



Budge Budge College

Estd. 1971

NAAC Accredited B+ & UGC 12B, 2(f)

Affiliated to the University of Calcutta

Ref. No.

Date

1.3.2 Percentage of students undertaking project work/field work/ internships (Data for the latest completed academic year)

1.3.2.1. Number of students undertaking project work/field work / internships: 1155

SUMMARY REPORT

Sl. No.	Name of Program	Other Details	Number of Students
		2022-2023	
1.	B.Com Honours	Semester 6	84
2.	B.Sc. Food & Nutrition Honours	Semester 3/ 5 / 6	34
3.	B.A. & B.Sc. Geography Honours	Semester 5 / 6	43
4.	B.A. History Honours	Semester 1, 3, 5	48
5.	B.Sc. Zoology Honours	Semester 5 / 6	15
6.	B.Sc. Botany General	Semester 5	10
7.	B.Sc. Zoology General	Semester 4	6
8.	B.A. / B.Sc. / B.Com	Semester 2: AECC: Environmental Studies	915
Total			1155

1.3.2 Percentage of students undertaking project work/ field work/ internships (Data for the latest completed academic year)

1.3.2.1. Number of students undertaking project work/ field work/ internships (1155) mentioned in Summary Report does not include any repeat count.

- Eight (08) students of B.Sc. Zoology General who have also undertaken project work in B.Sc. Food and Nutrition Honours
- Eleven (11) students of B.A. AECC Environmental Studies who have also undertaken project work in B.A. History Honours

have been highlighted in the B.Sc. Zoology General and B.A. AECC Environmental Studies lists and omitted from both Summary Report and Data Template 1.3.2

B.Com Honours

UNIVERSITY OF CALCUTTA



NISHAT ALAM

Secretary,

Councils for Undergraduate Studies,
University of Calcutta.

SENATE HOUSE

87/1, College Street, Kolkata-700 073.

Phone : 2257-3376, 2241-0071-74

e-mail: u.g.councilsc.u@gmail.com

Website: www.caluniv.ac.in

Ref. No. CUS/154/17

Dated the 26th May, 2017

To

The Principals

of all the Undergraduate Colleges
offering B.Com (Honours & General) courses
affiliated to the University of Calcutta.

Sir/Madam,

The undersigned is directed to forward you the University Notification No. CSR/26/17, dt. 26.05.2017 containing new course structure, syllabi and revised admission regulations for three-year B.Com. (Honours & General) Courses of Studies.

The above shall be effective for the students getting admission to the three-year six-semester B.Com. (Honours & General) Courses of Studies under CBCS, from the academic session 2017-18 and onwards.

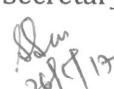
The said notification along with detail course structure, syllabi and admission regulations are available in the Calcutta University website.

Thanking you,

Yours faithfully,


(NISHAT ALAM)
Secretary

Enclo.: C.U. Notification No. CSR/26/17, dt. 26.05.2017


26/5/17



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 26 /17

It is notified for information of all concerned that the Syndicate in its meeting dated 23.05.2017 (vide Item No.46) resolved to approve the **New Course Structure & Syllabi and revised Admission Regulations for the B.Com. (Honours and General) courses of study under this University as laid down in the accompanying pamphlet.**

The above shall be effective for the students getting admission to the 3-year 6-Semester B.Com. (Honours and General) courses of study under CBCS, from the academic session 2017-2018 and onwards.

SENATE HOUSE
KOLKATA-700073
The 26th May, 2017

A handwritten signature in black ink, appearing to read "Rajagopal Dhar Chakraborti".
(Prof. Dr. Rajagopal Dhar Chakraborti)

Registrar

Year 3: Semester VI

		Marks	Credit Hours	
AECC 6.1Chg	Environmental Studies	100	2	
SEC 6.1Chg	Computerised Accounting and e-Filing of Tax Returns	100	4	
CC 6.1 Ch	Project Work	100	6	
DSE 6.1 A**	Financial Reporting and Financial Statement Analysis	100	6	
DSE 6.2 A**	Financial Management	100	6	

24

Chg: Common for Honours and General; **Ch:** Core Course for Honours

Options:

**Or DSE 6.1 M (Retail Management and Marketing of Services (50+50)
& DSE 6.2 M (Rural Marketing and International Marketing (50+50)

**Or DSE 6.1 T (Indirect Tax: Laws and Practices)
& DSE 6.2 T (Tax Procedures and Planning)

**Or DSE 6.1 e-B (Internet & WWW and Functional e-Business System (50+50)
& DSE 6.2 e-B(Computer Applications and e-Business Applications – Practical (50+50)

Summary for B.Com. Hons.

		Marks	Credit Hours	
Ability Enhancement Compulsory Course (AECC)	Two Papers	200	2 x 2 = 4	
Skill Enhancement Elective Course (SEC)	Two Papers	200	2x4 = 8	
Generic Elective (GE)	Four Papers	400	4 x 6 = 24	
CORE COURSE (CC)	Fourteen Papers	1400	14x 6 = 84	
Discipline Specific Elective (DSE)	Four Papers	400	4 x 6 = 24	
		2600	Total 144	

BUDGE BUDGE COLLEGE

Academic Session: 2022-2023

1.3.2 Percentage of students undertaking project work/field work/ internships (Data for the latest completed academic year)

Department of Commerce

List of students undertaking project work/field work/internship

Sl. No.	Name of Student	University Roll No.	University Registration No.	Title of Project	Name of Supervisor
1	Ankur Shaw	181561-21-0008	561-1111-1247-18	Online Banking	Dr. Gautam Das
2	Nabanita Sadhukhan	191561-11-0003	561-1211-0431-19	Financial Ratio Analysis of ITC Ltd.	Mr. Mriganka Mallick
3	Priyanka Kairi	191561-11-0010	561-1211-0391-19	Axis Mutual Fund	Dr. Gautam Das
4	Farhan Mirdha	191561-21-0016	561-1111-0417-19	GST- The New Era of the Taxation System	Dr. Gautam Das
5	Arpita Halder	201561-11-0001	561-1211-0441-20	Online Banking	Dr. Gautam Das
6	Madhushree Dalui	201561-11-0004	561-1211-0457-20	Comparison of Liquidity & Solvency position of TATA STEEL & SAIL	Dr. Gautam Das
7	Neha Shaw	201561-11-0005	561-1211-0461-20	Goods and Services Tax	Dr. Gautam Das
8	Payel Khanra	201561-11-0006	561-1211-0463-20	Ration Analysis of a Pharmaceutical Industry	Dr. Sandip Sinha
9	Payel Sadhukhan	201561-11-0007	561-1211-0464-20	Working Capital Management - A Case Study of CEAT Company Ltd.	Dr. Sandip Sinha
10	Pritha Santra	201561-11-0008	561-1211-0467-20	A Comparative Analysis Of The Financial Performances Of Selected Indian Automobile Companies Applying DuPont Model	Dr. Sandip Sinha
11	Priti Ghosh	201561-11-0009	561-1211-0468-20	A COMPARATIVE ANALYSIS ON FINANCIAL STATEMENTS OF IT SECTOR COMPANIES : CASE STUDY ON FINANCIAL STATEMENT ANALYSIS OF TCS AND WIPRO	Dr. Sandip Sinha
12	Rimi Das	201561-11-0010	561-1211-0473-20	Corporate Social Responsibility for Economic Growth of Indian Company ITC Ltd.	Mr. Sujit Kumar Mahato
13	Sanchita Das	201561-11-0011	561-1211-0478-20	Working Capital Management -A Case Study of CEAT Company Ltd.	Mr. Sujit Kumar Mahato
14	Sayanti Majumdar	201561-11-0012	561-1211-0485-20	RATIO ANALYSIS : A STUDY OF SHREE CEMENT AND AMBUJA CEMENT	Mr. Sujit Kumar Mahato
15	Serina Khatun	201561-11-0013	561-1211-0486-20	A Theoretical Construct in respect of Relationship between Stock Market and Bond Market	Mr. Sujit Kumar Mahato
16	Suhena Ghosh	201561-11-0015	561-1211-0504-20	Ratio Analysis of a Pharmaceutical Industry	Mr. Mriganka Mallick

Sl. No.	Name of Student	University Roll No.	University Registration No.	Title of Project	Name of Supervisor
17	Sumaiya Kharun	201561-11-0016	561-1211-0506-20	Financial Statement Analysis of HUL	Mr. Mriganka Mallick
18	Anindita Malick	201561-11-0018	561-1211-0521-20	The Indian Stock Market and its Operations	Mr. Mriganka Mallick
19	Meghna Rajak	201561-11-0020	561-1212-0460-20	Ratio Analysis of Shree Cement and Ambuja Cement Ltd.	Mr. Mriganka Mallick
20	Sutapa Mondal	201561-11-0021	561-1212-0510-20	Working Capital Management of Tata Motors Ltd.	Mr. Mriganka Mallick
21	Sk Jahir Hossain	201561-11-0023	561-1215-0518-20	Solvency Ratio Analysis of Dabur India Ltd.	Mr. Sourav Bhuiya
22	Aman Ali	201561-21-0001	561-1111-0434-20	Financial Statement Analysis on Wipro Ltd.	Mr Sourav Bhuiya
23	Anirban Adak	201561-21-0002	561-1111-0435-20	3-Stage DuPont Analysis of two Fast Moving Consumer Goods (FMCG) Companies	Mr. Sourav Bhuiya
24	Anirban Mondal	201561-21-0003	561-1111-0436-20	E-COMMERCE: A STUDY ON THE IMPACT OF ONLINE RETAILING ON THE SECTOR A CASE ON FLIPKART	Mr. Sourav Bhuiya
25	Anish Nath	201561-21-0004	561-1111-0437-20	A STUDY ON E-COMMERCE OF THE FLIPKART	Mr. Sourav Bhuiya
26	Argha Paul	201561-21-0005	561-1111-0438-20	Online Banking	Dr. Gautam Das
27	Aritra Gayen	201561-21-0006	561-1111-0439-20	A Theoretical Construct in Respect of Relationship Between Stock Market and Bond Market	Dr. Gautam Das
28	Arpan Panja	201561-21-0007	561-1111-0440-20	Micro-finance Institution in India	Dr. Gautam Das
29	Ayon Chatterjee	201561-21-0008	561-1111-0442-20	E-commerce on TRENDS Company	Dr. Gautam Das
30	Bishal Sabtra	201561-21-0009	561-1111-0443-20	Working Capital Management- A Case Study Of CEAT Company Ltd.	Dr. Gautam Das
31	Biswajyoti Deb	201561-21-0010	561-1111-0444-20	EFFECTIVENESS OF ADVERTISING: A CASE STUDY OF NESTLE VS CADBURY	Dr. Sandip Sinha
32	Debasish Das	201561-21-0011	561-1111-0446-20	A Report On E-Commerce	Dr. Sandip Sinha
33	Deb Kumar Das	201561-21-0012	561-1111-0448-20	WORKING CAPITAL MANAGEMENT - A Case Study of CEAT Company Ltd.	Dr. Sandip Sinha
34	Dipon Roy	201561-21-0013	561-1111-0449-20	An Analysis to Insurance Industry: Special Reference To Life Insurance	Dr. Sandip Sinha
35	Debprakash Shaw	201561-21-0014	561-1111-0451-20	A STUDY ON CUSTOMER SATISFACTION ON HEALTH DRINK & BEVERAGE	Dr. Sandip Sinha
36	Kushal Mondal	201561-21-0017	561-1111-0456-20	Solvency Ratio Analysis of Dabur India Ltd.	Mr. Sujit Kumar Mahato
37	Md Jalaluddin	201561-21-0018	561-1111-0458-20	AN ANALYSIS TO INSURANCE INDUSTRY SPECIAL REFERENCE TO LIFE INSURANCE	Mr. Sujit Kumar Mahato
38	Pallab Mondal	201561-21-0019	561-1111-0462-20	A Comparative Study on Profitability of Indian Oil Corporation Limited and Hindustan Petroleum Corporation Limited	Mr. Sujit Kumar Mahato

Sl. No.	Name of Student	University Roll No.	University Registration No.	Title of Project	Name of Supervisor
39	Pritam Banerjee	201561-21-0020	561-1111-0465-20	Ratio Analysis of a Pharmaceutical Industry	Mr. Sujit Kumar Mahato
40	Rahul Patra	201561-21-0021	561-1111-0470-20	Role of NABARD In Rural Sector	Mr. Sujit Kumar Mahato
41	Rohan Halder	201561-21-0022	561-1111-0474-20	Goods & Services Tax	Mr. Sourav Bhuiya
42	Sagar Santra	201561-21-0023	561-1111-0475-20	RELATIONSHIP BETWEEN STOCK MARKET AND BOND MARKET	Mr. Sourav Bhuiya
43	Samiran Das	201561-21-0024	561-1111-0476-20	An Analysis to Insurance Industry Special reference to Life Insurance	Mr. Sourav Bhuiya
44	Sayan Chatterjee	201561-21-0025	561-1111-0480-20	Working Capital Management -A Case Study of CEAT Company Ltd.	Mr. Sourav Bhuiya
45	Sayan Kumar Mondal	201561-21-0026	561-1111-0481-20	A Comparative Analysis on The Marketing Strategies of Swiggy and Zomato	Mr. Sourav Bhuiya
46	Sk Anish	201561-21-0028	561-1111-0487-20	E-Commerce	Mr. Sourav Bhuiya
47	Sk. Imran Hossain	201561-21-0029	561-1111-0488-20	GST-The New Era of The Taxation System	Mr. Sourav Bhuiya
48	Sk Salman	201561-21-0031	561-1111-0491-20	Working Capital Management	Mr. Sourav Bhuiya
49	Sk. Saruf	201561-21-0032	561-1111-0492-20	SOLVENCY RATIO ANALYSIS OF DABUR INDIA LTD.	Mr. Sourav Bhuiya
50	Soumadip Dhara	201561-21-0033	561-1111-0494-20	An Overview of Mutual Fund	Mr. Mriganka Mallick
51	Soumen Das	201561-21-0034	561-1111-0495-20	Analysis of Usage Pattern of Online Banking facilities by Customers with special reference to Kolkata	Mr. Mriganka Mallick
52	Subhajit Chatterjee	201561-21-0035	561-1111-0499-20	SALES & DISTRIBUTION MANAGEMENT	Mr. Mriganka Mallick
53	Subhajit Mondal	201561-21-0036	561-1111-0500-20	A PROJECT ON E COMMERCE THE IMPACT OF RETALING ON THE SECTOR A CASE ON AMAZON	Mr.Mriganka Mallick
54	Sudip Mukherjee	201561-21-0037	561-1111-0502-20	Corporate social responsibility: an initiative of Hindustan Unilever Limited	Mr. Mriganka Mallick
55	Sujay Banerjee	201561-21-0038	561-1111-0505-20	Working Capital Management - A Case Study Of CEAT Company LTD	Mr. Mriganka Mallick
56	Supratim Sarkar	201561-21-0039	561-1111-0507-20	Micro-finance Institutions in India	Mr. Mriganka Mallick
57	Swastik Bhattacharjee	201561-21-0040	561-1111-0513-20	INTRODUCTION OF E-COMMERCE TO THE ECONOMY AND IT'S SCOPE IN THE FUTURE: A CASE STUDY ON FLIPKART	Mr. Mriganka Mallick
58	Trimoy Dey	201561-21-0041	561-1111-0515-20	Working Capital Management - A Case Study of CEAT Company Ltd.	Mr. Mriganka Mallick
59	Souvik Das	201561-21-0042	561-1111-0520-20	E-COMMERCE	Mr. Mriganka Mallick
60	Sandeep Paul	201561-21-0044	561-1111-0523-20	Corporate Social Responsibility	Mr. Sujit Kumar Mahato
61	Kabir Khan	201561-21-0045	561-1111-0524-20	Working Capital Management - A Case Study of CEAT Company Ltd.	Mr. Sujit Kumar Mahato
62	Md Ariaan Raj	201561-21-0046	561-1111-0525-20	Online Banking	Mr. Sujit Kumar Mahato

Sl. No.	Name of Student	University Roll No.	University Registration No.	Title of Project	Name of Supervisor
63	Arpan Sau	201561-21-0047	561-1111-0527-20	Relationship between Stock Market and Bond Market	Mr. Sujit Kumar Mahato
64	Avijit Das	201561-21-0048	561-1111-0528-20	The Study of Working Capital Management with Ratio Analysis	Mr. Sujit kumar Mahato
65	Debasish Pramanick	201561-21-0050	561-1112-0447-20	Goods and Services Tax	Mr. Sujit Kumar Mahato
66	Ranajit Naskar	201561-21-0053	561-1112-0472-20	A Comparative Study on Profitability of Indian Oil Corporation Limited and Hindustan Petroleum Corporation Limited	Mr. Sujit Kumar Mahato
67	Samiran Mondal	201561-21-0054	561-1112-0477-20	Online Banking	Mr. Sujit Kumar Mahato
68	Sayan Pagra	201561-21-0055	561-1112-0482-20	E-commerce Project on Myntra	Dr. Gautam Das
69	Sayan Sardar	201561-21-0056	561-1112-0484-20	Corporate Social Responsibility in India & An Analysis of CSR Expenditure & Relationship with the Financial Performance of Reliance Industries Ltd.	Dr.Gautam Das
70	Sourav Baidya	201561-21-0057	561-1112-0496-20	A Comparative Study on Customer Satisfaction between Amazon and Flipkart	Dr. Gautam Das
71	Souvik Mondal	201561-21-0058	561-1112-0497-20	Goods & Services Tax	Dr. Gautam Das
72	Suvayan Dhara	201561-21-0060	561-1112-0512-20	Revolutionizing the Online Shopping Experience - E-Commerce	Dr. Gautam Das
73	Tunir Mondal	201561-21-0062	561-1112-0516-20	A Comparative Study of Financial Performances of Tata Steel and Jindal steel & Power using Ratio Analysis	Dr. Gautam Das
74	Rakesh Ghosh	201561-21-0063	561-1114-0471-20	Financial Performance Analysis of Tata Steel Ltd.	Dr. Gautam Das
75	Santanu Ghosh	201561-21-0064	561-1114-0479-20	Corporate Social Responsibility for Economic Growth of Indian Companies (Tata Motors, HUL)	Dr. Gautam Das
76	Souvik Samanta	201561-21-0065	561-1114-0498-20	Financial Statement Analysis of Tata Motors	Dr. Sandip Sinha
77	Subham Sadhukhan	201561-21-0066	561-1114-0501-20	CORPORATE SOCIAL RESPONSIBILITY	Dr. Sandip Sinha
78	Suresh Karmakar	201561-21-0067	561-1114-0508-20	RATIO ANALYSIS A STUDY OF BAJAJ AUTO LTD AND TVS MOTORS	Dr. Sandip Sinha
79	Sushabhan Nath	201561-21-0068	561-1114-0509-20	Customer's Satisfaction Towards Amazon.in	Dr. Sandip Sinha
80	Sk Najrul Islam	201561-21-0070	561-1115-0490-20	ANALYSIS OF FINANCIAL PERFORMANCE OF SELECTED INDIAN CEMENT COMPANIES USING DUPONT MODEL	Dr. Sandip Sinha
81	Sk. Mafuj	201561-21-0071	561-1115-0493-20	Online Banking	Dr. Sandip Sinha
82	Sk. Tariful Islam	201561-21-0072	561-1115-0517-20	Online Banking	Dr. Sandip Sinha
83	Sounak Dutta	201561-21-0145	561-1111-1260-20	Goods & Services Tax	Dr. Sandip Sinha
84	Touhid Mollick	201561-21-0147	561-1115-1287-20	Financial Statement Analysis	Dr. Sandip Sinha

Project Report

(Submitted for the Degree of B.Com. Honours in Accounting & Finance
under the University of Calcutta)

Title of the Project

**Analysis of Usage Pattern of Online Banking Facilities by Customers
with Special Reference to Kolkata**



Submitted by

Name of the Candidate: Soumen Das

Registration No.: 561-1111-0495-20

University Roll No.: 201561-21-0034

Name of the College: Budge Budge College

Supervised by

Name of the Supervisor: Mr. Mriganka Mallick

Name of the College: Budge Budge College

Month & Year of Submission

May, 2023

Soumen
20/7/23
Budge Budge College
Department of
Commerce

Annexure- IA

Supervisor's Certificate

This is to certify that Mr. Soumen Das student of B.Com. Honours in Accounting & Finance (**Budge Budge College**) under the University of Calcutta has worked under my supervision and guidance for his/her Project Work and prepared a Project Report with the title Analysis of Usage Pattern of Online Banking Facilities by Customers with special reference to Kolkata. which he is submitting, is his genuine and original work to the best of my knowledge.

