gov.in./ State Profile, 23/11/2022.
- 14. https://apeda.gov.in/apedawebsite/six\_ head\_product/FFV.htm/ Fresh Fruits and Vegetables, 01/12/ 2022.
- 15. https://www.worldbank.org/en/topic/ smefinance#:~:text=Small%20and%20 Medium%20Enterprises%20%28SMEs%29%20 play%20a%20major,businesses%20 and%20more%20than%2050%25%20of%20 employment%20worldwide/Small and Medium Enterprises (SMEs) Finance, 20/11/2022.
- https://gdc.unicef.org/resource/youthunemployment-facts/ Youth -unemployment: The facts, 02/02/2023.
- Javed, M. J., Khan, M.A., D.R., Ahmed Imran, H., Ranaaziz, U.R and Rehman, D.R. 2011. Determinants of business success of small and medium enterprises. Int. j. acad. res. bus. soc. sci., 22 (3): 33-39.

63

- Knowles MS, Holton EF, Swanson RA. 2011. The Adult Learner: The Definitive Classic in Adult Education and Human Resource Development. 7th ed. Boston, MA: Elsevier.
- Kumar, S., Sheoran, D.K. and Singh, J. 2014. Training needs of flower farmers in Haryana. technofame- Int. j. multidiscip. adv. res., 3(1): 87-95.
- 20. Lal, B. and Tondon, V. 2011. Impact of vocational training programmes on knowledge gain by rural youth. J. community mobilization sustain. dev., 6(2): 174 -176.
- 21. Lalhunthara 2015. Entrepreneurship and gender: A case study of Mizoram enterprises in Aizwal district, Mizoram. Int. J. Bus. Mana.,3(8): 46-51.
- 22. Mittal, S. and Sethi, D. 2008. Development strategy for the hill district of Uttarakhand. Working paper no. 217, In Cou for Research on International Economics Relations.
- 23. Mohapatra, S., Mishra, R. 2017. Diversification towards Vegetable Crops: A Good Option for Doubling the Farmer's Income. J. Exp. Agric. Int.,18(4): 1-7.
- Mualuko, B. W., Mbabazize, M and Jayashukla. 2016. Effect of self-help groups activities on women empowerment in Rwanda: A case of Twisungane women's self-help group. Int J Bus Manag., 4 (4): 539-547.
- 25. Nagalakshmi, T. and Sudhakar, A. 2013. Agripreneurs: A case study of Dharmpuri farmers. Int. J. Sci. Res., 2(8): 208-214.
- National Horticulture Board (nhb.gov.in)/ Area Production Estimate Statistics, 22/11/22.
- 27. Negi, S. and Anand, N. 2016. Factors leading to losses and Wastage in the Supply Chain of Fruits and Vegetables Sector in India. Energy, Infrastructure and Transportation Challenges and Way Forward., 1: 89-105.
- Olabisi, G., Sherifat, Y., Olagbemi, A. A and Akinwole, A. A. 2011. Factors affecting small-scale business performance in informal economy in Lagos state Nigeria: A gendered based analysis department of sociology Lagos state university. Asian J. Sci. Res., 9 (10): 558-573.
- 29. Qureshi, S., Ahmed, A. and Nargis, S. 2021. Women participation in Hilly Areas of Uttarakhand- India: An Analytical Study. European Scholar Journal (ESJ), 5(2): 6.

- Ravichandra, N.G. 2014. Horticulture and Its Role in the National Economies. 'In: Horticultural Nematology'. Springer, New Delhi. https://doi.org/10.1007/978-81-322-1841-8\_1.
- Robitasorokhaibam, K and Nandita, L. 2011. Women entrepreneurship in Manipur, North East India. Interdisciplinary Journal of Research in Business., 1 (2): 46-53.
- 32. Rokonuzzaman, M. 2013. Training needs of tribal people in carrying out income generating activities. Indian J. Ext. Educ., 13 (1): 77-84.
- 33. Schumpeter, J.A. 1965. The Fundamental Phenomenon of Economic Development: Entrepreneurship and Economic Development. Free Press, New York. 489p.
- Sajeev M. V. and Singha A. K. 2010. Capacity building through KVKs: Training need analysis of farmers of Arunachal Pradesh. Indian J. Ext. Educ., 10 (1): 83-90.
- 35. Sharma, J. P. and Sharma, N. 2011. Entrepreneurship Development in Agriculture. 'In: Agro Enterprises for Rural Development and Livelihood Security.' New India Publishing Agency, New Delhi. pp1-14.
- 36. Sonkar, S.P. and Mishra, O.P. 2015. Training needs of vegetable growers in Jaunpur district of Uttar Pradesh. Indian Society of Extension Education Golden Jubilee National Seminar, Souvenir cum abstract book, November 5-7, Varanasi.
- 37. Stephan, U., Martin, L., Dominika, D and Richter, P.G. 2010. Attitudes towards and perceptions of entrepreneurs in central eastern Europe (Poland, Czech Republic, and East Germany) study two the concept of entrepreneur across culture. Int. Small Bus. J., 27(3): 57-60.
- Swathy, S. and Benazir, Y. 2014. A Study on the Challenges faced by the entrepreneurs. Int. Mark. Rev.,2(4):18 – 28.
- 39. Thaker, K. and Ahlawat, S. 2012. Entrepreneurial interests and training need of tribal farm women of Amirgarh and Dantatalukas of Banaskantha district, Gujarat. Indian Res. J. Ext'., 1(2): 296-302.
- 40. Tiwari, A. K. & Pathak, J. 2011. Constraints Faced by Rice-Wheat Growers in Training Imparted by KVK. Indian J. of Ext. Edu., 47 (3 & 4): 82-85.