Mriganka Mallick

Signature

Place: KOLKATA

Name: Mr. Mriganka Mallick

Date: May,2023

Designation: Professor

Name of the College: Budge Budge College

PROJECT REPORT

(Submitted for the Degree of B.Com. Honours in Accounting & Finance under the University of Calcutta)

TITLE OF THE PROJECT

“GOODS & SERVICES TAX”

Submitted by

Name of the Candidate : Rohan Halder

Registration Number: 561-1111-0474-20

Name of the College: BUDGE BUDGE COLLEGE

College Roll Number: 20212696

CU exam Roll Number: 201561-21-0022

D. / M. / Y.
20/7/23
Budge Budge College
Department of Commerce

SUPERVISED BY

Name of the Supervisor: SOURAV BHUIYA

Name of the College: BUDGE BUDGE COLLEGE

MONTH & YEAR OF SUBMISSION:

Date : MAY, 2023

SUPERVISOR'S CERTIFICATE

This is to certify that **Rohan Halder** a student of B.Com. Honours in Accounting & Finance of **BUDGE BUDGE COLLEGE**, under the University of Calcutta has worked under my supervision and guidance for his/her Project Work and prepared a Project Report with the title
"GOODS & SERVICE TAX" which he/she is submitting, is his/her genuine and original work to the best of my knowledge.

Signature:



Name: **SOURAV BHUIYA**

Name of the College: **BUDGE BUDGE COLLEGE**

B.Sc. Food and Nutrition Honours



UNIVERSITY OF CALCUTTA

Notification No. CSR/ 12 /18

It is notified for information of all concerned that the Syndicate in its meeting held on 28.05.2018 (vide Item No.14) approved the Syllabi of different subjects in Undergraduate Honours / General / Major courses of studies (CBCS) under this University, as laid down in the accompanying pamphlet:

List of the subjects

<u>Sl. No.</u>	<u>Subject</u>	<u>Sl. No.</u>	<u>Subject</u>
1	Anthropology (Honours / General)	29	Mathematics (Honours / General)
2	Arabic (Honours / General)	30	Microbiology (Honours / General)
3	Persian (Honours / General)	31	Mol. Biology (General)
4	Bengali (Honours / General / LCC2 / AECC1)	32	Philosophy (Honours / General)
5	Bio-Chemistry (Honours / General)	33	Physical Education (General)
6	Botany (Honours / General)	34	Physics (Honours / General)
7	Chemistry (Honours / General)	35	Physiology (Honours / General)
8	Computer Science (Honours / General)	36	Political Science (Honours / General)
9	Defence Studies (General)	37	Psychology (Honours / General)
10	Economics (Honours / General)	38	Sanskrit (Honours / General)
11	Education (Honours / General)	39	Social Science (General)
12	Electronics (Honours / General)	40	Sociology (Honours / General)
13	English ((Honours / General/ LCC1/ LCC2/AECC1))	41	Statistics (Honours / General)
14	Environmental Science (Honours / General)	42	Urdu (Honours / General /LCC2 /AECC1)
15	Environmental Studies (AECC2)	43	Women Studies (General)
16	Film Studies (General)	44	Zoology (Honours / General)
17	Food Nutrition (Honours / General)	45	Industrial Fish and Fisheries – IFFV (Major)
18	French (General)	46	Sericulture – SRTV (Major)
19	Geography (Honours / General)	47	Computer Applications – CMAV (Major)
20	Geology (Honours / General)	48	Tourism and Travel Management – TTMV (Major)
21	Hindi (Honours / General /LCC2 /AECC1)	49	Advertising Sales Promotion and Sales Management –ASPV (Major)
22	History (Honours / General)	50	Communicative English –CMEV (Major)
23	Islamic History Culture (Honours / General)	51	Clinical Nutrition and Dietetics CNDV (Major)
24	Home Science Extension Education (General)	52	Bachelor of Business Administration (BBA) (Honours)
25	House Hold Art (General)	53	Bachelor of Fashion and Apparel Design – (B.F.A.D.) (Honours)
26	Human Development (Honours / General)	54	Bachelor of Fine Art (B.F.A.) (Honours)
27	Human Rights (General)	55	B. Music (Honours / General) and Music (General)
28	Journalism and Mass Communication (Honours / General)		

The above shall be effective from the academic session 2018-2019.

SENATE HOUSE
KOLKATA-700073
The 4th June, 2018


 (Dr. Santanu Paul)
 Deputy Registrar

SCHEME AND SYLLABUS FOR CHOICE BASED CREDITSYSTEM FOR B.Sc. HONOURS
FOOD AND NUTRITION

SEMESTER	CORE COURSE (14)	ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)	SKILL ENHANCEMENT COURSE (SEC)	DISPLINE SPECIFIC ELECTIVE COURSE (DSE)	ELECTIVE: GENERIC COURSE (GE)
I	FNT-A-CC-1-1-Th:BASIC FOOD SCIENCE-I FNT-A-CC-1-1-P:BASIC FOOD SCIENCE-I (PRACTICAL)	(2)	(2)	(4)	(4)
	FNT-A-CC-1-2-Th:HUMAN PHYSIOLOGY-I FNT-A-CC-1-2-P:HUMAN PHYSIOLOGY-I (PRACTICAL)				
II	FNT-A-CC-2-3-Th:BASIC FOOD SCIENCE-II FNT-A-CC-2-3-P: BASIC FOOD SCIENCE-II (PRACTICAL)				
	FNT-A-CC-2-4-Th:HUMAN PHYSIOLOGY-II FNT-A-CC-2-4-P:HUMAN PHYSIOLOGY-II (PRACTICAL)				
III	FNT-A-CC-3-5-Th: HUMAN NUTRITION-I FNT-A-CC-3-5-P: HUMAN NUTRITION-I (PRACTICAL)			SEC-A-(1/2)	
	FNT-A-CC-3-6-Th:COMMUNITY NUTRITION FNT-A-CC-3-6-P:COMMUNITY NUTRIION (PRACTICAL)				
	FNT-A-CC-3-7-Th: FOOD COMMODITIES FNT-A-CC-3-7-P: FOOD COMMODITIES (PRACTICAL)				

	FNTA-CC8Th: HUMAN NUTRITION-II FNTA-CC8P: HUMAN NUTRITION-II (PRACTICAL)			
IV	FNT-A-CC-4-9-Th: DIET THERAPY-I FNT-A-CC-4-9-P: DIET THERAPY-I (PRACTICAL)		SEC-B(3/4)	
	FNT-A-CC-4-10-Th:NUTRITIONAL BIOCHEMISTRY-I FNT-A-CC-4-10-P: NUTRITIONAL BIOCHEMISTRY-I (PRACTICAL)			
V	FNT-A-CC-5-11-Th: DIET THERAPY-II FNT-A-CC-5-11-P: DIET THERAPY-II (PRACTICAL)		DSE- A(1/2)	
	FNT-A-CC-5-12-Th: NUTRITIONAL BIOCHEMISTRY-II FNTA-CC12P: NUTRITIONAL BIOCHEMISTRY-II (PRACTICAL)		DSE- B(1/2)	
VI	FNT-A-CC-6-13-Th:FOOD MICROBIOLOGY FNT-A-CC-6-13-P: FOOD MICROBIOLOGY (PRACTICAL)		DSE- A(3/4)	
	FNT-A-CC-6-14-Th: FOOD PRESERVATION FNT-A-CC-6-14-P: FOOD PRESERVATION (PRACTICAL)		DSE- B(3/4)	

2. General concepts of weights and measures. Eye estimation of raw and cooked foods
3. Preparation of food from different food groups and their significance in relation to health.
4. Preparation of supplementary food for different age group and their nutritional significance.
5. Planning and preparation of low cost diet for Grade I and Grade II malnourished child

FNT-A-CC-3-6-Th: COMMUNITY NUTRITION**4 CREDITS**

1. Concept of Community, types of Community, Factors affecting health of the Community.
2. Nutritional Assessment and Surveillance: Meaning, need, objectives and importance
3. Nutritional assessment of human: Clinical findings, nutritional anthropometry, biochemical tests, biophysical methods.
4. Diet survey: Need and importance, methods of dietary survey, Interpretation - concept of consumption unit, individual and total distribution of food in family, adequacy of diet in respect to RDA, concept of family food security.
5. Clinical Signs: Need & Importance's, identifying signs of PEM, vitamin A deficiency and iodine deficiency, Interpretation of descriptive list of clinical signs.
6. Nutritional anthropometry:Need and importance, standard for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements. Use of growth chart.
7. International, national, regional agencies and organisations. Nutritional intervention programmes to combat malnutrition.

FNT-A-CC-3-6-P:COMMUNITY NUTRITION (PRACTICAL)**4 CREDITS**

1. Anthropometric Measurement of infant - Length, weight, circumference of chest, mid-upper arm circumference, precautions to be taken.
2. Comparison with norms and interpretation of the nutritional assessment data and its significance. Weight for age, height for age, weight for height, body Mass Index (BMI) Waist - Hip Ratio (WHR). Skin fold thickness.
3. Growth charts - plotting of growth charts, growth monitoring and promotion.
4. Clinical assessment and signs of nutrient deficiencies specially PEM (Kwashiorkor, marasmus) I vitamin A deficiencies, Anaemia, Rickets, B-Complex deficiencies.

5. Estimation of food and nutrient intake: Household food consumption data, adult consumption unit, 24 hours dietary recall 24 hours record, Weighment method, food diaries, food frequency data, use of each of the above, information available through each individual, collection of data, estimation of intakes.

FNT-A-CC-3-7-Th: FOOD COMMODITIES

4 CREDITS

1. Cereals and Millets: Structure, processing, storage, use in various preparation, variety, selection and cost. Cereal products, breakfast cereals, fast food.
2. Pulses and Legumes: Structures, Selection and variety. Storage, Processing and use in different preparations, Nutritional aspects and cost.
3. Milk and Milk products : Composition, Classification, Selection Quality and Cost, Processing, Storage and uses in different preparations, Nutritional aspects, shelf life and spoilage.
4. Eggs: Production, grade, quality selection, storage and spoilage, cost nutritional aspects and use in different preparations.
5. Meat, Fish and Poultry: Types, Selection, Purchase, Storage, Uses, preparations Cost, Spoilage of fish Poultry and meat.
6. Vegetables and Fruits: Variety, Selection, purchase, storage, availability causes and nutritional aspects of raw and processed products and use in different preparations.
7. Sugar and sugar Products: Types of natural, sweeteners, manufacture, selection, storage and use as preserves, stages in sugar cookery.
8. Fats and Oils: Types and sources (animal and vegetable), Processing, uses in different preparations, storage, cost and nutritional aspects.
9. Raising and Leavening agents: Types, constituents, uses in cookery and bakery, storage.
10. Food Adjuncts: Spices, condiments, herbs, extracts; concentrates essences, food colours, origin, classification, description, uses, specifications, procurements and storage.
11. Convenience Foods: Role, types, advantages, uses, cost and contribution to diet.
12. Salt: Types and uses.
13. Beverages: Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices.

FNT-A-CC-3-7-P: FOOD COMMODITIES (PRACTICAL)

2 CREDITS

1. Detection of starch, sucrose, sucrose, formalin, boric acid, and urea in milk.
2. Detection of urea in puffed rice.
3. Detection of Vanaspati in Ghee/Butter.
4. Detection of Khesari flour in besan.

2. Preserved Products: Jam, Jelly, Marmalade, Sauces, Pickles, Squashes, Syrups-types, composition and manufacture, selection, cost, storage, uses and nutritional aspects.
3. Food Standards : ISI, Agmark, FPO, MPO, PFA, FSSAI.

FNT-A-CC-6-14-P: FOOD PRESERVATION (PRACTICAL) 2 CREDITS

1. Different methods of Food preservation – Drying, Freezing, Frying, canning, bottling etc.
2. Aseptic handling: Sources of contamination of foods.
3. Preparation of pickles, tomato sauce, chili sauce, jelly, tomato puree, squashes etc.

DISCIPLINE SPECIFIC ELECTIVE (DSE) SYLLABUS

FNT-A- DSE-A-5-1-Th: PUBLIC HEALTH 4 CREDITS

1. Health and Dimension of Health: Positive health Versus Absence of disease
2. Secondary Sources of Community Health data :Sources of relevant vital statistics of infant, child & maternal mortality rates
3. Immunization: Importance and Immunization schedule for children, adults and for foreign travellers.
4. Community Water and Waste Management: Importance of water to the community, etiology and effects of toxic agents, water borne infectious agents, sources of water, safe drinking water, potable water, waste and waste disposal, sewage disposal and treatment, solid waste and disposal, liquid waste disposal.
5. Concept of Epidemiology: Study of the epidemiologic approach-determinants of disease preventive & social means.
6. Communicable and infective disease control: Nature of communicable and infectious diseases, infection, contamination, disinfections, decontamination, transmission-direct & indirect, vector borne disease infecting organisms and positive agents, environmental agents and epidemiological principles of disease control.
7. Public health hazards due to contaminated foods: Food borne infections and intoxications: symptoms, mode of transmission and methods of prevention, investigation and detection of food borne disease out-break.

FNT-A-DSE-A-5-1-P: PUBLIC HEALTH (PRACTICAL) 2 CREDITS

1. Preparation of 3 audio visual aids like charts, posters, models related to health and nutrition education.
2. Formulation and preparation of low cost and medium cost nutritious/ supplementary recipe.
3. Field visit(health centre, immunization centre, ICDS, MCH centre, NGOs etc.).

FNT-A-DSE-A-5-2-Th: MUSHROOM CULTURE 4 CREDITS

- 1 Definition and characteristics of mushroom.
- 2 Morphology and life cycle of Mushroom.
- 3 Identification and classification of mushroom
- 4 Nutritional and medicinal value of edible mushrooms; poisonous mushrooms
- 5 Types of edible mushrooms available in India- *Volvariella volvacea*, *Pleurotus citrinopileatus*, *Agaricus bisporus*.
- 6 Process of mushroom cultivation.
- 7 Storage and nutrition: short term storage (Refrigeration- upto 24 hours), long term storage (canning, pickles, papads), drying, storage in salt solutions.

FNT-A- DSE- A-5-2-P: MUSHROOM CULTURE(PRACTICAL) 2 CREDITS

- 1 Visit to Mushroom Culture Centers/ Farms for:
 - Process involved in mushroom cultivation
 - Types and varieties of mushroom
 - Visual Identification of edible and poisonous
 - mushroom Marketing
- 2 Different Food preparation from mushroom

FNTA-DSE- A-6-3-Th : DIET COUNSELING AND PATIENT CARE 4 CREDITS

1. Introduction to term Dietician: Definition of Dietician , Difference between registered dietician & Nutrition
2. Role of dietician in hospital : work area of hospital dietician, role of dietician in hospital
3. Role of dietician in community :- work area of community dietician, role of community dietician

4. Introduction to Nutrition Care Process: Definition of Nutrition Care Process .Steps of Nutrition Care Process
5. Nutrition Assessment:-Definition , Nutrition assessment component, Critical thinking
6. Nutrition Diagnosis: nutrition diagnosis domain:- intake, clinical, behavioral – environmental
7. Nutrition diagnosis component• nutrition vs. medical diagnosis
8. Nutrition Interventions: Definition and objectives
9. Nutrition Monitoring & Evaluation : Definition, Nutrition monitoring & evaluation components, nutrition goals & objectives. Evaluation of nutrition care

**FNT-A-DSE- A-6-3-P: DIET COUNSELING AND PATIENT CARE (PRACTICAL)
2CREDITS**

Visit and training to hospitals/nursing homes for 7-15 days :

- 1 Taking Case history and study
- 2 Routine Hospital diet
- 3 Distribution of food from kitchen to individual patient with specific diet.
- 4 Dietary management of patient in different diseases and diet chart for the particular patient.
- 5 Role of dietitian /nutritionist in diet counselling

FNT-A-DSE- A-6-4-Th: GERIATRIC NUTRITION 4 CREDITS

1. Definition of ageing, senescence, old age or aged people, gerontology, geriatrics, and Geriatric nutrition. Classification of old population.
- 2 .Physiological and biochemical changes during old age.
3. Assessment of nutritional status of older adults.
4. Nutritional requirements and general dietary guidelines for elderly .
5. Major nutritional and health problems during old age.

FNT-A-DSE- A-6-4-P: GERIATRIC NUTRITION(PRACTICAL) 2 CREDITS

1. Visit to old- age homes.
2. Preparation of dishes suitable for older person- soft,semisolid and easily digestible balanced diet.

FNT-A-DSE-B-5-1-Th: THEORIES OF HUMAN DEVELOPMENT 4 CREDITS

BUDGE BUDGE COLLEGE
Academic Session: 2022-2023
Department of Food and Nutrition

1.3.2 Percentage of students undertaking project work/field work/ internships (Data for the latest completed academic year)

List of students undertaking project field work follows:

B.Sc. Food and Nutrition Honours

Serial No.	Roll Number	Registration Number	Name	I. Course Name and Project Title	Supervisor	II. Course Name and Project Title	Supervisor	III. Course Name and Project Title	Supervisor
1	203561-11-0005	561-1211-0358-20	Alina Mitra	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
2	203561-11-0006	561-1211-0360-20	Anisha Dutta	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
3	203561-11-0007	561-1211-0363-20	Chandrani Garai	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
4	203561-11-0010	561-1211-0367-20	Pranita Basu	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
5	203561-11-0011	561-1211-0370-20	Sayantani Sarkar	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
6	203561-11-0012	561-1211-0374-20	Sneha Adhikary	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
7	203561-11-0013	561-1211-0375-20	Sudipa Dulai	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
8	203561-11-0036	561-1211-0429-20	Piu Paramanik	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu

Serial No.	Roll Number	Registration Number	Name	I. Course Name and Project Title	Supervisor	II. Course Name and Project Title	Supervisor	III. Course Name and Project Title	Supervisor
9	203561-11-0037	561-1211-0430-20	Payel Mukherjee	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
10	203561-11-0042	561-1212-0362-20	Arpita Mal	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
11	203561-11-0044	561-1212-0368-20	Riya Sardar	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
12	203561-11-0045	561-1212-0372-20	Shreya Kayal	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
13	203561-11-0046	561-1212-0377-20	Suparna Das	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
14	203561-11-0050	561-1214-0361-20	Anushree Sadhukhan	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
15	203561-11-0051	561-1214-0373-20	Shreya Mondal	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
16	203561-21-0002	561-1111-0369-20	Salil Panja	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
17	203561-21-0008	561-1111-0431-20	Sohan Mondal	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu
18	203561-21-0021	561-1115-0376-20	Suja Shaharyar Mozib	(DSE A-6-4-P) Geriatric Nutrition, Assessment of nutritional status of an elderly person	Dr.Shruti Agrawal	(CC-6-14-P) Food Preservation, Visit to Canning Industry	Dr.Shruti Agrawal	(DSE A-5-1-P) Public Health, Visit to ICDS Centre	Smita Sahu

IV. B.Sc. Food and Nutrition Honours

Serial No.	Roll Number	Registration Number	Name	Course Name and Project Title	Supervisor
1	213561-11-0012	561-1211-0308-21	Barsha Khamaru	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
2	213561-11-0013	561-1211-0310-21	Anisha Khatun	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
3	213561-11-0014	561-1211-0311-21	Rupsa Ghosh	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
4	213561-11-0015	561-1211-0312-21	Mahek Shaw	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
5	213561-11-0016	561-1211-0315-21	Sreemoyee Sengupta	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
6	213561-11-0017	561-1211-0317-21	Piyasa Ghosh	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
7	213561-11-0018	561-1211-0318-21	Nishat Sekh	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
8	213561-11-0019	561-1211-0319-21	Saptadipa Hazra	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
9	213561-11-0020	561-1211-0320-21	Sahina Khatun	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
10	213561-11-0021	561-1211-0321-21	Sneha Ghosh	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
11	213561-11-0022	561-1211-0322-21	Srijita Das	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
12	213561-11-0044	561-1214-0316-21	Rimita Pramanick	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
13	213561-11-0049	561-1215-0313-21	Monija Mollick	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
14	213561-11-0051	561-1212-1166-21	Priya Mondal	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
15	213561-11-0053	561-1212-1230-21	Trisita Mandal	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal
16	213561-21-0009	561-1115-0309-21	Ashik Iqbal Molla	(CC-3-6-P) Community Nutrition, Visit to ICDS Centre	Dr.Shruti Agrawal

B.Sc. SEMESTER - VI (H) PRACTICAL
EXAMINATION - 2023
(UNDER CBCS)

FOOD & NUTRITION (HONOURS)

PAPER : DSE-A4 (GERIARTIC NUTRITION)

ROLL & NO : 203561 - 11 - 0013

REGISTRATION NO : 561 - 1211 - 0375 - 20

CONTENT

SL NO.	TOPICS	DATE	PAGE NO.	TEACHER'S SIGNATURE
1.	NUTRITIONAL REQUIREMENT & PREPARATION OF SUITABLE DISHES FOR ELDERLY PERSONS:			
	• NUTRITIONAL NEEDS & WHOLE DAY MENU PLANNING FOR AN ELDERLY MAN:	16/03/23	1 - 14	<i>SA 23/03/23</i>
	• PREPARATION OF WHOLE DAY MENU & SEMI SOFT, EASILY DIGESTABLE DISHES FOR ELDERLY PERSONS:	23/03/23	15 - 38	<i>SA 05/04/23</i>
	• WHOLE DAY MENU PLANNING FOR ELDERLY PERSONS SUFFERING FROM SWALLOWING DIFFICULTIES:	23/03/23	39	
	• — DO - PREPARATION	08/05/23	40 - 42	<i>SA 20/5/23</i>
	• MINI NUTRITIONAL ASSESSMENT & ITS INTERPRETATION	20/5/23	43 - 57	<i>SA 13/6/23</i>
	• DIET SURVEY & ITS INTERPRETATION	20/05/23	58 - 61	<i>SA 13/6/23</i>

NUTRITIONAL REQUIREMENT DURING OLD AGE

&

PREPARATION OF DISHES SUITABLE FOR ELDERLY PERSONS

• INTRODUCTION:

Indian population has approximately tripled during the last 50 years, but the number of elderly Indians has increased more than four fold. As per census 2011, the absolute number of elderly population has crossed the 100 million mark.

The cornerstone of geriatric nutrition is ensuring a well balanced diet to provide optimal nutrition which can then delay the leading cause of death: heart disease, cancer, stroke.

• NUTRITIONAL NEED:

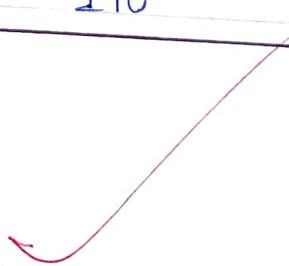
The nutritional needs of the elderly vary widely due to changes in the ability to digest, absorb & utilize nutrients.

• ENERGY:

The age related body composition changes reduce the REE & with the declining PAL, the BMR & energy requirement ultimately decrease in old age. The estimate

Daily Nutrient recommendation for the elderly in India
 (ICMR, NIN, 2020 RDA).

Nutrients	ELDERLY PERSONS	
	Men ≥ 60 Years	Women ≥ 60 Years
Dietary Fibre (gm)	30	25
Protein (gm)	54.0	46.0
Vitamin A (μg)	1000	840
Thiamine B1 (mg)	1.4	1.4
Riboflavin B2 (mg)	2.0	1.9
Niacin (mg)	14	11
Vitamin C (mg)	80	65
Vitamin B6 (mg)	1.9	1.9
Folate (μg)	300	200
Vitamin B12 (μg)	2.2	2.2
Vitamin D (I.U.)	800	800
Calcium (mg)	1200	1200
Magnesium (mg)	440	370
Iron (mg)	19	19
Zinc (mg)	17	13.2
Iodine (μg)	140	140



energy) requirements (EER) based on BMR and physical activity levels. For the sedentary elderly man and woman weighing 65 kg and 55 kg are 1699 kcal and 1477 kcal, respectively. These requirements have been rounded off to 1700 kcal for man and 1500 kcal for woman.

• PROTEIN:

A major feature of ageing is progressive loss of protein. This is due to reduction in skeletal muscle mass & Sub-optimal intakes protein. The protein: energy ratio (PE ratio) must has to be increased to maintain the protein intake in the presence of a decreased energy intake.

• FAT:

Fat provides energy, essential fatty acids & fat soluble vitamins. Dietary fat should meet 30-40 % of total energy intake of elderly saturated fat should provide not more than 10% of total calories.

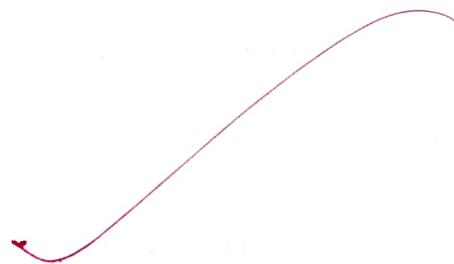
• CARBOHYDRATE:

The diet should include both simple and complex carbohydrates. The complex carbohydrates contain more fiber, vitamins and minerals are very important as they are digested more slowly & reduce glycemic response. Carbohydrate must provide 55-60% of the total calorie intake.

Daily Nutrients recommendations for the elderly in India (ICMR-NIN, 2020. EAR)

Elderly Persons	Energy (Kcal)
Men ≥ 60 years	1700
Women ≥ 60 years	1500

• EAR - Estimated Average Requirement.



• DIETARY FIBRE:

Elderly People should take adequate amount of dietary fibre, essentially the bulk forming cereal fibre. Fibre helps to prevent constipation and large bowel cancer.

• VITAMINS:

With the reduction in energy requirements & the lower intake of food along with the impaired absorption, metabolism and utilization, deficiency of certain vitamins is more likely occur in elderly.

■ WATER SOLUBLE VITAMINS:

• VITAMIN B₆:

Deficiency of Vitamin B₆ is common in older people. Vitamin B₆ deficiency is often associated with PEM and contributes to anaemia. Pyridoxine is also important for cell mediated immunity and lymphocyte proliferation.

• VITAMIN B₁₂:

Serum levels of vitamin B₁₂ decreases with age deficiency can causes anaemia neurological disorders and even dementia. Older population should consume foods fortified with vitamin B₁₂ or a supplement containing vitamin B₁₂ to meet their RDA.

• FOLIC ACID:

Folic acid is required for methylation & nucleotide biosynthesis reactions and its deficiency leads to anaemia, atherosclerosis, dementia etc. Folic acid deficiency is very common amongst the older population.

• VITAMIN-C:

The elderly are prone to vitamin deficiency & deficiency may cause capillary fragility & cataract. Hence older people encouraged to drink fruits or consume fruits rich in Vitamin-C.

• FAT SOLUBLE VITAMINS:

• VITAMIN-A:

Vitamin A deficiency is very rare in older people & essentially cause night vision impairment. However, the elderly are at risk of vitamin A deficiency if their intake of animal products, vegetables & fruits & inadequates.

• VITAMIN-D:

Vitamin D deficiency (VDD) is associated with osteoporosis in elderly people. VDD is also leads to secondary hyperparathyroidism, in sufficient bone calcification increased risk of osteoporosis, falls and fractures.

The ICMR-NIN (2020) recommends an additional

allowance of 200 IU (20 µg)/day. Vitamin D for the elderly population above 60 years in India as RDA of 800 IU.

• MINERALS:

• CALCIUM:

Calcium is important for bone health of elderly people also. Keeping in view the decreased absorption of calcium and age related bone loss, the ICMR-NIN (2020) recommends an additional allowance of 200 mg calcium to EAR of 800 mg set for adult person.

• ZINC:

Zinc is important for cell mediated immunity (CMI). Older adults are vulnerable to zinc deficiency leading to increased inflammation associated with various health problems, including cancer, CVDs, and autoimmune disease & diabetes. So diet of elderly people should be rich in good sources of zinc such as lean meat, seafood, and protein rich plant sources (beans and legumes).

• IRON:

Elderly people may have lower iron requirements to maintain adequate iron stores as compared to younger adults.

• FLUID:

Older people have a greater proportion of fat mass to lean muscle mass. Since the water content of fat mass is less than muscle mass, the elderly are likely to become dehydrated as there is impaired thirst response to hypovolemia & hyper osmolality. Therefore elderly should be encouraged to consume water frequently.

DIETARY GUIDELINES:

- The diet of the elderly may be modified according to physical activity of an individual & general condition.
- The diet should be simple but nutritious.
- Empty calorie foods should be taken minimum & calorie dense foods should be avoided.
- The quality of the diet can be improved by adding liberal amounts of green-leafy vegetables, Fruits, & whole cereals in the diet.
- Foods such in protein, vitamin and minerals should be included in diet.
- Fat promotes weight gain. Fat particularly saturated fat should be limited.
- Fried food should be avoided.
- Gas forming foods like sulphur containing vegetables & certain type of pulses have to be avoided.
- The semi-solid and soft well cooked foods should be given.

MODIFICATION OF DIET DURING OLD AGE:

Dietary Modification	Reasons
• Foods must be soft, easily chewable.	• Problems of dentition fallen teeth or dentures.
• Food should be easily digestible.	• Decreased production of digestive enzyme.
• Restricted fat in diet inclusion of PUFA.	• Susceptible to heart disease
• Food rich in fibre should be given.	• To prevent constipation & reduce cholesterol level. Also prevent colon cancer.
• Coffee, tea and cola beverages should be restricted.	• May result in insomnia due to over stimulation.
• Foods rich in calcium like milk and curd should be given.	• To compensate the bone loss and reduce the incidence of osteoporosis. Curd can aid in balance of intestinal flora.
• Green leafy vegetables can be given liberally.	• Source of nutrients like carotene, calcium, iron, riboflavin, folic acid, & vitamin-C besides supplying fibre, rich in antioxidants.

Dietary Modification

Reasons

- Foods of the elderly should consist of familiar foods. New pattern may lead to foods are difficult to accept. • Unfamiliar or changes in food psychological problems like depression.
- Clear soup at the beginning of meal. • Aids digestion.
- Small & frequent meals instead of three heavy ones. • Flavour more complete digestion and free from disease.
- A glass of warm milk Just before going to bed. • calcium along with magnesium deactivates adrenalin & promotes sleep. The warmth of milk acts as a relaxant.
- Heavy meal at noon & light in the night meal. • Sleep is less likely to be disturbed.
- Too many sweets which lot of fats and sugar should be avoided. ~~• Too much of sugar may cause fermentation, discomfort due to indigestion & cause tooth ache & may increase cholesterol level, may lead obesity.~~
- Plenty of fluid. • To prevent constipation & dehydration.
- Consumption of flaxseed (40 gm/day) • Decrease hot flushes in post menopausal woman.

CALCULATION OF DAILY NEEDS OF MACRONUTRIENT ON THE BASIS OF ESTIMATED AVERAGE REQUIREMENT OF ENERGY:

EAR = Estimated Average Requirement.

RDA = Recommended Dietary allowance

E = Total energy requirement.

\therefore EAR of energy for elderly Men = 1700 Kcal

\therefore RDA of protein = 54 gm.

\therefore Hence, diet should provide at least 64 gm protein,

$(100 \times \frac{54}{85} = 63.5 \approx 64 \text{ gm})$ as digestability of a

standard Indian diet is approximately 85%. (PDCAAS = 85%).

\therefore For elderly men, dietary fat should meet 30-40% E.

(ICMR, RDA, 2020)

As energy requirement decreases with increasing age
PE ratio should be raised.

\therefore If protein and fat provide 15% & 30% of total energy

respectively then, $[100 - (15 + 30)]\%$

= 55% of total energy should come

from carbohydrate.

$\therefore 1700 \times 30\% = 510$ should come from fats.

\therefore Amount of fat = $\frac{510}{9} \text{ gm} = 56.67 \text{ gm}$

(as 1 gm of fat provides 9 Kcal).

$\therefore 1700 \times 55\% = 935$ Kcal should come from carbohydrates.

\therefore Amount of carbohydrate = $\frac{935}{4} \text{ gm}$.

= 233.75 gm.

(as 1 gm of carbohydrate provides 4 Kcal).

$\therefore 1700 \times 15\% = 255$ Kcal should come from protein.

To provide 255 Kcal, $\frac{255}{4} = 63.75 \text{ gm}$ protein is needed.

(As 1 gm of protein provides 4 Kcal).

WHOLE DAY MENU PLAN FOR ELDERLY MEN:

Time	Food Items	Quantity
1. Early Morning (6:30 - 7:00 AM)	• Black Tea • Almonds	1 cup 10 gm
2. Breakfast (8:30 - 9:00 AM)	• Chapati • Soyabean Curry • Papaya	2 pieces 1 small bowl 1 bowl
3. Mid Morning (11:00 - 11:30 AM)	• Butter Milk	1 glass.
4. Lunch (12:30 - 1:00 PM)	• Rice • Spinach Curry • Chicken Curry • Curd	1 bowl 1 bowl 1 bowl 1 bowl
5. Afternoon (3:30 - 4:00 PM)	• Watermelon	1 bowl
6. Evening Snacks (5:30 - 6:00 PM)	• Cheera pulao	1 bowl
7. Dinner (8:30 - 9:00 PM)	• Daliya cooked with vegetables	1 bowl
8. Bed time (10:00 - 10:30 PM)	• Milk • Dates	1 cup 4 pieces

Date 16/03/23

Teacher's Signature



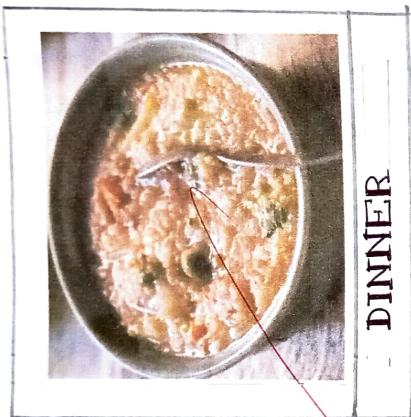
NUTRITIVE VALUE OF WHOLE DAY MENU FOR ELDERLY MEN:

Food Items	Amounts (gm)	Energy (Kcal)	Carbohydrate (gm)	Protein (gm)	Fat (gm)
1. Early Morning					
→ Black Tea					
→ Almonds	10	65.5	1.05	2.08	5.89
2. Breakfast					
→ chapati (whole wheat flour)	50	170.5	34.7	6.05	0.85
• Soyabean Curry					
→ Potato	80	77.6	13.08	1.28	0.08
→ Soyabean	25	108	1.47	10.8	4.87
→ Tomato	30	6	1.08	0.27	0.06
→ Onion	40	20	4.44	0.48	0.04
→ oil	5ml	45	-	-	5
• Papaya	80	25.8	5.76	0.48	0.08
3. Mid-Morning					
• Buttermilk	200ml	30	1	1.6	2.2
4. Lunch					
• Rice (Parboiled milled)	50	173	39.5	3.2	0.2
• Spinach Curry					
→ Potato	50	48.5	11.3	0.8	0.05

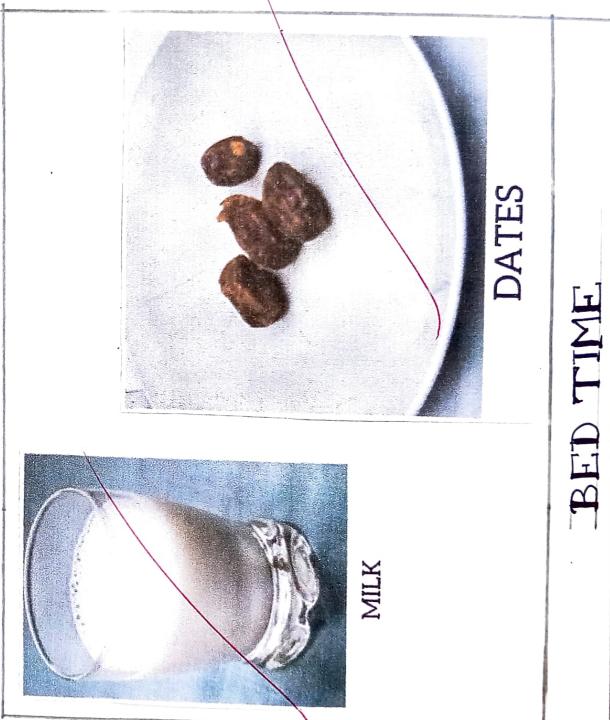
Teacher's Signature



Food Items	Amounts (gm)	Energy (Kcal)	Carbohydrate (gm)	Protein (gm)	Fat (gm)
→ Spinach	70	18.2	2.03	1.4	0.49
→ Onion	50	25	5.55	0.6	0.05
→ oil	5ml	45	-	-	5
• Chicken Curry					
→ chicken	75	81.75	-	19.42	0.45
→ Potato	60	58.2	13.56	0.96	0.06
→ Onion	40	20	4.44	0.48	0.04
→ Tomato	40	3	1.44	0.36	0.08
→ oil	5ml	45	-	-	5
• Curd	100	60	3.0	3.1	4.0
5. Afternoon:					
• Watermelon	100	16	3.3	0.2	0.2
6. Evening Snacks					
• Cheera pulaw					
→ Rice flakes	30	103.8	23.19	1.98	0.36
→ Carrot	30	14.4	3.18	0.27	0.06
→ Onion	50	25	5.55	0.6	0.05
→ oil	5ml	45	-	-	5



DINNER



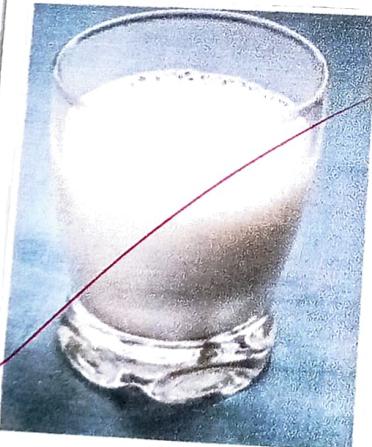
MILK

DATES

BED TIME



DINNER



MILK



DATES

BED TIME

	Energy (Kcal)	Protein (gm)	Carbohydrate (gm)	Fat (gm)
Total	1712.9	70.82 (60.19, 85%)	228.43	51.1
		digestable		
EAR	1700	43	-	-
RDA	-	54	-	-
Macronutrient Distribution (%E)		63.75 (15%)	233.75 (55%)	56.67 (30%)
Excess	$(1712.9 - 1700) = +12.9$	$(60.19 - 54) = 6.19$		
Deficit			- 5.32	- 5.57

SOFT, SEMI SOLID & EASILY DIGESTABLE BALANCED DIET FOR ELDERLY PERSONS:

Tooth loss, use of dentures & xerostomia (dry mouth) in elderly persons can lead to difficulties in chewing & swallowing. Missing teeth, loose or rotten teeth or poor fitting painful dentures make it difficult to eat some foods.

The soft diet is planned for condition where mechanical ease in eating or digestion or both are desired.

A soft diet is used as a transitional diet between a full fluid and a normal diet. The soft diet is a nutritionally adequate diet. It is soft in consistency, easy to chew, made up of simple, easily digestible foods, is moderately low in cellulose & connective tissues & does not contain such or highly flavoured foods.

In addition a soft diet also leaves a low residue after digestion & absorption. Thus, this diet is prescribed in acute infections. Some gastro-intestinal tract disorders & following surgery.

The average soft diet supplies between 1800-2000 Kcal & 55-65 gm protein. However, the energy, protein, and other nutrients are adjustable according to the individuals needs based on activity, height, weight, sex, age & disease condition. When properly planned, a soft diet is nutritionally adequate & can therefore, be continued for long periods.

Food Allowed:

- Refined cereals like rice & its products bread, biscuits, Semolina, Pasta etc.
- Washed pulses, as such or in the form of soups & in combination with cereals & vegetables.
- Milk & milk products such as curd, cottage cheese & mildly flavoured processed cheese
- Egg & lean meat like fish and chicken.
- Starchy & low fibre vegetable like potato, Spinach, bottle gourd etc.
- Soft fruits like papaya, banana, mango, etc. after removing the skin & seeds.
- Fruits & vegetables in the form of Juices, Soups & purees.
- Fats like butter, cream, vegetables oils etc.
- Salt & ~~Sugar~~ in moderation.