#### International Journal of Food, Nutrition and Dietetics

#### Library Recommendation Form

If you would like to recommend this journal to your library, simply complete the form given below and return it to us. Please type or print the information clearly. We will forward a sample copy to your library, along with this recommendation card.

#### Please send a sample copy to:

Name of Librarian Name of Library Address of Library

#### Recommended by:

Your Name/ Title Department Address

#### Dear Librarian,

I would like to recommend that your library subscribe to International Journal of Food, Nutrition and Dietetics. I believe the major future uses of the journal for your library would provide:

- 1. Useful information for members of my specialty.
- 2. An excellent research aid.
- 3. An invaluable student resource.

# I have a personal subscription and understand and appreciate the value an institutional subscription would mean to our staff.

Should the journal you're reading right now be a part of your University or institution's library? To have a free sample sent to your librarian, simply fill out and mail this today!

Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India) Phone: 91-11-79695648 Cell: +91-9821671871 E-mail: info@rfppl.co.in

# REDKART.NET

(A product of Red Flower Publication (P) Limited) (Publications available for purchase: Journals, Books, Articles and Single issues) (Date range: 1967 to till date)

The Red Kart is an e-commerce and is a product of Red Flower Publication (P) Limited. It covers a broad range of journals, Books, Articles, Single issues (print & Online-PDF) in English and Hindi languages. All these publications are in stock for immediate shipping and online access in case of online.

#### Benefits of shopping online are better than conventional way of buying.

- 1. Convenience.
- 2. Better prices.
- 3. More variety.
- 4. Fewer expenses.
- 5. No crowds.
- 6. Less compulsive shopping.
- 7. Buying old or unused items at lower prices.
- 8. Discreet purchases are easier.

URL: www.redkart.net

#### The Role of Pulses in Building a Suitable & Sustainable Future

Madhu

How to cite this article: Madhu/The Role of Pulses in Building a Suitable & Sustainable Future/Int J Food Nutr Diet. 2023;11(2):67–72.

#### Abstract

Pulses are a major source of protein requirement in the human diet. Fortunately, today in the race for modernity, the use of pulses in food is decreasing due to the trend of fast food, which is affecting the health of people, especially children and young people. The objective of the study is to study the available literature regarding pulses and their importance and justified their role in the sustainable future of the population. This article is a review based and reviewed literature was collected from different electronic data based. In this study, the importance of pulseshas been highlighted whose availability and use will be helpful in good future. The most important feature of pulses is that their nutritional elements are preserved even after being cooked on heat.

Keywords: Pulses; Sustainable future; Sustainable future; Nutrition; Human health; Food security.

 $\infty$ 

#### INTRODUCTION

Pulses are annual leguminous crops that yield up to 12 grains or seeds of variable size, shape, and color within a pod, which are used for both food and feed. The term "pulses" is restricted to crops harvested for dry grain only, thereby

Author Affiliation: <sup>1</sup>Assistant Professor, Department of Home Science, Kashi Naresh Government P.G. College, Bhadohi 221304, Uttar Pradesh, India.

**Corresponding Author: Madhu,** Assistant Professor, Department of Home Science, Kashi Naresh Government P.G. College, Bhadohi 221304, Uttar Pradesh, India.

E-mail: madhu.17june@gmail.com

Received on: 13.03.2023

Accepted on: 05.04.2023

excluding crops harvested green for food, which is classified as vegetable crops, as well as crops harvested primarily for oil. Used for extraction and leguminous crops that are specially used for sowing.