Foods to be used in restricted amounts or avoided:

- Raw vegetables & fruits excepting soft fruits. Avoid skin & seeds of vegetables & fruits.
- High fibre vegetables like tomatoes, Peas, beans etc. these may only be used in puree or soup form.
- Whole grain cereals & their products like cracked wheat and atta.
- Whole pulses & split pulses with husk.
- Dried fruits & nuts.
- Fried foods, fatty & tough meats, rich gravies, cakes, pastries, halwas etc.
- Heavily spiced food, pickles.



DALIYA KHICHIDI

DALIYA KHICHDI

■ Ingredient :

- Broken Wheat - 15 gm
- Green gram dal - 15 gm
- Grated Carrot - 15 gm
- Oil - 2.5 gm ($\frac{1}{2}$ tsp)
- Salt - to taste
- Water - 65 ml.
- Ginger paste - to taste.

■ Method :

1. oil is heated in pressure cooker.
2. Grated ginger is added and fried till it turn brown.
3. Then broken wheat is added & fried till golden brown.
4. Then rest of the ingredients are added & cook in pressure cooker for two minutes.

■ Nutritive Value:

Ingredient		Energy (Kcal)	Carbohydrate (gm)	Protein (gm)	Fat (gm)
	Amount Present in 100 gm	In taken Amount	Present in 100 gm	In taken Amount in 100 gm	Present in 100 gm
Broken wheat	15	346	51.9	71.2	10.68
Green gram dal	15	348	52.2	59.9	8.98
Groundnut	15	48	7.2	10.6	1.59
Carrot					
oil	2.5	900	22.5	-	-
Total			133.8	21.25	5.58
					100
					2.5
					2.94

■ Nutritional Significance of Daliya Khichdi:

1. GOOD SOURCE OF PROTEIN:

Daliya Khichdi consist of broken wheat & green gram dal. Broken wheat & green gram dal together, is good source of protein.

Wheat is deficient in lysine & green gram dal contains low amount of methionine but contain good amount of lysine. So, proteins from these two source (cereal & legume)

complement each other & improve the quality of protein. One Serving of daliya Khichdi provide approximately 5.5 gm protein.

In old age there is a decrease in skeletal tissue mass, results in decrease in storage protein. Deficiency of protein results in oedema, anemia & lower resistance to infection. Thus requirements of protein increased.

Therefore daliya Khichdi is good for elderly person.

2. RICH SOURCE OF FIBRE:

Broken wheat & green gram dal both contain good amount of fibre. (100 gm wheat contain 1.2 gm fibre & 100 gm green gram dal contain 0.8 gm).

So, Daliya Khichdi is a fibre rich food.

→ Fibre stimulates peristalsis & increase bowel movement & faecal bulk, which helps to prevent constipation.

Constipation is frequent in old age.

→ Fibre also helps in reducing cholesterol level which may reduce the incidence of atherosclerosis.

→ Fibre also helps to prevent colon cancer. The incidence of cancer increases progressively with age.

Therefore, Daliya Khichdi is good for elderly person.

3. GOOD SOURCE OF MAGNESIUM:

Broken wheat is rich in Magnesium and green gram dal contains good amount of magnesium. (In 100 gm wheat - 138 mg & 100 gm green gram dal - 122 mg magnesium is present).

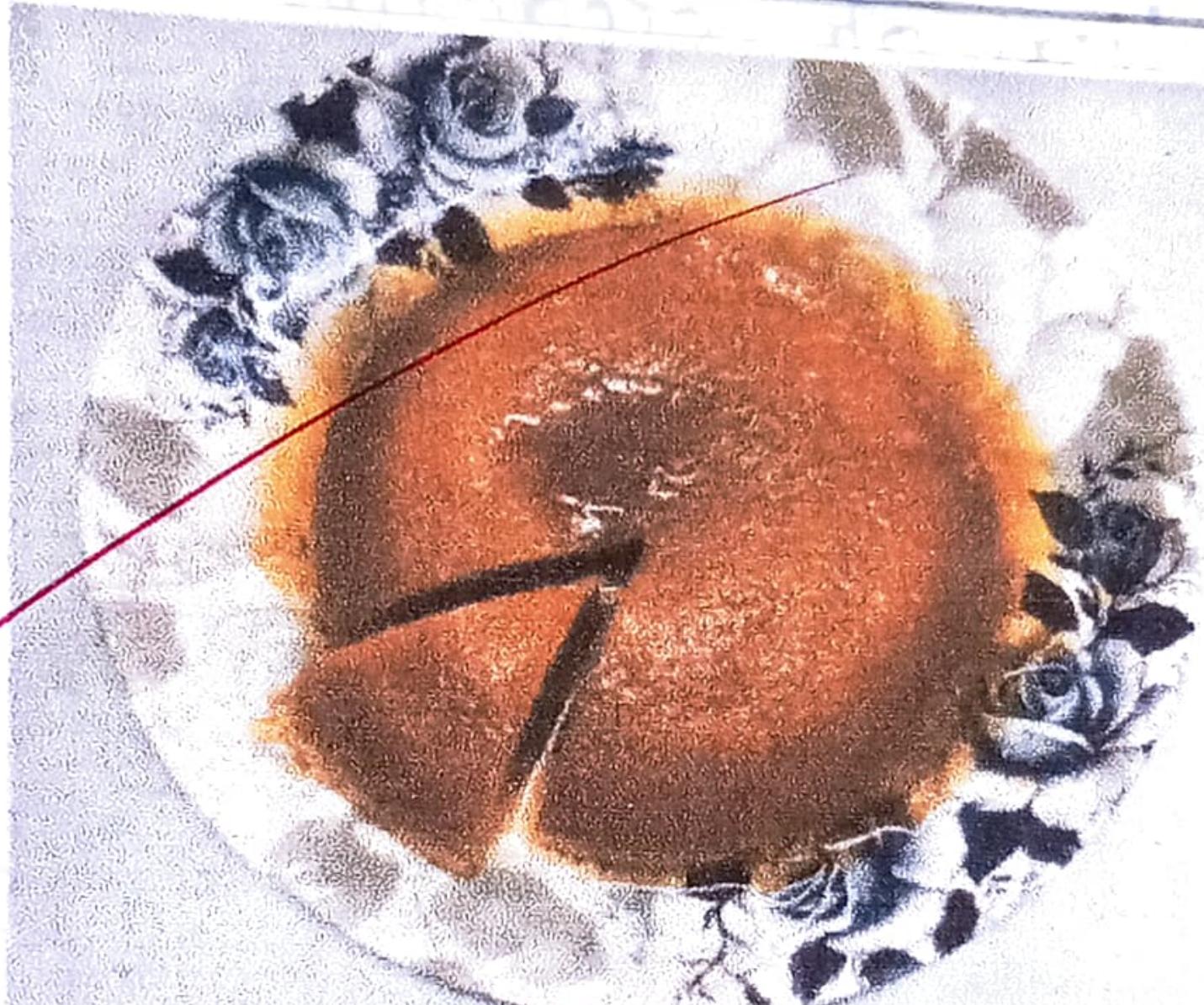
Magnesium deficiency may trigger an increased production of reactive oxygen species & promote a pro-inflammatory stage contributing to poor muscle strength.

Magnesium may retard the age-related loss of muscle function & performance.

4. Lastly, Daliya Khichdi is soft. So it is easy to chew & eat & also easy to digest.

In old age, people may have chewing problem & there is poor digestion due to decrease production of digestive enzyme & hydrochloric acid.

So, daliya Khichdi is suitable for elderly person



BREAD PUDDING

BREAD PUDDING

■ Ingredients:

- Bread - 40gm (2 slices)
- Skimmed Milk - 300 ml.
- Sugar - 30gm
- Egg - 55gm (1 piece)
- Butter - 5 gm
- Vanilla essence - As per taste.

■ Method: 1) The edges of bread slices are trimmed & removed before buttering them.

2) The buttered side to be kept facing downwards in the mould in which pudding is to be baked.

3) The egg is to be beaten and sugar, milk, vanilla essence are to be added and mixed well.

4) The mixture of egg & milk to be spread over the slices of bread.

5) To be kept aside for 10-15 minutes.

6) In hot oven at 350°F for about 20 minutes to be baked & to be stored in refrigerator & kept 2 hrs.

7) To be served that cold bread pudding.

■ Nutritive Value:

Ingredients	Amount (gm)	Per 100gm	Taken Amount	Per 100gm	Taken Amount	Per 100gm	Taken Amount	Carbohydrate (gm)	Protein (gm)	Fat (gm)
Bread	40	245	98	51.9	20.76	7.8	3.12	0.7	0.28	
Skimmed Milk	300 ml	29	87	4.6	13.8	2.5	7.5	0.1	0.3	
Sugar	30	400	120	100	30	-	-	-	-	
Egg	55	173	95.15	-	-	13.3	7.31	18.3	7.31	
Butter	5	729	36.45	-	-	-	-	81	4.05	
Total			436.6		64.56		17.93		11.94	

■ Nutritional Significance of Bread pudding:

1. Bread pudding is soft & easily chewable food suitable for elderly persons because they generally face the problem of dentition or fallen teeth.
 2. Loss of protein is very common in old age that increases the risk of infection & illness & reduces the muscle mass (sarcopenia).
- Bread pudding is made of first class

protein milk & egg) & per serving of bread Pudding provides 17.93 gm of protein.

Thus, this food is an ideal food for elderly person.

3. Bread pudding is made of 300 ml of skimmed milk which provides 360 mg of calcium that helps to compensate the bone loss & reduce the risk of osteoporosis.

4. This food provides approximately 25-30% of total requirement of energy & it is palatable & provide Satisfaction.

5. As gastric acid & digestive enzymes production decrease in old age, so this food is suitable for digestion.



SUJI KHEER

SUJI KHEER

Ingredients:

- Semolina - 30gm
- Skimmed milk - 200 ml.
(liquid)
- Sugar - 20gm

Method:

1. Semolina is roasted till it get slightly brown & gives an aroma.
2. Milk is added to it and cooked till the grains are cooked and become semi-solid.
3. After that sugar, powdered cardamon is added one by one.

Nutritive value of Suji Kheer:

Ingredients	Amount (gm)	Energy(kcal)		Carbohydrate (gm)		Protein (gm)		Fat(gm)	
		Per 100gm amount	Taken Per amount	Per 100gm amount	Taken Per amount	Per 100gm amount	Taken Per amount	Per 100gm amount	Taken Per amount
Semolina	30	348	10.4	74.8	22.44	10.4	3.12	0.8	0.24
Skimmed milk (liquid)	200	29	58	4.6	9.2	2.5	5	0.1	0.2
Sugar	20	398	79.6	99.4	19.88	0.1	0.02	-	-
Total			242		51.52		8.14		0.44

Teacher's Signature

Nutritional Significance of Seji Kheer:

1. Excellent Protein Source:

Milk is an excellent protein source.

200 ml of Skimmed milk provides upto 5gm of protein.

These protein is needed to build healthy skin, hair & muscle cells throughout the body. Milk's high protein contain is a good way for seniors to increase the amount of protein in the diet without having to eat more meat.

2. Milk Provides much needed calcium:

200 ml of Skimmed milk provides upto 240 mg of calcium & seniors needed 1,200 mg of calcium per day (RDA).

Calcium is necessary because its important to keep the bones healthy, without proper calcium intake osteoporosis (a condition that causes bones to become brittle & breakable) occurs.

3. Good for heart health:

Semolina contains heart healthy nutrients like folate ($25\ \mu\text{g}/100\ \text{gm}$) & magnesium. It also rich in fibre that reduce the risk of heart disease. Fibre supports heart health by lowering LDL (bad) cholesterol, blood pressure & overall inflammation. 100 gm of semolina contains 9.72 gm of total dietary fibre.

4. SUPPORTS DIGESTIVE SYSTEM:

The high fibre content of Samolina supports digestive system by stimulating the growth of the gut bacteria and promoting regular bowel.

5. Due to its high level of Magnesium & dietary fibre:

Samolina improves blood sugar control, which then reduces the risk of type II diabetes, heart disease maintaining sugar level in old age.

→ Magnesium controls blood sugar by increasing cells response to insulin, that regulates blood sugar levels.

(100gm of Samolina contain 3.7 gm of Mg).

→ Whereas, fibre slows the absorption of carbohydrates in blood stream, helping to control blood sugar after a meal. Fibre also reduces HbA_{1C} levels as average blood sugar in old people with diabetes.

6. GOOD Carbohydrate SOURCE:

Lastly Sugar from Suji Kheer provides a good amount of carbohydrate. The energy comes from sugar helps to boost the mood & also gives the energy for daily work of senior. Too much of sugar is strictly restricted for diabetic older person.



KHICHDI

KHICHDI

■ Ingredients:

- Rice - 25 gm
- Green gram dal - 25 gm
- Onion - 30 gm
- Grated Carrot - 15 gm
- oil - 5 ml
- Ginger paste - to taste.
- Salt - to taste
- Water - 125 ml.
- Cumin - as per taste.
- Turmeric - as per taste.

■ Method:

1. First oil is heated in pressure cooker.
2. Then ginger paste and onion is added and fried until its turns brown.
3. Then carrot is added and sauted for while.
4. After that rice, green gram dal is added and stirred for sometimes.
5. Then rest of the ingredients (salt, water) is added & cooked it in pressure cooker for 15 minutes.

■ Nutritive Value:

Ingredients	Amount (gm)	Energy (Kcal)	Carbohydrate (gm)		Protein (gm)		Fat (gm)	
			Per 100g	Taken Amount	Per 100g	Taken Amount	Per 100g	Taken Amount
Rice (Parboiled, milled)	25	346	86.5	79	19.75	0.4	0.1	0.7
Green gram dal	25	348	87	59.9	14.97	24.5	6.12	1.2
Carrot (grated)	15	10.6	1.59	48	7.2	0.9	0.13	0.2
Onion	30	59	17.7	12.6	3.78	1.8	0.54	0.1
oil	5ml	900	45	-	-	-	100	5
Total			237.8		46.95		6.89	5.53

■ Nutritional Significance of Khichdi:

1. WHOLE SOME & NUTRITIOUS MEAL:

The rice & green gram dal combination in Khichdi helps to give the right mix of carbohydrate, dietary fibre and protein. Rice is packed with essential vitamins and minerals such as Vitamin B, potassium, phosphorus, folic acid, and magnesium. On the

other hand, green gram dal also contain similar minerals and vitamins.

2. Good SOURCE OF PROTEIN:

Rice is deficient in lysine but contains high amount of methionine and cysteine & green gram dal is contains good amounts of lysine but deficient in methionine. So, rice and green gram dal together is good source of protein & these two source complement each other, improve the quality of protein. This meal also contains essential amino acids, making it a complete protein source. One Serving of Khichdi provides approximately 6.89 gm protein.

During old age, it is very common to loose the skeletal muscle mass and results in decrease of protein storage in the muscle. Protein deficiency also shown in oedema, anaemia. So in old age it is very important to increase the requirements of protein & Khichdi is the right meal for elderly persons to fulfill their requirements.

3. Helps in Digestion:

As per recipe, using cumin in Khichdi helps in the digestion by increasing the activity of digestive enzyme in the body. This also release bile from the liver, which helps in the digestion process in the gut.

In old age, the risk of digestive disorder is developed, like heart burn or reflux, irritable bowel

Syndrome etc. is very common, consumption of Khichdi helps to detoxify the body, according to ayurveda diet, & this also boost their immune system & maintains their digestive system properly.

4. RICH SOURCE OF MICRONUTRIENT:

Rice and green gram dal contains good amount of manganese, phosphorus, potassium, Zinc etc. But rice is good source of Mg & green gram dal also rich source of magnesium (100 gm of rice contain = 91 mg) & 100 gm of green gram dal contain = 122 mg).

Deficiency in micronutrients especially calcium can decrease bone density & results in osteoporosis which is very common in old age. Also developed a number of disorders like neuromuscular disorders endocrine disturbance, diabetes & poor absorption of other nutrient.

5. RICH SOURCE OF FIBRE:

Khichdi is a good source of fibre. From 100g rice and green gram dal. We can get 3.74 gm & 9.37 gm of fibre.

During old age it is commonly, green gram dal help in the constipation problems, Fibre to prevent it by decreasing the bowel movement.

Fibre also helps in reducing the cholesterol level & lower the blood pressure which helps to prevent the various cardiovascular disease.

It helps to reduce the blood glucose level improve the glucose tolerance in the body.

Fibre helps to prevent the colon cancer which is very common in elderly person.

6. GLUTEN FREE:

Another advantage of Khichdi is that it is gluten free, as it contains rice and green gram dal, so it is beneficial for those elderly person who suffer from gluten sensitivity or celiac disease.

Celiac disease cause the gastrointestinal symptom like diarrhoea, steatorrhoea, so this recipe can prevent it.



PISH PASH

PISH PASH

- Ingredients:

- i) Rice (parboiled, milled) - 50 gm
- ii) chicken - 100 gm
- iii) Potato - 50 gm.
- iv) Carrot - 50 gm
- v) Capsicum - 40 gm.
- vi) Beans - 30 gm.
- vii) Onion - 100 gm.
- viii) Butter - 2 tsp.
- Garlic - As per taste.
- Ginger - As per taste.
- Black pepper - As per taste.
- Cinnamon stick - As per taste.
- Cardamom - As per taste.
- Cloves - As per taste.
- Bay leaves - As per taste.
- Green chilli - As per taste.
- Lemon - As per taste.
- Water - 3 to 4 cups.

- black paper powder & pt at side for 30 min.
- whole water is drained out.
- On a pan 1/2 tsp butter is added, then Bay leaf & cinnamom, black pepper, cloves, cardamoms are added & fried for 1 min.
- 5) Then all the vegetables & chicken pieces are added & fried in slow flames for 5-7 min.
- 6) Then the washed rice is added & stirred & fried for 10 min.
- 7) The require amount of salt is sprinkled & 3-4 cts of warm water added to the pan & allowed to cook for 15-20 min.
- 8) Till rice is soft & mushy, 1/2 tsp of butter is added and pish pash is ready to be serve.

NUTRITIVE VALUE CALCULATION:

Ingredients	Amount (gm)	Energy(kcal)		Carbohydrate (gm)		Protein(gm)		Fat (gm)	
		Per 100 gm	Taken amount	Per 100 gm	Taken amount	Per 100 gm	Taken amount	Per 100 gm	Taken amount
• Rice, parboiled milled	50	346	173	79.0	39.5	6.4	3.2	0.4	0.2
• Chicken	100	109	109	-	-	25.9	25.9	0.6	0.6
• Potato	50	97	48.5	22.6	11.3	1.6	0.8	0.1	0.05
• Carrot	50	48	24	10.6	5.3	0.9	0.45	0.2	0.1
• Capsicum	40	18	7.2	2.9	1.16	1.2	0.48	0.2	0.08
• Beans	30	158	47.4	29.8	8.94	7.4	2.22	1.0	0.3
• Onion	100	50	50	11.1	11.1	1.2	1.2	0.1	0.1
• Butter	10	729	72.9	-	-	-	-	81.0	8.1
Total			532		177.3		34.25		9.53

NUTRITIONAL SIGNIFICANCE OF PISH PASH:

CARBOHYDRATE:

Due to the presence of rice, potato, vegetables, it is a good source of carbohydrate. Rice contains methionine & few others amino acid. This dish contains sufficient amount of carbohydrates which is adequate for a meal.

PROTEIN:

chicken is a first class protein & contains lysine. Rice is deficient in lysine but rich in methionine & chicken rich in lysine. So, together it provides a balanced protein.

ENERGY:

As this food contains rice; chicken, potato, vegetables, it can provide adequate energy for one meal. One Serving of pish pash can provide 532 kcal of energy.

VITAMINS & MINERALS:

VITAMINS:

Cereal product like rice & various types of vegetables & spices are added to make this item, which contains vitamin B₁, B₂ & B₃, also chicken contains B₁₂.

• MINERALS:

This food item contains various types of mineral such as, zinc, iron, potassium, magnesium, Selenium of which selenium & zinc work as antioxidant.

At last it can be said that, this item will fill the stomach in a healthy way.

CALCULATION OF DAILY NEEDS OF MACRONUTRIENT ON THE BASIS OF ESTIMATED AVERAGE REQUIREMENT OF ENERGY:

Page No. 38

Date 23/03/23

EAR of energy for elderly men (≥ 60 years) = 1700 Kcal.

As requirement of energy decreases 10 Kcal/year (ICMR, 2020).
the adjusted requirement of energy for an elderly man
aged 82 years = $1700 - [(82 - 60) \times 10]$
= 1480 Kcal.