The year 2016 was celebrated as the International Year of Pulses. The Food and Agriculture Organization played a leading role in this. After the success of this campaign, in the 73rd session of the United Nations General Assembly held in December 2018, a request was made to celebrate February 10 every year as World Pulses Day.<sup>1</sup> The General Assembly accepted the request made by the Government of Burkina Faso. The theme of World Pulses Day, 2023 was "Pulses for a sustainable future". This underscores the importance of pulses in ensuring equity and creating livelihood opportunities, both of which are essential elements of sustainable agri-food systems.<sup>2</sup>

In the cultivation of pulses, less irrigation is required as compared to other crops. They can better deal with drought conditions and climate related disasters. Therefore, they become an important tool for adapting to climate change and mitigating such changes. Pulses also prove to help provide a better quality of life to farmers in water-scarce areas.3 Pulses can help increase productivity and improve the resilience of farm based livelihoods in a range of farming practices, including agroforestry, intercropping, and integrated farming systems. From an economic perspective, the global pulses industry (which produces and trades pulses) also demonstrates its beneficial power in ensuring the stability of regional and global supply chains. It promotes the sustainable use of natural resources while enabling consumers to have access to whole foods.4

#### METHODS AND MATERIALS

Research papers showing data related to pulses and their importance are reviewed in this article. In this study, papers published in the last 10 years were collected from electronic data based sources: Pub Med, Springer Nature, Research Gate, and Google Scholar and synthesized by the traditional literature review method.

#### **RESULTS AND DISCUSSION**

#### **Environment and Pulses**

In addition to serving as an important source of protein for a large portion of the global population, pulses contribute to healthy soil and climate change mitigation through their nitrogen fixing properties. Bengal gram, red gram, green gram, black gram, rajma, cowpea, lentils, white peas, and horse gram are the major pulses grown and consumed in India. Furthermore, one kilogram of legumes emits 0.5 kg in CO<sub>2</sub> equivalent while one kilogram of meat produces 9.5 kg in CO<sub>2</sub> equivalent. According to estimates, the water footprint for the production of one kilogram of meat is five times higher than that of pulses. Farmers have a wide range of options to choose from when incorporating pulses into their cropping systems. With this, the ill effects of pests, diseases, and weeds can be reduced in the crop.

Offering a new source of income, pulses can also prove to help deal with climate related extreme events. Pulses also provide many other resources in the fight against climate change.<sup>6</sup>

Pulses reduce the need for fertilizers throughout the crop cycle. At the same time, by "fixing" the nitrogen present in the atmosphere, they also reduce the emission of greenhouse gases.<sup>7</sup> A major advantage in a changing climate is that many pulse crops have adapted to thrive in arid environments, and can withstand drought better than most other crops. Thus, the cultivation of pulses meets Sustainable Development Goals 2, 3, and 13, which cover issues such as improving human health, sustainable agriculture, food security, and climate action.<sup>8</sup>

*Nitrogen fixation:* The quantity of nitrogen in the crops is supplied by the molecular nitrogen present in the atmosphere. Rhizobium bacteria found in the root nodules (nodules) of pulse crops fix the free nitrogen of the atmosphere and make it available to the plants. Because of this, these crops do not require much nitrogen. But it takes 20 to 30 days for rhizobium bacteria present in the soil to form glands on the roots of plants. Therefore, at this time it is beneficial to use fertilizer nitrogen for the growth of plants and the development of root glands. Therefore, at the time of sowing, nitrogen should be used at the rate of 20 kg per hectare in irrigated areas and 10 kg in non-irrigated areas.

#### Availability and Consumptions

The per capita monthly consumption of pulses in rural and urban India was 0.81 kg and 0.96 kg respectively in 1999-2000; Which decreased to 0.74 kg and 0.86 kg respectively in 2011-12.9 Presently India is the largest producer and consumer of pulses in world. Since the level of production is insufficient to meet the demand, the import of pulses becomes necessary.<sup>10</sup> In recent years, there has been a steady increase in the demand for pulses in India. The government is taking various steps to expand the production of pulses in the country to meet the domestic demand for pulses. As such, there has been a steady decline in the quantity of pulses imports since 2014-15 (Fig. 1 below). According to statistics, 26.7 million tonnes of pulses are produced in India.11



Fig. 1: Per capita availability of pulses for Indians.

Details of pulse demand production, import dependence, and future projections are given. This gives a glimpse of the reduction in the imports of pulses. The import dependency of pulses was 9 percent in 2021-22, which is expected to increase to 3.6 percent by 2030-31.<sup>12</sup>

There has been a dramatic increase not only in production but also in the area and yield of pulses. In 2015-16, pulses were cultivated on 25 million hectares of land. At that time, on average, 656 kg pulses were produced per hectare.<sup>13</sup> In 2021-22, cultivation of pulses started on 3.04 crore hectares of land and the yield level increased to an average of 888 kg per hectare. Reached up to To increase the production of pulses, the Government of India has launched the National Food Security Mission Pulses program in 644 districts of 28 states and union territories (Jammu & Kashmir and Ladakh).<sup>14</sup>

On the production front, although India ranks first globally in terms of the area under pulses and the production of pulses, it is not yet self-sufficient and remains a net importer of pulses. In 2013-14, the total area under pulses was 25 million hectares and production was about 19 million tonnes, and demand was about 24 million tonnes (Directorate of Economics & Statistics 2015). After accounting for seed, feed, and wastage, the per capita availability of pulses in 2014 was around 38 gm per day, which is less than the recommended daily requirement of 40 grams per day. It was only after including imports of 3.5 million tonnes that net availability reached a level of 44 grams, which is above the recommended daily requirement. Data from the consumer expenditure surveys of the National Sample Survey (NSS) indicate that the average consumption of pulses increased in rural India from 22 gm in 2004-05 to 26 gm in 2011-12. This is less than 70 percent of the requirement of 40 gm per day. Further, there were large differences in consumption across expenditure classes. In the lowest decile of monthly per capita expenditure, the deficit in the consumption of pulses per day was 25 gm in 2004-05, an amount that came down to 22 gm in 2011-12. In 2011-12, only persons in the top three deciles consumed more than 70 percent of the Recommended Dietary Allowance for pulses.