\therefore RDA of protein = 54 gm.

Hence, diet should provide at least 64 gm protein

$(100 \times \frac{54}{85} = 63.5 = 64 \text{ gm})$ as digestibility of
a standard Indian diet is approximately 85% (PDCAAS = 85%).
 \therefore For elderly men, dietary fat should meet 30-40% of
Energy (ICMR, RDA 2020).

\therefore As energy requirement decreases with increasing age
PE ratio should be raised.

\therefore If protein & fat provide 15% and 30% of total energy
respectively then,

$$[100 - (15 + 30)]\%$$

= 55% of total energy should come from

carbohydrate.

$1480 \times 30\% = 444 \text{ Kcal}$ should come from fats.

\therefore Amount of fat = $\frac{444}{9} = 49.33 \text{ gm.}$

(As 1 gm of fat provides 9 Kcal).

$1480 \times 15\% = 222 \text{ Kcal}$ should come from

proteins.

\therefore Amount of protein = $\frac{222}{4} = 55.5 \text{ gm}$

(As 1 gm of protein provides 4 Kcal)

WHOLE DAY MENU PLANNING FOR ELDERLY PERSONS SUFFERING FROM SWALLOWING DIFFICULTIES

Time	Food Items	Quantity.
1. Early Morning (6.30 - 7:00 AM)	• Shattu shake	1 glass.
2. Breakfast (8:30 - 9:00 AM)	• Rice flakes with whole Milk • Dates.	1 bowl 4 pieces.
3. Mid-Morning (11:00 - 11:30 AM)	• Butter Milk • Papaya	1 glass 1 plate
4. Lunch (12:30 - 1:00 PM)	• Veg Khichdi • Fish fry • Curd(1cup) Fish (1 piece)	1 bowl
5. Afternoon (3:30 - 4:00 PM)	• Black Tea (without Sugar.) • Biscuit	1 cup 1 piece
6. Evening Snacks (5:30 - 6:00 PM)	• Semolina Porridge	1 bowl.
7. Dinner (8:30 - 9:00 PM).	• Veg dal • Roti • Apple stew	1 bowl. 1 piece 1 piece

Date
05/04/23



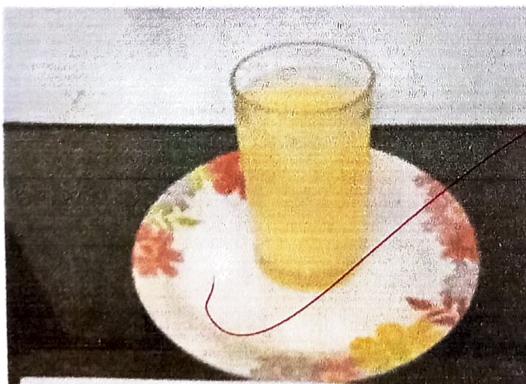
EARLY MORNING



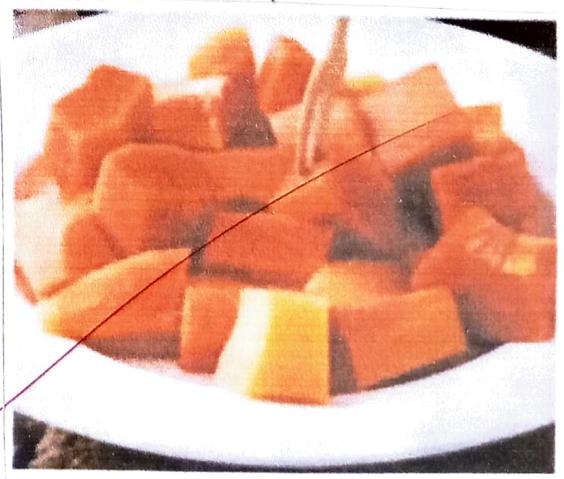
BREAKFAST



BREAKFAST



MID MORNING



MID MORNING

ONE DAY MENU FOR ELDERLY MEN SUFFERING FROM SWALLOWING DIFFICULTIES

Food Items	Amount (gm)	Energy (Kcal)	Carbohydrate (gm)	Protein (gm)	Fat (gm)
<u>1. Early</u> <u>Morning:</u> • Shattu shake → Shattu	25	92.25	14.53	5.63	1.3
<u>2. Breakfast:</u> • Rice Flakes with milk → Rice Flakes	30	103.8	23.19	1.98	0.36
→ Milk (whole cow milk) → Dates (4 pieces)	200ml	134	8.8	6.4	8.2
	10	14.4	3.38	0.12	0.04
<u>3. Mid-Morning:</u> → Butter Milk → Papaya	200ml	30	1	1.6	2.2
	100	32	7.2	0.6	0.1

Teacher's Signature



Food Items	Amount (gm)	Energy (Kcal)	Carbohydrate (gm)	Protein (gm)	Fat (gm)
<u>4. Lunch:</u>					
• Khichdi					
→ Rice (Parboiled Milled)	30	103.8	23.7	1.92	0.12
→ Lentil	20	68.6	11.5	5.11	0.14
→ Carrot	25	12	3	0.225	0.005
→ Beans	25	4	2.7	0.8	0.1
→ Pumpkin	25	6.5	1.15	0.35	0.025
• Fish Fry (Rohu)	75	72.75	3.3	12.45	1.05
→ oil	15 ml	135	—	—	15
• Curd	100	60	3	3.1	4
<u>5. Afternoon:</u>					
• Black Tea with out sugar	—	—	—	—	—
• Biscuit	7	26	6.44	0.81	0.06
<u>6. Evening Snacks:</u>					
• Semolina Porridge					
→ Semolina	30	104.4	22.44	3.12	0.24
→ Milk (whole cow milk)	200 ml	134	8.8	6.4	8.2
→ Jaggery	20	76.6	19	0.08	0.02



DINNER



DINNER

FOOD ITEMS	AMOUNT (gm)	ENERGY (KCAL)	CARBOHYDRATE (gm)	PROTEIN (gm)	Fat (gm)
7. Dinner					
• Roti (whole wheat flour)	30	102.3	20.82	3.63	0.51
• Veg Dal					
→ Carrot	20	9.6	2.12	0.18	0.04
→ Beans	30	4.8	3.24	0.96	0.12
→ Lentil	30	102.9	17.7	7.53	0.21
→ Onion	50	29.5	6.3	0.9	0.05
→ oil	5ml	45	-	-	5
• Apple stew	100	59	13.4	0.2	0.5
Total		1562.95	226.71	63.38	47.69

	Energy (Kcal)	Protein (gm)	Carbohydrate (gm)	Fat (gm)
Total	1562.95	63.38, (53.87) 85% digestible	226.71	47.69
EAR	1700	43	-	-
Age-adjusted Requirement of Energy	1480	-	-	-
RDA	-	54	-	-
Macronutrient Distribution (%E)	-	55.5 (15%)	203.5 (55%)	49.33 (30%)
Excess	+ 82.95		+ 23.21	
Deficit		(54 - 53.87) = - 0.13		- 1.64

Teacher's Signature

SA
20/5/20

Mini Nutritional Assessment

MNA®

Last name: MONDAL

First name: ARUN

Sex: Male Age: 61 Weight, kg: 60

Height, cm: 159 Date: 20/05/23

Complete the screen by filling in the boxes with the appropriate numbers.
Add the numbers for the screen. If score is 11 or less, continue with the assessment to gain a Malnutrition Indicator Score.

Screening

A Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?

- 0 = severe decrease in food intake
- 1 = moderate decrease in food intake
- 2 = no decrease in food intake

1

B Weight loss during the last 3 months

- 0 = weight loss greater than 3kg (6.6lbs)
- 1 = does not know
- 2 = weight loss between 1 and 3kg (2.2 and 6.6 lbs)
- 3 = no weight loss

2

C Mobility

- 0 = bed or chair bound
- 1 = able to get out of bed / chair but does not go out
- 2 = goes out

2

D Has suffered psychological stress or acute disease in the past 3 months?

- 0 = yes
- 2 = no

0

E Neuropsychological problems

- 0 = severe dementia or depression
- 1 = mild dementia
- 2 = no psychological problems

1

F Body Mass Index (BMI) = weight in kg / (height in m)²

- 0 = BMI less than 19
- 1 = BMI 19 to less than 21
- 2 = BMI 21 to less than 23
- 3 = BMI 23 or greater

2

0 8

Screening score (subtotal max. 14 points)

12-14 points: Normal nutritional status

8-11 points: At risk of malnutrition

0-7 points: Malnourished

For a more in-depth assessment, continue with questions G-R

Assessment

G Lives independently (not in nursing home or hospital)

- 1 = yes
- 0 = no

1

H Takes more than 3 prescription drugs per day

- 0 = yes
- 1 = no

0

I Pressure sores or skin ulcers

- 0 = yes
- 1 = no

1

References

1. Vellas B, Villars H, Abellan G, et al. Overview of the MNA® - Its History and Challenges. *J Nutr Health Aging*. 2006; 10:456-465.
 2. Rubenstein LZ, Harker JO, Salva A, Guigoz Y, Vellas B. Screening for Undernutrition in Geriatric Practice: Developing the Short-Form Mini Nutritional Assessment (MNA-SF). *J. Gerontol. 2001, 56A: M366-377*
 3. Guigoz Y. The Mini-Nutritional Assessment (MNA™) Review of the Literature - What does it tell us? *J Nutr Health Aging*. 2006; 10:466-487.
- © Société des Produits Nestlé SA, Trademark Owners
© Société des Produits Nestlé SA 1994, Revision 2009.

For more information: www.mna-elderly.com

J How many full meals does the patient eat daily?

- 0 = 1 meal
- 1 = 2 meals
- 2 = 3 meals

2

K Selected consumption markers for protein intake

- At least one serving of dairy products (milk, cheese, yoghurt) per day
 - Two or more servings of legumes or eggs per week
 - Meat, fish or poultry every day
- 0.0 = if 0 or 1 yes
0.5 = if 2 yes
1.0 = if 3 yes

yes no
yes no
yes no

1.0

L Consumes two or more servings of fruit or vegetables per day?

- 0 = no
- 1 = yes

0

M How much fluid (water, juice, coffee, tea, milk...) is consumed per day?

- 0.0 = less than 3 cups
- 0.5 = 3 to 5 cups
- 1.0 = more than 5 cups

1.0

N Mode of feeding

- 0 = unable to eat without assistance
- 1 = self-fed with some difficulty
- 2 = self-fed without any problem

1

O Self view of nutritional status

- 0 = views self as being malnourished
- 1 = is uncertain of nutritional state
- 2 = views self as having no nutritional problem

1

P In comparison with other people of the same age, how does the patient consider his / her health status?

- 0.0 = not as good
- 0.5 = does not know
- 1.0 = as good
- 2.0 = better

1.0

Q Mid-arm circumference (MAC) in cm

- 0.0 = MAC less than 21
- 0.5 = MAC 21 to 22
- 1.0 = MAC greater than 22

0.0

R Calf circumference (CC) in cm

- 0 = CC less than 31
- 1 = CC 31 or greater

1

Assessment (max. 16 points)

1 0 0

Screening score

0 3 0

Total Assessment (max. 30 points)

1 8 0

Malnutrition Indicator Score

- | | | |
|---------------------|-------------------------------------|---------------------------|
| 24 to 30 points | <input type="checkbox"/> | Normal nutritional status |
| 17 to 23.5 points | <input checked="" type="checkbox"/> | At risk of malnutrition |
| Less than 17 points | <input type="checkbox"/> | Malnourished |

Normal nutritional status

At risk of malnutrition

Malnourished

INTERPRETATION OF MNA

Mini Nutritional Assessment (MNA) is a screening tool to help identify elderly persons who are malnourished or at risk of malnutrition.

The full MNA is the original version of the MNA & takes 10-15 minutes to complete. The revised MNA-SF is a short form of the MNA that takes less than 5 minutes to complete. It retains the accuracy & validity of the MNA. Currently, the MNA-SF is the preferred form of the MNA for clinical practice in community, hospital, or long term care settings, due to its ease of use & practicality.

Recommended intervals for screening with the MNA are annually in the community, every three months in institutional settings or in persons who have been identified as malnourished or at risk for malnutrition, and whenever a change in clinical condition occurs. The MNA was developed by Nestle and leading international geriatricians.

The MNA proforma consists of two groups. First group is Screening (A-F) and second group is assessment (G-R). The maximum points for screening is 14 whereas maximum points for assessment is 16. If the person score is between 24-30, it indicates normal.

nutritional status, score between 17-23.5 indicates risk of malnutrition & score less than 17 shows malnutrition among elderly.

In this survey, it was found that the screening score was 08 which indicates at risk of malnutrition.

The assessment score was 10.0. which indicates malnourishment of the person.

Thus total assessment score is 18.0 & the elderly person is at risk of malnutrition.

SA
13/01/23

DIET SURVEY BY 24 HOUR RECALL METHOD (ORAL QUESTIONNAIRE METHOD)

A) GENERAL INFORMATION OF THE SUBJECT

Household No.....156..... Name of the Respondent.....Anum Mondal
Village.Puttikuli..... District.South.A.P.G.S.Address P.G.Sohar Road.Date of Visit..20/5/23

Name of the Respondent	<u>Anum Mondal</u>
Age	61
Sex	Male
Religion	Hindu
Caste	General
Activity Type	Sedentary Worker - S.W
Educational Level	H.S
Occupation	Retired
Monthly Income(Rs)	₹ 6,000

- Activity Type : a) Sedentary worker-S.W
b) Moderate Worker-M.W
c) Heavy Worker-H.W

MEAL PATTERN (Veg/Non-Veg):

B) SCHEDULE FOR DIET SURVEY

FOOD ALLERGY (Yes/No):

DIETARY PATTERN:

(Foods to be consumed by the subject on the day of survey)

MEAL TIME	FOOD CONSUMED	HOUSEHOLD MEASUREMENT (BOWL/CUP/PLATE/SPOON) AMOUNT	INDIVIDUAL INTAKE OF COOKED QUANTITY (gm/ml)	APPROXIMATE INDIVIDUAL INTAKE OF RAW QUANTITY (gm/ml)
EARLY MORNING	<ul style="list-style-type: none"> • Milk (Cow's whole) • White bread 	<ul style="list-style-type: none"> • Cow's milk - 1 cup • white bread - 2 pieces 		<ul style="list-style-type: none"> • Cow's milk - 100 ml • white bread - 76 gm
BREAKFAST	<ul style="list-style-type: none"> • Roti • Boiled dal • Banana 	<ul style="list-style-type: none"> • Roti - 2 pieces • Boiled Dal - 1 bowl • Banana - 1 pieces 		<ul style="list-style-type: none"> • whole wheat flour - 60 gm, Lentil - 30 gm • Mustard oil - 5 gm, Ripe Banana - 80 gm
LUNCH	<ul style="list-style-type: none"> • Rice • Fish curry 	<ul style="list-style-type: none"> • Rice - 1 bowl • Fish curry - 1 bowl 		<ul style="list-style-type: none"> • Rice - 60 g • Tomato - 20 g • Fish - 50 g • coconut - 25 g • Potato - 30 g • oil - 5 gm
EVENING SNACKS	<ul style="list-style-type: none"> • Rice Flakes Poha 	<ul style="list-style-type: none"> • Rice Flakes poha - 1 bowl 		<ul style="list-style-type: none"> • Rice Flakes - 55 g • Potato - 50 gm • Ground nut - 10 g • oil - 5 gm
DINNER	<ul style="list-style-type: none"> • Roti • Paruppu curd 	<ul style="list-style-type: none"> • Roti - 2 pieces • Paruppu curd - 1 bowl 		<ul style="list-style-type: none"> • whole wheat flour - 60 gm • Paruppu - 30 gm • oil - 5 gm
OTHER MEAL(IF ANY)				

INTAKE OF FOOD IN TERMS OF FOOD GROUP (24 HOUR RECALL METHOD)

[A] CEREALS:

Name of the food stuffs	Intake of food (gm) as per meal timing					Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	
Rice (Parboiled) Milled		60				60
Rice (Raw) Milled						
Wheat Flour (Whole)		60			60	120
Wheat Flour/Maida (Refined)						
Puffed Rice					55	55
Flaked Rice						
Suji(Semolina)						76
Bread(<u>white/Brown</u>)		76				
Semolina						
Others(specify)						311
	TOTAL CEREAL(gm)					

Name of the food stuffs

Intake of food (gm) as per meal timing

	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	Total
Green Gram							
Bengal Gram							
Lentil		30				30	
Black gram							
Soyabean							
Others(specify)							
							30
Total pulses & legumes (gm)							

[C] ROOT VEGETABLES:

Name of the food stuffs

	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	Total
Potato			30	50	20		100
Radish							

Colocasia / Yam					
Onion					
Carrot		25			25
Others(specify)					
					125

Total Root vegetable (gm)

[D] LEAFY VEGETABLES:

Name of the food stuffs	Intake of food (gm) as per meal timing					Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	
Cabbage						
Spinach						
Amaranth						
Kalmi						
Pumpkin Leaves						
Colocasia Leaves						
Others(Specify)						
						—
						Total Leafy Vegetables(gm)

Intake of food (gm) as per meal timing

Name of the food stuffs	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	Total
Brinjal							
Cauliflower							
Papaya(Green)							
Beans							
Pumpkin							
Tomato		20			20		40
Potol (Parwar)					30		30
Ladies Finger							
Drumstick							
Plantain(green)							
Bottle gourd							
Bitter gourd							
Cucumber							
Others(specify)							70

Total Other Vegetables (gm)

FATS AND OILS & NUTS:

Name of the food stuffs	Intake of food (gm) as per meal timing						Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	
Mustard Oil		5	5	5	5		20
Groundnut Oil							
Butter							
Ghee							
Groundnut					10		10
Cashew nuts							
Gingely seeds							
Others(specific)							
						Total Fats & Oils(gm/ml)	30

[G] MILK AND MILK PRODUCTS:

Name of the food stuffs	Intake of food (gm) as per meal timing						Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	

Cow/ Buffalo Milk	100						100
Standard Milk							
Skimmed Milk Powder							
Curd							
Channa							
Others							
		Total Milk & Milk Products (gm/ml)					100

[H] FLESH FOODS:

Name of the food stuffs	Intake of food (gm) as per meal timing					Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	
Egg(Duck/Hen)						
Fish			50			50
Meat						
Others(Specify)						50
		Total Flesh foods (gm)				50

Name of the food stuffs	Intake of food (gm) as per meal timing						Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	
Sugar							
Jaggery(specify)							
Others							
	Total Sugar & Jaggery (gm)						

[J] FRUITS:

Name of the food stuffs	Intake of food (gm) as per meal timing						Total
	Early Morning	Breakfast	Lunch	Evening Snacks	Dinner	Other meal (if any)	
Guava							
Ripe Banana							80
Ripe Papaya							
Ripe Mango							
Orange							

Sweet lime(Musambi)											
Others(Specify)											

Total Fruits (gm)

80

CONSUMPTION OF DIFFERENT NUTRIENTS BY THE INDIVIDUAL

Meal Pattern	Food Consumed	Energy (kcal)	Carbohydrate (gm)	Protein (gm)	Fat(gm)	Calcium (mg)	Iron (mg)	Dietary Fibre(gm)
Early Morning		253.2	43.84	9.12	4.63	128.36	1.04	0.152
Breakfast		418.3	81.1	15.75	3.47	63.1	5.49	1.67
Lunch		346.2	59.75	13.025	6.06	357.4	1.38	1.16
Evening Snacks		455.2	12.43	6.181	17.75	23.7	14.55	0.895
Dinner		279	47.54	8.36	6.17	43.8	3.90	2.26
Other meal(if any)	NA	—	—	—	—	—	—	—
		1751	244.9	108.06	38.08	616.3	23.36	6.137

RESULTS
(RECALL METHOD)
(Nutrient wise)

NUTRIENTS	REQUIREMENT (as per RDA)	CONSUMPTION	DEFICIENCY (gm)	DEFICIENCY (%)	EXCESS (gm)	EXCESS (%)
Energy (kcal)	1700 (EAR)	1751			51	3
Carbohydrate (gm)	255	244.9	10.1	3.9		
Protein(gm)	54.0 (PDCAA) (63.52) 85%.	108.06			44.54	82.4
Fat(gm)	56.67	38.08	18.59	32.8		
Iron(mg)	19	23.36			4.36	22.94
Calcium(mg)	1200	616.9	583.7	48.64		
Dietary Fibre(gm)	30	6.137	23.86	79.53		

DIET SURVEY & ITS INTERPRETATION

The diet survey was done using 24 hour recall method.

It was found that the energy intake was 1751 Kcal which was 3% excess than the recommended EAR.

It was found that the carbohydrate intake was 244.9 gm which was 3.9% less than the recommended amount.

It was found that the protein intake was 108.06 gm which was 82.4% excess than the recommended RDA.

It was found that the fat intake was 38.08 gm which was 32.8% less than the recommended amount.

It was found that the iron intake was 23.36 mg which was 22.94% excess than the recommended RDA.

It was found that the calcium intake was 616.3 mg which was 48.64% less than the recommended RDA.

It was found that the Dietary fibre intake was 6.137 gm which was 79.53% less than the

recommended RDA.

It can be concluded that the elderly person dietary intake is various macronutrients and micronutrients deficiency.

The following suggestions can be given to the elderly person for the improvement in nutritional status:

1. As per result of the survey the carbohydrate taken by the elderly person was deficient, hence the energy source was by the increased of the carbohydrate. It can be improved by including complex carbohydrate because complex carbohydrate is better than simple carbohydrate. Complex carbohydrate have low GI index than the simple sugar, so it can be enhanced by including complex carbohydrate like (whole wheat flour) Roti, Brown bread etc, rather than sugar or honey. Complex carbohydrate does not directly increased the glucose level like simple sugar.

2. Fat from plant source (Soyabean oil, rice oil) is included in daily diet proper amount also useful for stop fat deficiency. Sea fish like (Salmon & Sardines) are also rich in required

amount of fat which helpful in our body). It also helps in lowering the LDL 'bad cholesterol' & increased HDL 'Good cholesterol'. So appropriate amount of fat is necessary for better health as it is required for energy, metabolism of other nutrients & proper absorption of fat soluble vitamins.

3. Calcium is important for maintaining proper bone health & teeth.

Calcium rich food items like milk, fish with bone, calcium rich fruits such as coconut, Banana which help to delay tooth loss and lower the risk of osteopenia (pain in bone) & and osteoporosis (porous like structure in bone).

4. Elderly people have chances to develop constipation and thus dietary fibres are important in daily diet. Soluble fibre is better than insoluble fibre. Soluble fibre has a good water holding capacity and helps in bulk formation & enhances bowel movement and also lowering the risk of constipation. It has a lower GI Index so it has very important role in our proper body function. Whole wheat flour

• fruits and some vegetable have a good source of dietary fibre, by including this type of food items in the diet increased the amount of dietary fibre.



Sem VI ✓
B.Sc. Part I (Hons./Gen) Examination 20²³ (C.U)
Dept. of Food & Nutrition
Behala College

26/5/23
EXAMINED
26/5/23

B.Sc. SEMESTER-V(H) PRACTICAL
EXAMINATION-2022

UNDER CBCS SYSTEM

FOOD & NUTRITION (HONOURS)

PAPER- DSE-A1 (PUBLIC HEALTH)

Roll & No: 203561-11-0013

Registration No: 561-1211-0375-20

CONTENT

SI NO	TOPICS	DATE	PAGE No.	Teacher's Signature
1.	Introduction to Supplementary Foods	16/9/22	1-8	<i>Sue 11/11/22</i>
2.	Preparation of Low Cost Supplementary Foods:			
1)	Wheat Gram Porridge	11/11/22	9 - 10	
2)	Rice porridge		11-12	<i>Sue 11/12/22</i>
3)	Bajra Infants foods		13 - 14	
4)	Rajma		15 - 16	
5)	Sajna	11/11/22	17 - 19	
6)	Barebi	1/12/22	20 - 21	
7)	Wheat Guava Laddoo		22 - 23	
8)	Wheat Payasam		24 - 25	<i>Sue 22/12/22</i>
9)	Groundnut Biscuits		26 - 27	
10)	Bengal Sesame Biscuits	1/12/22	28 - 29	
3.	Field Visit • Visit to the ICDS Centre	16/12/22	30 - 33	

INTRODUCTION TO SUPPLEMENTARY FOODS

Supplementary feeding means providing extra food to people or families over & above their home diet & has been used in populations that are food insecure (limited access to adequate & nutritious food) & vulnerable (including women & young children, school aged children, people living with diseases such as tuberculosis, HIV & Alzheimers disease & older people) to improve their health & quality of life.

A dietary supplement is a product for ingestion that contains dietary ingredients intended to add further nutritional value to supplement diet. These dietary ingredients may be one or any combination following substances -

- A vitamin
- A mineral
- A herb or other botanical product.
- An amino acid.

A dietary substance for use by people to supplement the diet by increasing the total dietary intake.

- A concentrate, metabolic, constituent or extract.

Dietary supplements may be found in many forms such as

Teacher's Signature

tablets, capsule, gelcaps, liquids or powder. Some dietary supplements can ensure to get an adequate dietary intake of essential nutrients. Other may be reduce the risk of disease.

• LOW COST SUPPLEMENTARY FOODS:

Indian mothers wear their infants into traditional adult diet because of their ignorance of past cost weaning foods & also because of incapacity to buy expensive commercial foods. Infants of weaning age or period belong to the vulnerable group also who need dietary supplementation.

Infant ready to use infant foods are standardised at coimbatore (cereal 30 gm, pulse 20 gm roasted groundnut 10 gm. & Jaggery 15 gm.) NIN Hyderabad (Bajra / Ragi 60 gm, green gram dal 15 gm, skim milk powder 10 gm, Sugar or salt to taste.) & at Gandhi-gram (groundnut cake biscuits, ragi biscuits).

LOW COST SUPPLEMENTARY FOODS DEVELOPED IN INDIA

Name of the Product	Composition
• Indian Multipurpose food (C.F.T.R.I)	low fat groundnut flour (75:25) fortified with Vit-A, & D, B ₁ , B ₂ & calcium carbonate contains 42% proteins.
• Malt Food (C.F.T.R.I)	Cereal malt, low fat groundnut flour, roasted bengal gram flour (40:40:20) fortified with vitamin & ca salt contains 28% protein.
• Balahar (C.F.T.R.I).	Whole wheat flour, groundnut flour & roasted bengal gram (70:20:10) fortified with Ca salts & vitamins.
• Supplementary Food (NIN)	Roasted wheat flour, green gram flour, groundnut, & sugar or jaggery (80:20:8:20) contains 12.5% protein.
• Supplementary Food (A.H.S.C.W) Kuzhandai Amudhu	Roasted maize flour, green gram flour, groundnut and sugar or jaggery (30:20:10:20) This food contains 14.4% proteins.

Teacher's Signature

Name of Supplementary Food	Composition
• Win Food (Grandhigram Rural Institute).	Pearl millet, green gram dal, groundnut flour, and jaggery (50:15:25:25). This food contains 20% proteins.
• Amutham	Rice flour, ragi flour, bengal gram flour, sesame flour, groundnut flour and jaggery (15:15:15:10:10:25) This food contains 14% proteins.
• Poshak	Cereal (wheat, maize, rice or jowar) pulse (chana dal or green gram dal) and oil seed (groundnut) and jaggery (4:2:1:2).
• Poshak (least cost weaning mix).	Some ingredients as poshak but in the proportion of 60:17:14:9
• Kerala Indigenous Food (KIF)	Tapioca, Bulgar wheat and groundnut (25:50:25).

Teacher's Signature

• CURRENT SCENARIO OF INDIA:

Health & Nutrition are most important contributing factors for human resources development in the century. India ranks 13th in terms of human development among 189 countries (UNDP, 2020).

- The following table shows the nutritional status of children in India (National Family Health Survey-5, 2019-2021):

child feeding practices & Nutritional status of children	NFHS-5 (%)		
	Urban	Rural	Total
children under age 3 yrs. breast fed within one hour of birth.	44.7	40.7	41.8
children age 6-8 months receiving solid or semisolid food & breast milk	52.0	43.9	45.9
Total children age 6-23 month receiving an adequate diet	12.3	11.0	11.3
children under 5 yrs. who are stunted (height for Age)	30.1	37.3	35.5
children under 5 yrs. who are wasted (weight for height)	18.5	19.5	19.3
children under 5 yrs. who are severely wasted (wt. for Ht.)	7.6	7.7	7.7
children under 5 yrs. who are underweight (wt. for age)	27.3	33.8	32.1

Teacher's Signature

• PLANNING & PREPARATION LOW COST SUPPLEMENTARY FOODS FOR DIFFERENT AGE GROUP:

After 6 months, increasing needs of calories & proteins of growing children can't be met by diminishing output of mother's milk.

If the body is to maintain the expected rate of growth, remain healthy & well nourished. Supplementary feeding has been restored to around 6 month.

Globally undernutrition is the single biggest contribution to disease. Undernutrition is of particular concern in young children as it can development. According to ICMR-NIN (2020) the requirement of calorie, protein are -

Age group	Expected body wt (approx) (kg)	Calories (Kcal)	Protein (gm)
i) Birth-6- months	5.8	530	8.0
ii) 6 months - 1 yr.	8.5	680	10.5
iii) 1-3 yrs.	12.9	1110	12.5
iv) 4-6 yrs.	18.3	1360	16.0
v) 7-9 yrs	25.3	1700	23.0
vi) 10-12 yrs. (boys)	34.9	2220	32.0
10-12 yrs (Girls)	36.4	2060	33.0

Generally by the time child is 1-1^{1/2} yrs. old breast milk may not be available to it. Such a child will therefore have to depend solely on other foods based on the rice, wheat or other common cereals.

They are relatively low in protein & only small quantity are usually given to the child. This is the time when the child needs more nutritious food supplying protein & calories.

Supplementary foods provide additional nutrient to children to ameliorate or prevent undernutrition. The focus is usually on increasing the amount of energy & protein a child receives. But supplementary foods can also contain micro-nutrients (vitamins & minerals).

•PRINCIPLES GOVERNING THE FORMATION OF THE RECIPES:

A recipe providing about 400-500 Kcal & 12-14 gm of protein is required to be used as supplement to breast milk to feed the older infant. The quantity is for the whole day per child & the cooked preparation can be distributed in several feeds throughout the day. Most of the supplementary programme in our country provide about 300 Kcal & 9-10 g protein.

The supplementary food should provide about the half of the total daily requirement of protein &

& about $\frac{1}{3}$ the total calorie need.

During supplementary food planning the following should be kept in mind —

- i) The recipes must be based on locally available food stuff.
- ii) The cooking method must be simple.
- iii) The cost should be minimal.
- iv) The recipes should be acceptable in taste, consistency & bulk to the child as well as the mother.

*Sue
11/11/22*



WHEAT GRAM PORRIDGE

PREPARATION OF LOW COST SUPPLEMENTARY FOODS:

• WHEAT GRAM PORRIDGE:

- Ingredients:
 - Roasted whole wheat flour - 20 gm ($\frac{1}{2}$ tbs)
 - Roasted bengal gram - 10 gm
 - Roasted groundnut - 10 gm
 - Spinach - 20 gm
 - Sugar or jaggery - 25 gm.

• Recipes:

Groundnut, wheat, & bengal gram are roasted & powdered. After that all three powders are mixed. Jaggery is dissolved in the water & thin syrup is made. Next a batter of the powders are prepared with the help of this syrup. Spinach is boiled in water till soft. Then it is mashed & strained through a clean cloth. Then the juice is added to the batter & cooked for a few minutes stirring continuously till semi-solid.

• NUTRITIVE VALUE & COST OF WHEAT GRAM PORRIDGE:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Whole wheat flour	20	2.36	0.3	14.24	68.2	Free	Free
Bengal Gram	10	2.25	0.52	5.81	36.9	80	0.8
Groundnut	10	2.62	3.98	2.67	57	140	1.4
Spinach	20	0.4	0.14	0.58	5.2	50	1
Jaggery	25	0.1	0.025	23.75	95.75	60	1.5
Total		7.73	4.965	47.05	263.05		4.7

SIGNIFICANCE :

• ENERGY :

Wheat gram porridge is a energy rich food, it contains whole wheat, groundnut, Jaggery, bengal gram which are good source of energy. It provides 263.65 Kcal energy in one serving.

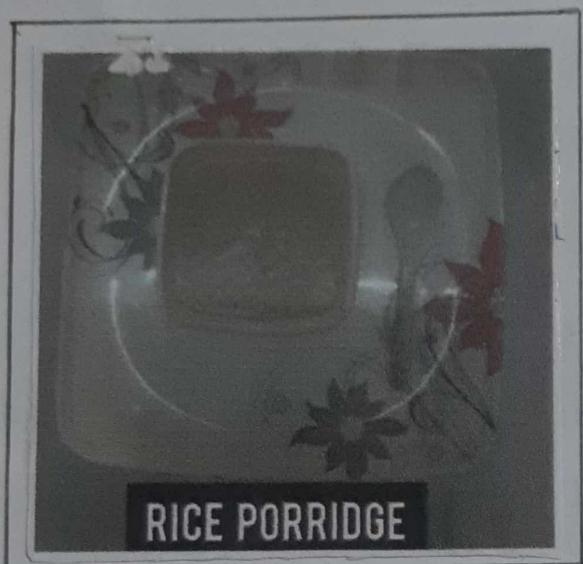
• PROTEIN :

Roasted groundnut and roasted bengal gram are rich source of protein. Wheat also provides protein. One serving porridge provides 7.73 gm protein.

• VITAMINS :

Whole wheat, roasted bengal gram and other ingredients provides thiamin and other important B-vitamins. They also provide B₆ - and folate essential for our health.

This is a very low cost supplementary food and easy to prepare. Hence it could be good, supplementary food for children.



RICE PORRIDGE



RICE PORRIDGE:

- Ingredients:
 - i) Rice - 20 gm
 - ii) Powdered roasted groundnut - 10 gm
 - iii) Powdered, roasted greengram dal - 10 gm
 - iv) Sugar or jaggery - 25 gm

Recipes:

Rice is cooked. Then pulse & groundnut powders are added to the cooked rice. Leafy vegetables are boiled in water & the juice is added to the mixture. Sugar is added & cooked for few minutes.

NUTRITIVE VALUE & COST OF RICE PORRIDGE:

Ingredients	Amount (g)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost(₹) Per Kg	Actual
Rice	20	1.28	0.08	15.8	69.2	Free	Free
Groundnut	10	2.62	3.98	2.67	57	140	1.4
Greengram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Sugar	25	0.025	0	24.85	99.5	44	1.1
Total		6.375	4.18	49.31	260.5		3.7

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

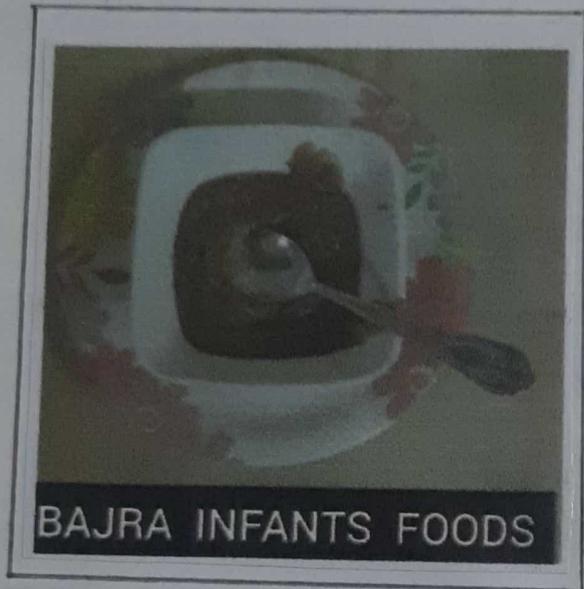
Rice, Jaggery and green gram dal are good source of energy. This provides 260 Kcal energy which is sufficient to meet the 1/3rd of the total energy requirement of children.

PROTEIN: Green gram dal is rich source of protein. Rice, Jaggery, ground nut also provides protein.

VITAMINS:

Rice porridge is rich source of thiamine B₆ and other essential B-vitamins that is essential for our body.

Hence, it is a good source of low cost supplementary for children suffering from protein-energy malnutrition.



✓

READY TO USE INFANT WEANING FOOD:

■ BAJRA INFANTS FOODS

- Ingredients:
 - i) Bajra - 20gm
 - ii) Roasted green gram dhal - 10gm
 - iii) Roasted decorticated gingelly Seeds - 5 gm.
 - iv) Sugar - 25gm
 - v) Roasted Groundnut - 5gm

• Recipes:

Bajra, green gram dhal, groundnut & gingelly seeds are powdered. The powders are mixed thoroughly. After that it is mixed with hot water before serving to the child. Sugar is added to the mixture. It can either be made into balls in porridge form.

• NUTRITIVE VALUE & COST OF BAJRA INFANTS FOODS:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate rate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bajra	20	2.32	1	13.5	72.2	49	0.9
Green gram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Groundnut	5	1.31	1.99	1.335	28.5	140	0.7
Gingelly Seeds	5	0.915	2.165	1.25	28.15	240	1.2
Sugar	25	0.025	0	24.85	99.5	49	1.1
Total		7.02	5.275	46.925	263.15		5.1

Teacher's Signature

■ SIGNIFICANCE:

ENERGY: Bajra infant's food contain sugar, gingelly seeds along with bajra, green gram dal which are the good source of energy. One serving of bajra infant's food provide 263.15 Kcal energy.

• Protein: Bajra infant's food contain green gram dal, ground nut, gingelly seeds which are the good source of protein. One serving of bajra infant's food provide 7.02gm protein. Hence it could be a supplementary food for children suffering PEM.

• Micronutrients: Bajra infant's food contain in bajra, green gram dal and gingelly seeds which are the good source of various micronutrients:

- Bajra Provide vitamin B₁, B₂ and vitamin B₂.
- Green gram dal provide vitamin B₆
- Gingelly seeds provide vitamin B₁
- Bajra infants food contain bajra which is the rich source of calcium.

It is a low cost food and prepared from easily available ingredients and can be prepared very easily.



RAGINA

■ RAGINA:

- Ingredients:
 - i) Ragi (dehusked) - 25gm
 - ii) Roasted bengal gram dhal - 5gm
 - iii) Sugar - 25gm
 - iv) Roasted groundnut - 10gm.

• Recipes:

All the roasted ingredients are powdered individually & mixed thoroughly. The mixture can be stored in air-tight containers. Before serving to the child, it is added with hot water & jaggery. It can be made into balls form or it can be made into porridge form.

• NUTRITIVE VALUE & COST OF RAGINA:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost(₹) Per Kg	Actual
Ragi	25	1.825	0.325	18	82	60	1.5
Bengal gram	5	1.125	0.26	2.905	57	80	0.4
Sugar	25	0.025	-	24.85	99.5	44	1.1
Ground nut	10	2.62	3.98	2.67	57	140	1.4
Total		5.595	4.565	48.425	295.5		4.4

Teacher's Signature

SIGNIFICANCE:

ENERGY:

Ragina contains ragi, bengal gram, sugar, and ground nut which are good source of energy one serving of ragina provide 263.15 Kcal energy.

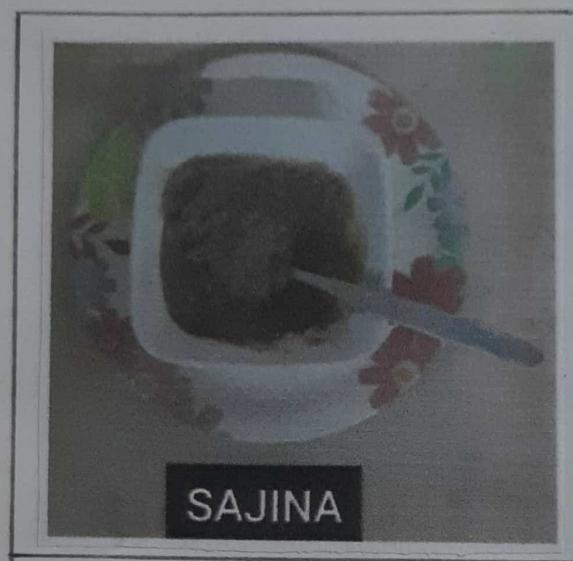
PROTEIN: Ragina contains Ragi, Bengal gram and groundnut which are the good source of protein. One serving of ragina provide 5.595 gm protein. Hence it could be a good supplementary food for children suffering from PEM.