#### **ROLE OF PULSES IN THE DIET**

Pulses provide 10 percent of dietary protein, with a marginal increase in monthly per capita consumption. Pulses can be included in cereal based diets to fight malnutrition. There is evidence to support the fact that people who regularly consume pulses have higher levels of nutritional security.<sup>15</sup> A study on the factors influencing the consumption of pulses in Indian households suggests ways to increase market access and make pulses cheaper than other food items. Pulses are an important source of protein in the Indian diet. Children, adolescent girls, and pregnant and lactating mothers meet half of the recommended dietary requirements of protein through food security programs of the Government of India.<sup>16</sup>

During the pandemic, 5 kg of rice/wheat and 1 kg of selected pulses were provided to the poor

under the Pradhan Mantri Garib Kalyan Yojana.<sup>17</sup> States like Andhra Pradesh, Telangana, Haryana, and Himachal Pradesh have managed to distribute pulses under the Public Distribution System (PDS). As a policy, pulses should be provided to the weaker sections of the population at subsidized rates under the PDS. This will increase the reach of pulses and they will be available at low prices.<sup>18</sup>

Apart from preventing obesity, pulses have been identified as having "*a valuable role*" in reducing chronic diseases such as diabetes and heart disease. It also has an important role in promoting a diverse microbiome in children at risk of stunting or stunting during the first 1000 days of life.<sup>45</sup> The amount of protein in pulses is 2 to 3 times more than that of cereals, so it is an excellent option for the population facing protein deficiency.

#### **HEALTH BENEFITS OF PULSES**

As mentioned above, pulses, beans, and lentils act as antioxidants and anti-inflammatory agents, reducing cancer risk. Lentils also contain an element known as selenium, which decreases the rate at which a tumor grows. They also boost immunity and stimulate T cells' production, which helps in fighting diseases.

Pulses are an important part of a vegetarian diet, containing a treasure trove of protein. Apart from being delicious, they are also very beneficial from the point of view of digestion. Apart from protein, and carbohydrates, many types of vitamins, phosphorus, and minerals are found in them, which keep the body healthy as well as keep away many types of diseases. There are many types of pulses and the methods of cooking them are also different. Today we will learn about these pulses and their benefits.

*Arhar:* It is also called Tuvar. Minerals, carbohydrates, iron, calcium, etc. are found in sufficient quantity in it. It is an easily digestible pulse. Therefore, it can be given to the patient as well, but patients with gas, constipation, and shortness of breath should consume it less.<sup>19</sup>

*Moong:* Moong whether whole or washed, is full of nutrients. After sprouting, the amount of nutrients calcium, iron, protein, carbohydrate, and vitamins found in it doubles. Moong is powerful. Its use is beneficial for patients with fever and constipation.<sup>20</sup>

*Gram:* Gram and gram dal are not only beneficial in physical health and beauty but are also helpful in treating many diseases. Carbohydrates, protein,

moisture, smoothness, fiber, calcium, iron, and vitamins are found in them. The use of gram is beneficial in diseases like anemia, constipation, diabetes, and jaundice. The use of gram flour is beneficial for the beauty of hair and skin.<sup>21,12</sup>

**Urad:** The effect of Urad is cold, so while consuming it, a paste of asafoetida should be applied in pure ghee. Carbohydrates, vitamins, calcium, and proteins are also found in sufficient quantity in this. Patients with piles, arthritis, asthma, and paralysis should reduce their intake.<sup>21,24</sup>

*Moth:* Moth pulse containing calcium, phosphorus, carbohydrates, and vitamins is anti-worm and anti-fever.<sup>22,24</sup>

*Lentils:* Its nature is hot, dry, blood enhancing, and thickening in the blood. Consuming lentils is beneficial for diarrhea, polyuria, leucorrhoea, constipation, and irregular digestion.

*Kulthi:* This is also a type of pulse. Its use helps in getting rid of arthritis, fever, leucorrhoea, and obesity.<sup>23</sup>

#### CONCLUSION

Pulses have a lower water footprint than other food crops and are better able to withstand drought and climate related calamities, making them a crucial tool for adjusting to and reducing climate change. Furthermore, one kilogram of legumes emits 0.5 kg in CO<sub>2</sub> equivalent while one kilogram of meat produces 9.5 kg in CO<sub>2</sub> equivalent. They also help farmers in water scarce regions have a better quality of life. With the continuous efforts of the government, India is moving towards "*self-sufficiency*" in pulses. Pulses, rich in macronutrients, meet the needs related to sustainable development and diet, so it becomes very important to raise awareness of the benefits associated with their consumption. As a policy, pulses should be provided to the weaker sections of the population at subsidized rates under the PDS. This will increase the reach of pulses and they will be available at low prices.

#### REFERENCES

- Paul RK, Yeasin M. COVID-19 and prices of pulses in Major markets of India: Impact of nationwide lockdown. PLoS One. 2022;17(8):e0272999. Published 2022 Aug 25. doi:10.1371/journal.pone.0272999.
- 2. Pratap A, Kumar S, Polowick PL, Blair MW, Baum M. Editorial: Accelerating Genetic Gains

in Pulses. Front Plant Sci. 2022;13:879377. Published 2022 Apr 7. doi:10.3389/fpls.2022. 879377.

- Didinger C, Thompson HJ. Defining Nutritional and Functional Niches of Legumes: A Call for Clarity to Distinguish a Future Role for Pulses in the Dietary Guidelines for Americans. Nutrients. 2021;13(4):1100. Published 2021 Mar 27. doi:10.3390/nu13041100.
- Mitchell DC, Webster A, Garrison B. Terminology Matters: Advancing Science to Define an Optimal Pulse Intake. Nutrients. 2022;14(3):655. Published 2022 Feb 3. doi:10.3390/nu14030655.
- Robinson GHJ, Balk J, Domoney C. Improving pulse crops as a source of protein, starch, and micronutrients. Nutr Bull. 2019;44(3):202-215. doi:10.1111/nbu.12399.
- Teshome GB, Whiting SJ, Green TJ, Mulualem D, Henry CJ. Scaled-up nutrition education on pulse-cereal complementary food practice in Ethiopia: a cluster-randomized trial. BMC Public Health. 2020;20(1):1437. Published 2020 Sep 22. doi:10.1186/s12889-020-09262-8.
- Kumar, I. and Gautam, M. Enhance the Nutritive Value of Diet through Dietary Diversity in the Rural area of Uttar Pradesh: an intervention-based study. Indian Research Journal of Extension Education. 2022;22 (2). https://doi.org/10.54986/irjee/2022/apr\_ jun/29-33.
- Didinger C, Thompson H. Motivating Pulse-Centric Eating Patterns to Benefit Human and Environmental Well-Being. Nutrients. 2020;12(11):3500. Published 2020 Nov 14. doi:10.3390/nu12113500.
- Kumar I. The Beliefs that Hindering the use of Food and the Scientific Criterion: A Mixed Method Study. International Journal of Food, Nutrition and Dietetics . 2022;10. http://dx.doi. org/10.21088/ijfnd.2322.0775.10322.2.
- Haileslassie HA, Ramikie R, Vatanparast H, et al. A Nutrition Intervention to Promote the Consumption of Pulse-Based Foods in Childcare Centers: Protocol for a Multimethod Study. JMIR Res Protoc. 2020;9(12):e22775. Published 2020 Dec 24. doi:10.2196/22775.
- Kumar I., Yadav P., Gautam M., and Panwar H. Impact of Heat on Naturally Present Digestive Enzymes in Food. Int J Food Nutr Diet. 2022;10(2):57–63.
- 12. Winham DM, Davitt ED, Heer MM, Shelley MC. Pulse Knowledge, Attitudes, Practices,

and Cooking Experience of Midwestern US University Students. Nutrients. 2020;12(11):3499. Published 2020 Nov 13. doi:10.3390/nu12113499.

- 13. Kumar, I. & Gautam M. Determinants of Dietary Diversity Score for the Rural Households of Uttar Pradesh State. Int J Food Nutr Diet. 2022;10(1):9–16. DOI: http://dx.doi. org/10.21088/ijfnd.2322.0775.10122.1.
- Mullins AP, Arjmandi BH. Health Benefits of Plant-Based Nutrition: Focus on Beans in Cardiometabolic Diseases. Nutrients. 2021;13 (2):519. Published 2021 Feb 5. doi:10.3390/ nu13020519.
- Singh N. Pulses: an overview. J Food Sci Technol. 2017;54(4):853-857. doi:10.1007/ s13197-017-2537-4.
- Gazan R, Maillot M, Reboul E, Darmon N. Pulses Twice a Week in Replacement of Meat Modestly Increases Diet Sustainability. Nutrients. 2021;13(9):3059. Published 2021 Aug 31. doi:10.3390/nu13093059.
- 17. Marinangeli CPF, Curran J, Barr SI, et al. Enhancing nutrition with pulses: defining a recommended serving size for adults. Nutr Rev. 2017;75(12):990-1006. doi:10.1093/nutrit/ nux058.
- Margier M, Georgé S, Hafnaoui N, et al. Nutritional Composition and Bioactive Content of Legumes: Characterization of Pulses Frequently Consumed in France and Effect of the Cooking Method. Nutrients. 2018;10(11):1668. Published 2018 Nov 4. doi:10.3390/nu10111668.
- John AT, Makkar S, Swaminathan S, et al. Factors influencing household pulse consumption in India: A multilevel model analysis. Glob Food Sec. 2021;29:100534. doi:10.1016/j.gfs.2021.100534.
- 20. Mishra P, Yonar A, Yonar H, et al. State of the art in total pulse production in major states of India using ARIMA techniques. Curr Res Food Sci. 2021;4:800-806. Published 2021 Oct 28. doi:10.1016/j.crfs.2021.10.009.
- 21. Kumar I, and Gautam M, Excessive intake of micronutrients in rural population of Uttar Pradesh state, SPR, 2022, Volume 2, issue 2, Page No.: 515-519. DOI: https://doi.org/10.52152/spr/2021.174.
- 22. Kumar, I; Gautam, M. Correlation between Individual Dietary Diversity Score and Nutrients Adequacy Ratio in the Rural Community. SPR. 2021;1(4):258–263. https://