MICRONUTRIENTS:

Vitamin B complex: Ragina contains Ragi, bengal gram and ground nut which are good source of vitamin B complex.

Minerals: Ragina contain Ragi which is the reach source of calcium.

It is a low cost food and prepared from easily available ingredients & can be prepared very easily.



SAJINA

■ SAJINA:

- Ingredients:
 - i) Roasted Bajra - 20gm
 - ii) Roasted green gram dhal - 10 gm
 - iii) Sugar - 20gm
 - iv) Ground nut - 5gm

• Recipes: Bajra & greengram dhal are roasted & powdered properly. This powder is mixed well & then sugar & water is added to this mixture & cooked for few minutes.

• NUTRITIVE VALUE & COST OF SAJINA:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bajra	20	2.9	1.25	16.875	90.28	49	0.9
Green gram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Sugar	20	0.02	0	19.88	79.6	49	0.9
Groundnut	5	1.265	2.005	1.335	28.35	140	0.7
Total		6.635	3.375	44.08	233		3.7

■ SIGNIFICANCE:-

• ENERGY:

Sajna provides good amount of energy due to presence of bajra, groundnut, sugar. As a soft food, it is good for gradual weaning process of infants. One serving of sajna provides 233 Kcal.

• PROTEIN:

It consists green gram dal and groundnut which provides second class protein from plant source. This is a good choice for infants which provides good amount and quality of proteins in a meal. As bajra is deficient in lysine but rich in methionine but green gram dhal is rich in lysine and deficient in methionine. So, together it provides a balance protein. If this type of supplementary food we choose, it can help to survive against protein energy malnutrition or other health problems. One serving of Sajna provides 6.635 gm.

• LOADS OF MICRONUTRIENTS:

• VITAMIN B COMPLEX:

All cereals, pulses and nuts present in this meal provides different types of vitamin B, such as B₁, B₂, B₃ and B₆ which helps to meet the requirement of B vitamins and release energy from food.

Teacher's Signature

MINERALS:

It provides, phosphorous, iron, zinc of which zinc works as an antioxidant.

✓
Date
01/11/22



RECIPES SUITABLE FOR PRE-SCHOOL CHILDREN:

Proper nutritional care of pre-school children aged 1-5 yrs. is very important. Children in this age group require 12.5-16 gm of protein & 1110-1360 Kcal energy daily.

■ BARFI:

- Ingredients:
 - Pressed rice - 25gm
 - Roasted groundnut - 25 gm
 - Roasted sesame seeds (white) - 10 gm
 - Jaggery - 25 gm.

• Recipes: The pressed rice is roasted & mixed with the broken groundnuts. A sticky syrup is prepared with Jaggery & water. The beaten rice & nuts are added & mixed quickly. This is spreaded on a greased plate & it is cut into pieces immediately.

• NUTRITIVE VALUE & COST OF BARFI:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (gm)	Cost(₹) Per Kg	Actual
Rice	25	1.65	0.3	19.325	86.5	Free	Free
Groundnut	25	6.55	9.95	6.675	142.5	140	3.5
Sesame seeds	10	1.83	4.33	2.5	56.3	240	2.4
Jaggery	25	0.1	0.025	23.75	95.75	60	1.5
Total		10.13	14.60	52.25	381.05		7.4

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

For infants energy is needed for their growth and increased activity. The food item consists rice which gives the large amount of energy from carbohydrate and also from jaggery, groundnut and sesame seeds. Although one third of the energy requirement can be fulfilled from the one serving barbi that provides 381.05 Kcal.

• PROTEIN:

Barbi contains rice, groundnut, Sesame seeds which are second class protein is included in the meal. Though this is a second class protein and comes from plant source, it also very essential for infants one serving provides 10.13g.

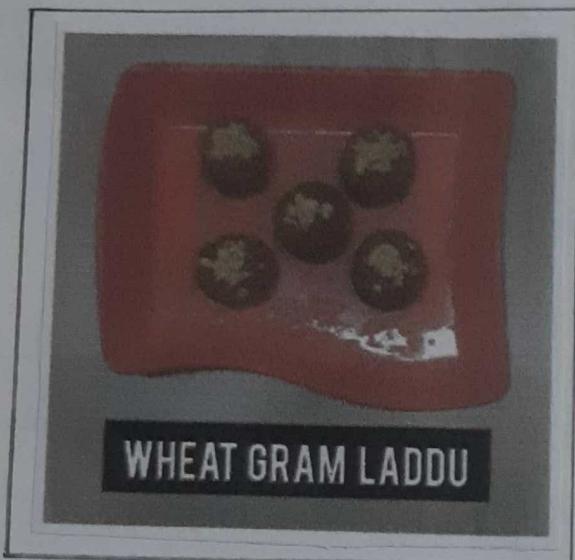
PROVIDES MICRONUTRIENT:

• VITAMIN-B- Due to presence of cereals & nuts, it provides several B vitamins which helps to meet the requirement of B vitamins and release energy from food.

• MINERALS:

In this food due to presence of sesame seeds and groundnut it consists phosphorus, magnesium, Zinc, iron etc. Jaggery also contains a large amount of iron.

It is a low cost supplementary food and prepared from easily available ingredients.



WHEAT GRAM LADDU

■ WHEAT GRAM LADDU:

- Ingredients: i) Whole wheat (roasted flour)-30g
ii) Green gram dhal - 20gm
iii) Groundnut - 15gm
iv) Jaggery / Sugar - 30gm
- Recipes: whole wheat, green gram dhal & groundnut are roasted & powdered well. Then jaggery Syrup is prepared & roasted flour mixture is added to it & mixed well. All ingredients are mixed well & made into balls.

• NUTRITIVE VALUE & COST OF WHEAT GRAM LADDUS:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
whole wheat	30	3.63	0.51	20.82	102.3	Free	Free
Green gram dhal	20	4.9	0.25	11.98	69.6	120	2.4
Groundnut	15	3.8	6.015	3.915	85.05	140	2.1
Jaggery	30	0.12	0.03	28.5	114.9	60	1.8
Total		12.45	6.8	65.21	371.85		6.3
-							

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

This food provides 371.85 Kcal energy which we get from whole wheat, Green gram dhal, Groundnut, and Jaggery. Jaggery contains high amount of carbohydrate which helps to meet the energy requirement of children.

• PROTEIN:

12.45 gm of protein is provided from this food and Green gram dhal is a rich source of 'lysine'. So it fulfill protein requirement of children. Wheat is deficient in lysine but rich in methionine and Green gram dhal is rich in lysine and deficient in methionine. So wheat gram laddu could be a source good quality of protein for children suffering from PEM.

• B-VITAMIN:

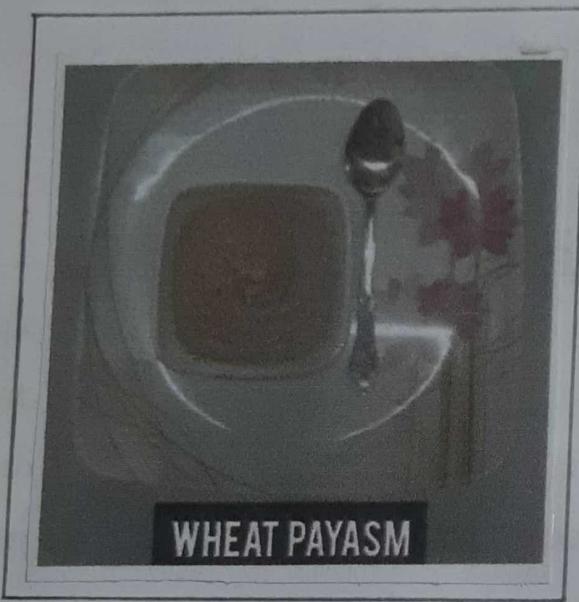
Whole wheat contains B₁-Thiamin, B₂-Riboflavin which meet up the requirement of B-Vitamin.

• MINERAL: Jaggery contains calcium, iron and other minerals needed for the growing children.

• It is a low cost food and can be prepared very easily.

ИНДИЙСКИЕ
СИНИ.

1079.



МЯСНЫЕ.

МАРУМБА.

• WHEAT PAYASAM:

- Ingredients:
 - i) Whole wheat - 30gm
 - ii) Roasted bengal gram flour - 20gm
 - iii) Sugar - 25gm
 - iv) Groundnut - 15 gm

• Recipes:

Whole wheat & bengal gram are roasted & then powdered separately. Sugar & crushed roasted groundnuts are added with roasted whole wheat & bengal gram flour. Water is added & the mixture is cooled for five minutes.

• NUTRITIVE VALUE & COST OF WHEAT PAYASAM:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Whole wheat	30	3.54	0.45	21.36	103.8	Free	Free
Bengal gram flour	20	4.5	1.04	11.62	73.8	135	2.7
Sugar	25	0.025	0	24.85	99.5	44	1.1
Groundnut	15	3.93	5.97	4.005	85.5	140	2.1
Total		11.995	7.46	61.835	362.6		5.9

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

This food provides 362.6 kcal energy which we get from whole wheat bengal gram flour and Sugar, Groundnut. Sugar contains higher amount of carbohydrate than other ingredients present in the payasam. It gives intense energy to cope up the stress in many conditions especially in PEM.

• PROTEIN:

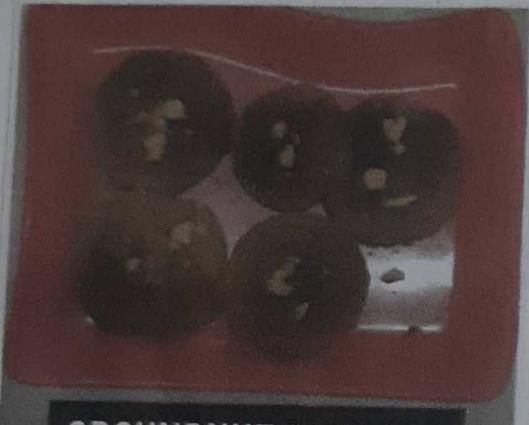
11.995 gm protein is provided from one serving of this food. Bengal gram dal, groundnut which are present in the food have high amount of protein.

■ MICRONUTRIENTS:

• B-VITAMIN:

Whole wheat contains Vitamin B1-Thiamin, B₂-Riboflavin which meet up the children's requirement of B-vitamins.

• It is a low cost food and prepared from easily available ingredients and can be prepared very easily.



GROUNDNUT BISCUITS

NUTRITIOUS SNACKS FOR INFANTS & PRE-SCHOOL CHILDREN:

• GROUNDNUT BISCUITS:

- Ingredients:
 - i) Roasted groundnut - 20 gm
 - ii) Wheat flour (whole) - 30 gm
 - iii) Sugar - 30 gm.

■ Recipes: At first roasted groundnut powder & wheat powder were mixed with sugar, then baking powder & salt were added with the mixture & it was kneaded to make a stiff dough. The dough was rolled like chapatis & cut out in desired shapes with tin lids or any other sharp instruments. The biscuits are placed on greased metal trays & baked in an oven or on heated and in a degchi [The degchi should be kept covered with a lid & pieces of live charcoal were kept on the lid to ensure uniform brown baking]. The biscuits were removed from the heat when they were golden brown & it usually takes about 20 min.

• NUTRITIVE VALUE & COST OF GROUNDNUT BISCUITS:

Ingredients	Amount (gm)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Groundnut	20	5.24	7.96	5.34	114	140	2.8
wheat flour	30	3.6	0.51	20.82	102.3	34	1.02
Sugar	30	0.03	-	29.82	119.4	44	1.32
Total		8.87	8.47	55.98	335.7		5.14

Teacher's Signature

■ SIGNIFICANCE:

i) ENERGY:

Ground nut biscuit supplies our body with a quick source of energy. Ground nut and wheat flour are the major source of energy.

ii) PROTEIN: Ground nuts are the great sources of plant based protein, which are essential to health.

iii) VITAMIN:

In addition to being major source of energy, wheat flour also provides vitamins mostly B-vitamins which play a crucial function in releasing energy.

- Along with health benefits ground nut biscuit are also low cost food which may prepared easily.



✓

• BENGAL SESAME BISCUITS:

- Ingredients:
 - i) Bengal gram flour - 10 gm.
 - ii) Maida - 15 gm
 - iii) Sesame - 15 gm
 - iv) Sugar - 25 gm
 - v) oil - 10 gm.

■ Recipe: Bengal gram flour, maida & sesame seeds are powdered & mixed well. Then baking powder & salt are added to the mixture and mixed thoroughly. The mixture is kneaded with oil to prepare stiff dough. Small dough are rolled like chapatis & cut out in desired shapes with tins-lids. The biscuits are placed on metal trays & the tray is placed on the heated out in a degchi & baked well. After 20-30 mins the biscuits are removed from the degchi, when they are golden-brown.

• NUTRITIVE VALUE & COST OF BENGAL SESAME BISCUITS:

Ingredients	Amount (gm)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bengal Gram flour	10	2.08	0.56	5.98	37.2	135	1.35
Maida	15	1.65	0.135	11.085	52.2	34	0.51
Sesame	15	2.745	6.435	3.75	84.45	240	3.6
Sugar	25	0.025	-	24.85	99.5	44	1.1
oil	10	-	10	-	90	16.5	1.65
Total		6.5	17.19	45.665	363.35		8.21

Teacher's Signature

■ SIGNIFICANCE :

• ENERGY:

Bengal sesame biscuit are full of nutrient that our body requires to generate energy. It is a high energy food. One serving of Bengal sesame food provide 363.35 Kcal energy.

• RICH IN PROTEIN:

Bengal gram are rich source of plant protein. They are also a very good source of folic acid and fibre and contain phytochemical called saponins, which act as antioxidants. Sesame also contain methionine.

• LOADED WITH CALCIUM:

Sesame seeds are one of the major non-dairy foods that contains high amount of calcium and also a excellent source of manganese which helps our bones grow healthy and strong.

- It is low cost supplementary food which can be prepared easily.

Ans
22/12/22

Date - 16/12/2022 P-30

INTEGRATED CHILD DEVELOPMENT SERVICE SCHEME (ICDS)

Date of Visit: 16/12/2022

Teacher Accompanied: Dr. Shruti Agrawal

Address: ICDS Centre
Budge Budge, South 24 Parganas,
West Bengal-700137



INTEGRATED CHILD DEVELOPMENT SERVICE SCHEME (ICDS)

The Integrated Child Development Service Scheme (ICDS) is the country's most comprehensive and multi-dimensional programme. The ICDS was launched on 2nd October 1975 under the 5th five-year plan and in pursuance of the National Policy for children in 33 experimental blocks.

The ICDS is the foremost symbol of India's commitment to her children; India's response to the challenge of providing pre-school education on one hand and breaking the vicious cycle of malnutrition, morbidity, reduced learning capacity and mortality on the other.

Objectives

The objectives of the scheme are-

- to improve the nutritional and health status of children in the age-group 0-6 years
- to lay the foundation for proper psychological, physical and social development of the child
- to reduce the incidence of mortality, morbidity, malnutrition and school dropout
- to achieve effective co-ordination of policy and implementation amongst the various departments to promote child development and
- to enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

Beneficiaries

- Children below six years
- Expectant and nursing mothers
- Adolescent girls
- Women in the age group of 15 to 45 years



Programme Components

The package of services provided by ICDS scheme includes-

- *Supplementary Nutrition*

Supplementary Nutrition Programme is provided to children below 6 year of age, pregnant and nursing mothers and adolescent girls of low income group to improve health and nutritional status. The provision of supplementary nutrition includes supplementary feeding and distribution of nutrient supplements. The scheme is implemented through the network of Anganwadi workers under the ICDS.

Nutritional Contribution of Supplementary Foods Provided By ICDS

Beneficiaries	Energy (Kcal)	Protein (g)
Children (6 months to 72 months)	500	12-15
Severely malnourished Children (6 months- 72 months)	800	20-25
Pregnant and lactating mothers/ adolescent girls (under KSY)	600	18-20

Cost of Supplementary Nutrition provided at Anganwadis

Beneficiaries	Cost of Supplementary Meal (Rs./day/beneficiary)
Children (6-72 months)	8.00
Children (6-72 months) Severely Malnourished	12.00
Pregnant and nursing mothers	9.50

- *Vitamin A Supplementation*

At the AWC children are administered vitamin A at periodic intervals according to their age to prevent vitamin A deficiency.

Age	Dose of Vitamin A
Children (6-11 months)	One dose of 1,00,000 IU of vitamin A orally (measles immunization is good to give a routine dose)
Children (1-5 years)	One dose of 2,00,000 IU of vitamin A orally every six months

- ***Iron and Folic acid supplementation***

All pregnant women and children are given Iron and Folic acid (IFA) tablets to prevent anaemia as per the following recommended dose irrespective of their haemoglobin status.

Beneficiaries	Dose	Quantity
Pregnant women	1 Big tablet containing 100 mg elemental iron and 500 microgram Folic acid	1 tablet per day for 100 days (in 3 rd trimester of pregnancy)
Children (1-5 years)	1 Small tablet containing 20 mg elemental iron and 100 microgram Folic acid	1 tablet per day for 100 days

- Growth Monitoring
- Pre-school non-formal education
- Nutrition & health education
- Immunization
- Health check-up and
- Referral services

Conclusion

The ICDS has a huge potential as a platform to provide comprehensive child and maternal services. This visit to the ICDS centre or anganwadi was beneficial for us as we got the opportunity to watch implementation of the low cost supplementary feeding programme where several low cost food ingredients are used to prepare the nutrient dense foods for children and mothers.

1/23/22/12/22
 Sem I ✓
 B.Sc. Part III/H (Hons./Gen) Examination 20.23.(CU)
 Dept. of Food & Nutrition
 Behala College

EXAMINED

B.Sc. SEMESTER-V(H) PRACTICAL
EXAMINATION-2022

UNDER CBCS SYSTEM

FOOD & NUTRITION (HONOURS)

PAPER- DSE-A1 (PUBLIC HEALTH)

Roll & No: 203561-11-0013

Registration No: 561-1211-0375-20

CONTENT

SI NO	TOPICS	DATE	PAGE No.	Teacher's Signature
1.	Introduction to Supplementary Foods	16/9/22	1-8	<i>Sue 11/11/22</i>
2.	Preparation of Low Cost Supplementary Foods:			
1)	Wheat Gram Porridge	11/11/22	9 - 10	
2)	Rice porridge		11-12	<i>Sue 11/12/22</i>
3)	Bajra Infants foods		13 - 14	
4)	Rajma		15 - 16	
5)	Sajna	11/11/22	17 - 19	
6)	Barebi	1/12/22	20 - 21	
7)	Wheat Guava Laddoo		22 - 23	
8)	Wheat Payasam		24 - 25	<i>Sue 22/12/22</i>
9)	Groundnut Biscuits		26 - 27	
10)	Bengal Sesame Biscuits	1/12/22	28 - 29	
3.	Field Visit • Visit to the ICDS Centre	16/12/22	30 - 33	

INTRODUCTION TO SUPPLEMENTARY FOODS

Supplementary feeding means providing extra food to people or families over & above their home diet & has been used in populations that are food insecure (limited access to adequate & nutritious food) & vulnerable (including women & young children, school aged children, people living with diseases such as tuberculosis, HIV & Alzheimers disease & older people) to improve their health & quality of life.

A dietary supplement is a product for ingestion that contains dietary ingredients intended to add further nutritional value to supplement diet. These dietary ingredients may be one or any combination following substances -

- A vitamin
- A mineral
- A herb or other botanical product.
- An amino acid.

A dietary substance for use by people to supplement the diet by increasing the total dietary intake.

- A concentrate, metabolic, constituent or extract.

Dietary supplements may be found in many forms such as

Teacher's Signature

tablets, capsule, gelcaps, liquids or powder. Some dietary supplements can ensure to get an adequate dietary intake of essential nutrients. Other may be reduce the risk of disease.

• LOW COST SUPPLEMENTARY FOODS:

Indian mothers wear their infants into traditional adult diet because of their ignorance of past cost weaning foods & also because of incapacity to buy expensive commercial foods. Infants of weaning age or period belong to the vulnerable group also who need dietary supplementation.

Infant ready to use infant foods are standardised at coimbatore (cereal 30 gm, pulse 20 gm roasted groundnut 10 gm. & Jaggery 15 gm.) NIN Hyderabad (Bajra / Ragi 60 gm, green gram dal 15 gm, skim milk powder 10 gm, Sugar or salt to taste.) & at Gandhi-gram (groundnut cake biscuits, ragi biscuits).