doi.org/10.52152/spr/2021.143.

23. Illei GG, Austin HA, Crane M, et al. Combination therapy with pulse cyclophosphamide plus pulse methylprednisolone improves longterm renal outcome without adding toxicity in patients with lupus nephritis. Ann Intern Med. 2001;135(4):248-257. doi:10.7326/0003-4819135-4-200108210-00009.

24. Hakim J, Musiime V, Szubert AJ, et al. Enhanced Prophylaxis plus Antiretroviral Therapy for Advanced HIV Infection in Africa. N Engl J Med. 2017;377(3):233-245. doi:10.1056/ NEJMoa1615822. Red Flower Publication Pvt. Ltd.

# CAPTURE YOUR MARKET

For advertising in this journal

Please contact:

#### International print and online display advertising sales Advertisement Manager Phone: 91-11-79695648, Cell: +91-9821671871 E-mail: info@rfppl.co.in

#### **Recruitment and Classified Advertising**

Advertisement Manager Phone: 91-11-79695648, Cell: +91-9821671871 E-mail: info@rfppl.co.in

Instructions to Authors
Submission to the journal must comply with the Guidelines for Authors. Non-compliant submission will be returned to the author for correction.
To access the online submission system and for the most up-to-date version of the Guide for Authors please visit:
http://www.rfppl.co.in
Technical problems or general questions on publishing with <b>IJFND</b> are supported by Red Flower Publication Pvt. Ltd.'s Author Support team (http://rfppl.co.in/article_ submission_system.php?mid=5#)
Alternatively, please contact the Journal's Editorial Office for further assistance.
Editorial Manager
Red Flower Publication Pvt. Ltd.
48/41-42, DSIDC, Pocket-II
Mayur Vihar Phase-I
Delhi - 110 091(India).
Mobile: 98216/18/1, Phone: 91-11-/9695648

Г

L

L

I

L

L

L

L

L

L

L

I

L

L

L

I

L

#### **Guidelines for Authors**

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journal" developed by international committee of medical Journal Editors

#### **Types of Manuscripts and Limits**

Original articles: Up to 3000 words excluding references and abstract and up to 10 references.

Review articles: Up to 2500 words excluding references and abstract and up to 10 references.

Case reports: Up to 1000 words excluding references and abstract and up to 10 references.

#### **Online Submission of the Manuscripts**

Articles can also be submitted online from http:// rfppl.co.in/customer\_index.php.

I) First Page File: Prepare the title page, covering letter, acknowledgement, etc. using a word processor program. All information which can reveal your identity should be here. use text/rtf/doc/PDF files. Do not zip the files.

2) Article file: The main text of the article, beginning from Abstract till References (including tables) should be in this file. Do not include any information (such as acknowledgement, your name in page headers, etc.) in this file. Use text/rtf/doc/PDF files. Do not zip the files. Limit the file size to 400 Kb. Do not incorporate images in the file. If file size is large, graphs can be submitted as images separately without incorporating them in the article file to reduce the size of the file.

3) Images: Submit good quality color images. Each image should be less than 100 Kb in size. Size of the image can be reduced by decreasing the actual height and width of the images (keep up to 400 pixels or 3 inches). All image formats (jpeg, tiff, gif, bmp, png, eps etc.) are acceptable; jpeg is most suitable.

Legends: Legends for the figures/images should be included at the end of the article file.

If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks from submission. Hard copies of the images (3 sets), for articles submitted online, should be sent to the journal office at the time of submission of a revised manuscript. Editorial office: Red Flower Publication Pvt. Ltd., 48/41-42, DSIDC, Pocket-II, Mayur Vihar Phase-I, Delhi – 110 091, India, Phone: 91-11-79695648, Cell: +91-9821671871. E-mail: author@rfppl.co.in. Submission page: http://rfppl. co.in/article\_submission\_system.php?mid=5.

#### Preparation of the Manuscript

The text of observational and experimental articles should be divided into sections with the headings: Introduction, Methods, Results, Discussion, References, Tables, Figures, Figure legends, and Acknowledgment. Do not make subheadings in these sections.

#### Title Page

The title page should carry

- 1) Type of manuscript (e.g. Original article, Review article, Case Report)
- 2) The title of the article should be concise and informative;
- 3) Running title or short title not more than 50 characters;
- 4) The name by which each contributor is known (Last name, First name and initials of middle name), with his or her highest academic degree(s) and institutional affiliation;
- 5) The name of the department(s) and institution(s) to which the work should be attributed;
- 6) The name, address, phone numbers, facsimile numbers and e-mail address of the contributor responsible for correspondence about the manuscript; should be mentoined.
- The total number of pages, total number of photographs and word counts separately for abstract and for the text (excluding the references and abstract);
- 8) Source(s) of support in the form of grants, equipment, drugs, or all of these;
- 9) Acknowledgement, if any; and
- 10) If the manuscript was presented as part at a meeting, the organization, place, and exact date on which it was read.

#### **Abstract Page**

The second page should carry the full title of the manuscript and an abstract (of no more than 150 words for case reports, brief reports and 250 words for original articles). The abstract should be structured and state the Context (Background), Aims, Settings and Design, Methods and Materials, Statistical analysis used, Results and Conclusions. Below the abstract should provide 3 to 10 keywords.

#### Introduction

State the background of the study and purpose of the study and summarize the rationale for the study or observation.

#### Methods

The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http:// www. consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma. net/e/policy/17-c\_e.html).

#### Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

#### Discussion

Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, What this study adds to the available evidence, effects on patient care and health policy, possible mechanisms)? Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

#### References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform\_ requirements.html) for more examples.

#### Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540–7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, *et al.* Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347–55.

#### Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone-iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3–9.

#### Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792–801.

#### **Unpublished article**

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

#### Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

#### Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. pp 7–27.

#### No author given

[8] World Health Organization. Oral health surveys - basic methods, 4<sup>th</sup> edn. Geneva: World Health Organization; 1997.

#### Reference from electronic media

[9] National Statistics Online – Trends in suicide by method in England and Wales, 1979–2001. www. statistics.gov.uk/downloads/theme\_health/HSQ 20.pdf (accessed Jan 24, 2005): 7–18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

More information about other reference types is available at www.nlm.nih.gov/bsd/uniform\_ requirements.html, but observes some minor deviations (no full stop after journal title, no issue or date after volume, etc.).

#### Tables

Tables should be self-explanatory and should not duplicate textual material.

Tables with more than 10 columns and 25 rows are not acceptable.

Table numbers should be in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.

Explain in footnotes all non-standard abbreviations that are used in each table.

For footnotes use the following symbols, in this sequence: \*,  $\P$ , †, ‡‡,

#### **Illustrations (Figures)**

Graphics files are welcome if supplied as Tiff, EPS, or PowerPoint files of minimum 1200x1600 pixel size. The minimum line weight for line art is 0.5 point for optimal printing.

When possible, please place symbol legends below the figure instead of the side.

Original color figures can be printed in color at the editor's and publisher's discretion provided the author agrees to pay. Type or print out legends (maximum 40 words, excluding the credit line) for illustrations using double spacing, with Arabic numerals corresponding to the illustrations.

#### Sending a revised manuscript

While submitting a revised manuscript, contributors are requested to include, along with single copy of the final revised manuscript, a photocopy of the revised manuscript with the changes underlined in red and copy of the comments with the point-to-point clarification to each comment. The manuscript number should be written on each of these documents. If the manuscript is submitted online, the contributors' form and copyright transfer form has to be submitted in original with the signatures of all the contributors within two weeks of submission. Hard copies of images should be sent to the office of the journal. There is no need to send printed manuscript for articles submitted online.

#### Reprints

Journal provides no free printed, reprints, however a author copy is sent to the main author and additional copies are available on payment (ask to the journal office).

#### Copyrights

The whole of the literary matter in the journal is copyright and cannot be reproduced without the written permission.

#### Declaration

A declaration should be submitted stating that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under the present authorship has been published or is being considered for publication elsewhere and the authorship of this article will not be contested by any one whose name(s) is/are not listed here, and that the order of authorship as placed in the manuscript is final and accepted by the co-authors. Declarations should be signed by all the authors in the order in which they are mentioned in the original manuscript. Matters appearing in the Journal are covered by copyright but no objection will be made to their reproduction provided permission is obtained from the Editor prior to publication and due acknowledgment of the source is made.

#### **Approval of Ethics Committee**

We need the Ethics committee approval letter from an Institutional ethical committee (IEC) or an institutional review board (IRB) to publish your Research article or author should submit a statement that the study does not require ethics approval along with evidence. The evidence could either be consent from patients is available and there are no ethics issues in the paper or a letter from an IRB stating that the study in question does not require ethics approval.

#### Abbreviations

Standard abbreviations should be used and be spelt out when first used in the text. Abbreviations should not be used in the title or abstract.

#### Checklist

- Manuscript Title
- Covering letter: Signed by all contributors
- Previous publication/ presentations mentioned, Source of funding mentioned
- Conflicts of interest disclosed

#### Authors

- Middle name initials provided.
- Author for correspondence, with e-mail address provided.
- Number of contributors restricted as per the instructions.
- Identity not revealed in paper except title page (e.g. name of the institute in Methods, citing previous study as 'our study')

#### **Presentation and Format**

- Double spacing
- Margins 2.5 cm from all four sides
- Title page contains all the desired information. Running title provided (not more than 50 characters)
- Abstract page contains the full title of the manuscript
- Abstract provided: Structured abstract provided for an original article.
- Keywords provided (three or more)
- Introduction of 75-100 words

- Headings in title case (not ALL CAPITALS). References cited in square brackets
- References according to the journal's instructions

#### Language and grammar

- Uniformly American English
- Abbreviations spelt out in full for the first time. Numerals from 1 to 10 spelt out
- Numerals at the beginning of the sentence spelt out

#### **Tables and figures**

- No repetition of data in tables and graphs and in text.
- Actual numbers from which graphs drawn, provided.
- Figures necessary and of good quality (color)
- Table and figure numbers in Arabic letters (not Roman).
- Labels pasted on back of the photographs (no names written)
- Figure legends provided (not more than 40 words)
- Patients' privacy maintained, (if not permission taken)
- Credit note for borrowed figures/tables provided
- Manuscript provided on a CDROM (with double spacing)

#### Submitting the Manuscript

- Is the journal editor's contact information current?
- Is the cover letter included with the manuscript? Does the letter:
- 1. Include the author's postal address, e-mail address, telephone number, and fax number for future correspondence?
- 2. State that the manuscript is original, not previously published, and not under concurrent consideration elsewhere?
- 3. Inform the journal editor of the existence of any similar published manuscripts written by the author?
- 4. Mention any supplemental material you are submitting for the online version of your article. Contributors' Form (to be modified as applicable and one signed copy attached with the manuscript)

#### International Journal of Food, Nutrition and Dietetics

#### Library Recommendation Form

If you would like to recommend this journal to your library, simply complete the form given below and return it to us. Please type or print the information clearly. We will forward a sample copy to your library, along with this recommendation card.

#### Please send a sample copy to:

Name of Librarian Name of Library Address of Library

#### **Recommended by:**

Your Name/ Title Department Address

#### Dear Librarian,

I would like to recommend that your library subscribe to International Journal of Food, Nutrition and Dietetics. I believe the major future uses of the journal for your library would provide:

- 1. Useful information for members of my specialty.
- 2. An excellent research aid.
- 3. An invaluable student resource.

# I have a personal subscription and understand and appreciate the value an institutional subscription would mean to our staff.

Should the journal you're reading right now be a part of your University or institution's library? To have a free sample sent to your librarian, simply fill out and mail this today!

Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India) Phone: 91-11-79695648 Cell: +91-9821671871 E-mail: info@rfppl.co.in

#### SUBSCRIPTION FORM

I want to renew/subscribe international class journal "**International Journal of Food, Nutrition and Dietetics**" of Red Flower Publication Pvt. Ltd.

#### Subscription Rates:

• Institutional: INR 6500 / USD 507.31

Name and complete address (in capitals):\_\_\_\_

#### Payment detail:

Online payment link: http://rfppl.co.in/payment.php?mid=15

Cheque/DD: Please send the US dollar check from outside India and INR check from India made payable to 'Red Flower Publication Private Limited'. Drawn on Delhi branch.

#### Wire transfer/NEFT/RTGS:

Complete Bank Account No. 604320110000467 Beneficiary Name: Red Flower Publication Pvt. Ltd. Bank & Branch Name: Bank of India; Mayur Vihar MICR Code: 110013045 Branch Code: 6043 IFSC Code: BKID0006043 (used for RTGS and NEFT transactions) Swift Code: BKIDINBBDOS

#### Term and condition for supply of journals

- 1. Advance payment required by Demand Draft payable to **Red Flower Publication Pvt. Ltd**. payable at **Delhi**.
- 2. Cancellation not allowed except for duplicate payment.
- 3. Agents allowed 12.5% discount.
- 4. Claim must be made within six months from issue date.

#### Mail all orders to

Subscription and Marketing Manager Red Flower Publication Pvt. Ltd. 48/41-42, DSIDC, Pocket-II Mayur Vihar Phase-I Delhi - 110 091(India). Phone: 91-11-79695648 Cell: +91-9821671871 E-mail: sales@rfppl.co.in SCAN HERE TO PAY WITH ANY BHIM UPI APP



RED FLOWER PUBLICATIONS PRIVATE LIMITED