LOW COST SUPPLEMENTARY FOODS DEVELOPED IN INDIA

Name of the Product	Composition
• Indian Multipurpose food (C.F.T.R.I)	low fat groundnut flour (75:25) fortified with Vit-A, & D, B ₁ , B ₂ & calcium carbonate contains 42% proteins.
• Malt Food (C.F.T.R.I)	Cereal malt, low fat groundnut flour, roasted bengal gram flour (40:40:20) fortified with vitamin & ca salt contains 28% protein.
• Balahar (C.F.T.R.I).	Whole wheat flour, groundnut flour & roasted bengal gram (70:20:10) fortified with Ca salts & vitamins.
• Supplementary Food (NIN)	Roasted wheat flour, green gram flour, groundnut, & sugar or jaggery (80:20:8:20) contains 12.5% protein.
• Supplementary Food (A.H.S.C.W) Kuzhandai Amudhu	Roasted maize flour, green gram flour, groundnut and sugar or jaggery (30:20:10:20) This food contains 14.4% proteins.

Teacher's Signature

Name of Supplementary Food	Composition
• Win Food (Grandhigram Rural Institute).	Pearl millet, green gram dal, groundnut flour, and jaggery (50:15:25:25). This food contains 20% proteins.
• Amutham	Rice flour, ragi flour, bengal gram flour, sesame flour, groundnut flour and jaggery (15:15:15:10:10:25) This food contains 14% proteins.
• Poshak	Cereal (wheat, maize, rice or jowar) pulse (chana dal or green gram dal) and oil seed (groundnut) and jaggery (4:2:1:2).
• Poshak (least cost weaning mix).	Some ingredients as poshak but in the proportion of 60:17:14:9
• Kerala Indigenous Food (KIF)	Tapioca, Bulgar wheat and groundnut (25:50:25).

Teacher's Signature

• CURRENT SCENARIO OF INDIA:

Health & Nutrition are most important contributing factors for human resources development in the century. India ranks 13th in terms of human development among 189 countries (UNDP, 2020).

- The following table shows the nutritional status of children in India (National Family Health Survey-5, 2019-2021):

child feeding practices & Nutritional status of children	NFHS-5 (%)		
	Urban	Rural	Total
children under age 3 yrs. breast fed within one hour of birth.	44.7	40.7	41.8
children age 6-8 months receiving solid or semisolid food & breast milk	52.0	43.9	45.9
Total children age 6-23 month receiving an adequate diet	12.3	11.0	11.3
children under 5 yrs. who are stunted (height for Age)	30.1	37.3	35.5
children under 5 yrs. who are wasted (weight for height)	18.5	19.5	19.3
children under 5 yrs. who are severely wasted (wt. for Ht.)	7.6	7.7	7.7
children under 5 yrs. who are underweight (wt. for age)	27.3	33.8	32.1

Teacher's Signature

• PLANNING & PREPARATION LOW COST SUPPLEMENTARY FOODS FOR DIFFERENT AGE GROUP:

After 6 months, increasing needs of calories & proteins of growing children can't be met by diminishing output of mother's milk.

If the body is to maintain the expected rate of growth, remain healthy & well nourished. Supplementary feeding has been restored to around 6 month.

Globally undernutrition is the single biggest contribution to disease. Undernutrition is of particular concern in young children as it can development. According to ICMR-NIN (2020) the requirement of calorie, protein are -

Age group	Expected body wt (approx) (kg)	Calories (Kcal)	Protein (gm)
i) Birth-6- months	5.8	530	8.0
ii) 6 months - 1 yr.	8.5	680	10.5
iii) 1-3 yrs.	12.9	1110	12.5
iv) 4-6 yrs.	18.3	1360	16.0
v) 7-9 yrs	25.3	1700	23.0
vi) 10-12 yrs. (boys)	34.9	2220	32.0
10-12 yrs (Girls)	36.4	2060	33.0

Generally by the time child is 1-1^{1/2} yrs. old breast milk may not be available to it. Such a child will therefore have to depend solely on other foods based on the rice, wheat or other common cereals.

They are relatively low in protein & only small quantity are usually given to the child. This is the time when the child needs more nutritious food supplying protein & calories.

Supplementary foods provide additional nutrient to children to ameliorate or prevent undernutrition. The focus is usually on increasing the amount of energy & protein a child receives. But supplementary foods can also contain micro-nutrients (vitamins & minerals).

•PRINCIPLES GOVERNING THE FORMATION OF THE RECIPES:

A recipe providing about 400-500 Kcal & 12-14 gm of protein is required to be used as supplement to breast milk to feed the older infant. The quantity is for the whole day per child & the cooked preparation can be distributed in several feeds throughout the day. Most of the supplementary programme in our country provide about 300 Kcal & 9-10 g protein.

The supplementary food should provide about the half of the total daily requirement of protein &

& about $\frac{1}{3}$ the total calorie need.

During supplementary food planning the following should be kept in mind —

- i) The recipes must be based on locally available food stuff.
- ii) The cooking method must be simple.
- iii) The cost should be minimal.
- iv) The recipes should be acceptable in taste, consistency & bulk to the child as well as the mother.

*Sue
11/11/22*



WHEAT GRAM PORRIDGE

PREPARATION OF LOW COST SUPPLEMENTARY FOODS:

• WHEAT GRAM PORRIDGE:

- Ingredients:
 - Roasted whole wheat flour - 20 gm ($\frac{1}{2}$ tbs)
 - Roasted bengal gram - 10 gm
 - Roasted groundnut - 10 gm
 - Spinach - 20 gm
 - Sugar or jaggery - 25 gm.

• Recipes:

Groundnut, wheat, & bengal gram are roasted & powdered. After that all three powders are mixed. Jaggery is dissolved in the water & thin syrup is made. Next a batter of the powders are prepared with the help of this syrup. Spinach is boiled in water till soft. Then it is mashed & strained through a clean cloth. Then the juice is added to the batter & cooked for a few minutes stirring continuously till semi-solid.

• NUTRITIVE VALUE & COST OF WHEAT GRAM PORRIDGE:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Whole wheat flour	20	2.36	0.3	14.24	68.2	Free	Free
Bengal Gram	10	2.25	0.52	5.81	36.9	80	0.8
Groundnut	10	2.62	3.98	2.67	57	140	1.4
Spinach	20	0.4	0.14	0.58	5.2	50	1
Jaggery	25	0.1	0.025	23.75	95.75	60	1.5
Total		7.73	4.965	47.05	263.05		4.7

SIGNIFICANCE :

• ENERGY :

Wheat gram porridge is a energy rich food, it contains whole wheat, groundnut, Jaggery, bengal gram which are good source of energy. It provides 263.65 Kcal energy in one serving.

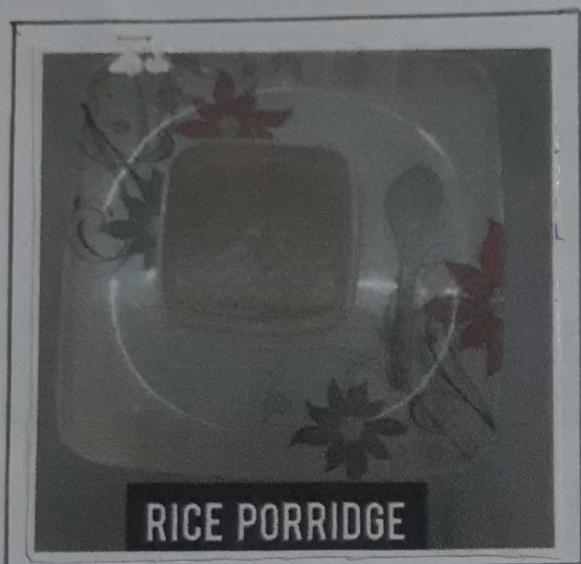
• PROTEIN :

Roasted groundnut and roasted bengal gram are rich source of protein. Wheat also provides protein. One serving porridge provides 7.73 gm protein.

• VITAMINS :

Whole wheat, roasted bengal gram and other ingredients provides thiamin and other important B-vitamins. They also provide B₆ - and folate essential for our health.

This is a very low cost supplementary food and easy to prepare. Hence it could be good, supplementary food for children.



RICE PORRIDGE



RICE PORRIDGE:

- Ingredients:
 - i) Rice - 20 gm
 - ii) Powdered roasted groundnut - 10 gm
 - iii) Powdered, roasted greengram dal - 10 gm
 - iv) Sugar or jaggery - 25 gm

Recipes:

Rice is cooked. Then pulse & groundnut powders are added to the cooked rice. Leafy vegetables are boiled in water & the juice is added to the mixture. Sugar is added & cooked for few minutes.

NUTRITIVE VALUE & COST OF RICE PORRIDGE:

Ingredients	Amount (g)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost(₹) Per Kg	Actual
Rice	20	1.28	0.08	15.8	69.2	Free	Free
Groundnut	10	2.62	3.98	2.67	57	140	1.4
Greengram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Sugar	25	0.025	0	24.85	99.5	44	1.1
Total		6.375	4.18	49.31	260.5		3.7

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

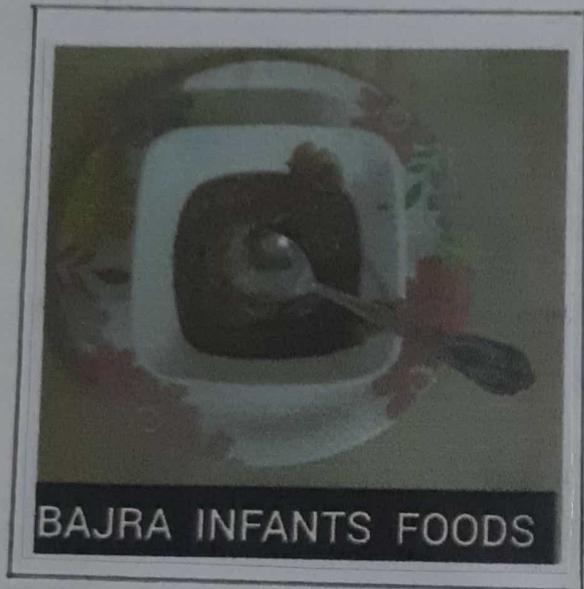
Rice, Jaggery and green gram dal are good source of energy. This provides 260 Kcal energy which is sufficient to meet the 1/3rd of the total energy requirement of children.

PROTEIN: Green gram dal is rich source of protein. Rice, Jaggery, ground nut also provides protein.

VITAMINS:

Rice porridge is rich source of thiamine B₆ and other essential B-vitamins that is essential for our body.

Hence, it is a good source of low cost supplementary for children suffering from protein-energy malnutrition.



✓

READY TO USE INFANT WEANING FOOD:

■ BAJRA INFANTS FOODS

- Ingredients:
 - i) Bajra - 20gm
 - ii) Roasted green gram dhal - 10gm
 - iii) Roasted decorticated gingelly Seeds - 5 gm.
 - iv) Sugar - 25gm
 - v) Roasted Groundnut - 5gm

• Recipes:

Bajra, green gram dhal, groundnut & gingelly seeds are powdered. The powders are mixed thoroughly. After that it is mixed with hot water before serving to the child. Sugar is added to the mixture. It can either be made into balls in porridge form.

• NUTRITIVE VALUE & COST OF BAJRA INFANTS FOODS:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate rate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bajra	20	2.32	1	13.5	72.2	49	0.9
Green gram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Groundnut	5	1.31	1.99	1.335	28.5	140	0.7
Gingelly Seeds	5	0.915	2.165	1.25	28.15	240	1.2
Sugar	25	0.025	0	24.85	99.5	49	1.1
Total		7.02	5.275	46.925	263.15		5.1

Teacher's Signature

■ SIGNIFICANCE:

ENERGY: Bajra infant's food contain sugar, gingelly seeds along with bajra, green gram dal which are the good source of energy. One serving of bajra infant's food provide 263.15 Kcal energy.

• Protein: Bajra infant's food contain green gram dal, ground nut, gingelly seeds which are the good source of protein. One serving of bajra infant's food provide 7.02gm protein. Hence it could be a supplementary food for children suffering PEM.

• Micronutrients: Bajra infant's food contain in bajra, green gram dal and gingelly seeds which are the good source of various micronutrients:

- Bajra Provide vitamin B₁, B₂ and vitamin B₂.
- Green gram dal provide vitamin B₆
- Gingelly seeds provide vitamin B₁
- Bajra infants food contain bajra which is the rich source of calcium.

It is a low cost food and prepared from easily available ingredients and can be prepared very easily.



RAGINA

■ RAGINA:

- Ingredients:
 - i) Ragi (dehusked) - 25gm
 - ii) Roasted bengal gram dhal - 5gm
 - iii) Sugar - 25gm
 - iv) Roasted groundnut - 10gm.

• Recipes:

All the roasted ingredients are powdered individually & mixed thoroughly. The mixture can be stored in air-tight containers. Before serving to the child, it is added with hot water & jaggery. It can be made into balls form or it can be made into porridge form.

• NUTRITIVE VALUE & COST OF RAGINA:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost(₹) Per Kg	Actual
Ragi	25	1.825	0.325	18	82	60	1.5
Bengal gram	5	1.125	0.26	2.905	57	80	0.4
Sugar	25	0.025	-	24.85	99.5	44	1.1
Ground nut	10	2.62	3.98	2.67	57	140	1.4
Total		5.595	4.565	48.425	295.5		4.4

Teacher's Signature

SIGNIFICANCE:

ENERGY:

Ragina contains ragi, bengal gram, sugar, and ground nut which are good source of energy one serving of ragina provide 263.15 Kcal energy.

PROTEIN: Ragina contains Ragi, Bengal gram and groundnut which are the good source of protein. One serving of ragina provide 5.595 gm protein. Hence it could be a good supplementary food for children suffering from PEM.

MICRONUTRIENTS:

Vitamin B complex: Ragina contains Ragi, bengal gram and ground nut which are good source of vitamin B complex.

Minerals: Ragina contain Ragi which is the reach source of calcium.

It is a low cost food and prepared from easily available ingredients & can be prepared very easily.



SAJINA

■ SAJINA:

- Ingredients:
 - i) Roasted Bajra - 20gm
 - ii) Roasted green gram dhal - 10 gm
 - iii) Sugar - 20gm
 - iv) Ground nut - 5gm

• Recipes: Bajra & greengram dhal are roasted & powdered properly. This powder is mixed well & then sugar & water is added to this mixture & cooked for few minutes.

• NUTRITIVE VALUE & COST OF SAJINA:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bajra	20	2.9	1.25	16.875	90.28	49	0.9
Green gram dhal	10	2.45	0.12	5.99	34.8	120	1.2
Sugar	20	0.02	0	19.88	79.6	49	0.9
Groundnut	5	1.265	2.005	1.335	28.35	140	0.7
Total		6.635	3.375	44.08	233		3.7

■ SIGNIFICANCE:-

• ENERGY:

Sajna provides good amount of energy due to presence of bajra, groundnut, sugar. As a soft food, it is good for gradual weaning process of infants. One serving of sajna provides 233 Kcal.

• PROTEIN:

It consists green gram dal and groundnut which provides second class protein from plant source. This is a good choice for infants which provides good amount and quality of proteins in a meal. As bajra is deficient in lysine but rich in methionine but green gram dhal is rich in lysine and deficient in methionine. So, together it provides a balance protein. If this type of supplementary food we choose, it can help to survive against protein energy malnutrition or other health problems. One serving of Sajna provides 6.635 gm.

• LOADS OF MICRONUTRIENTS:

• VITAMIN B COMPLEX:

All cereals, pulses and nuts present in this meal provides different types of vitamin B, such as B₁, B₂, B₃ and B₆ which helps to meet the requirement of B vitamins and release energy from food.

Teacher's Signature

MINERALS:

It provides, phosphorous, iron, zinc of which zinc works as an antioxidant.

✓
Date
01/11/22



RECIPES SUITABLE FOR PRE-SCHOOL CHILDREN:

Proper nutritional care of pre-school children aged 1-5 yrs. is very important. Children in this age group require 12.5-16 gm of protein & 1110-1360 Kcal energy daily.

■ BARFI:

- Ingredients:
 - Pressed rice - 25gm
 - Roasted groundnut - 25 gm
 - Roasted sesame seeds (white) - 10 gm
 - Jaggery - 25 gm.

• Recipes: The pressed rice is roasted & mixed with the broken groundnuts. A sticky syrup is prepared with Jaggery & water. The beaten rice & nuts are added & mixed quickly. This is spreaded on a greased plate & it cut into pieces immediately.

• NUTRITIVE VALUE & COST OF BARFI:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (gm)	Cost(₹) Per Kg	Actual
Rice	25	1.65	0.3	19.325	86.5	Free	Free
Groundnut	25	6.55	9.95	6.675	142.5	140	3.5
Sesame seeds	10	1.83	4.33	2.5	56.3	240	2.4
Jaggery	25	0.1	0.025	23.75	95.75	60	1.5
Total		10.13	14.60	52.25	381.05		7.4

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

For infants energy is needed for their growth and increased activity. The food item consists rice which gives the large amount of energy from carbohydrate and also from jaggery, groundnut and sesame seeds. Although one third of the energy requirement can be fulfilled from the one serving barbi that provides 381.05 Kcal.

• PROTEIN:

Barbi contains rice, groundnut, Sesame seeds which are second class protein is included in the meal. Though this is a second class protein and comes from plant source, it also very essential for infants one serving provides 10.13g.

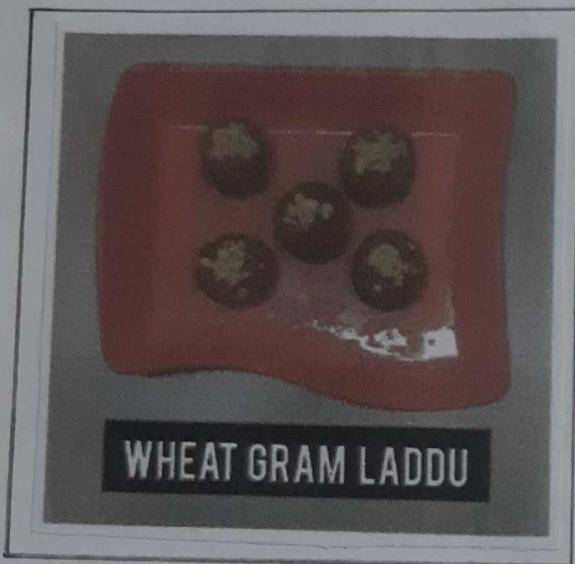
PROVIDES MICRONUTRIENT:

• VITAMIN-B- Due to presence of cereals & nuts, it provides several B vitamins which helps to meet the requirement of B vitamins and release energy from food.

• MINERALS:

In this food due to presence of sesame seeds and groundnut it consists phosphorus, magnesium, Zinc, iron etc. Jaggery also contains a large amount of iron.

It is a low cost supplementary food and prepared from easily available ingredients.



WHEAT GRAM LADDU

■ WHEAT GRAM LADDU:

- Ingredients: i) Whole wheat (roasted flour)-30g
ii) Green gram dhal - 20gm
iii) Groundnut - 15gm
iv) Jaggery / Sugar - 30gm
- Recipes: whole wheat, green gram dhal & groundnut are roasted & powdered well. Then jaggery Syrup is prepared & roasted flour mixture is added to it & mixed well. All ingredients are mixed well & made into balls.

• NUTRITIVE VALUE & COST OF WHEAT GRAM LADDUS:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
whole wheat	30	3.63	0.51	20.82	102.3	Free	Free
Green gram dhal	20	4.9	0.25	11.98	69.6	120	2.4
Groundnut	15	3.8	6.015	3.915	85.05	140	2.1
Jaggery	30	0.12	0.03	28.5	114.9	60	1.8
Total		12.45	6.8	65.21	371.85		6.3
-							

Teacher's Signature

SIGNIFICANCE:

• ENERGY:

This food provides 371.85 Kcal energy which we get from whole wheat, Green gram dhal, Groundnut, and Jaggery. Jaggery contains high amount of carbohydrate which helps to meet the energy requirement of children.

• PROTEIN:

12.45 gm of protein is provided from this food and Green gram dhal is a rich source of 'lysine'. So it fulfill protein requirement of children. Wheat is deficient in lysine but rich in methionine and Green gram dhal is rich in lysine and deficient in methionine. So wheat gram laddu could be a source good quality of protein for children suffering from PEM.

• B-VITAMIN:

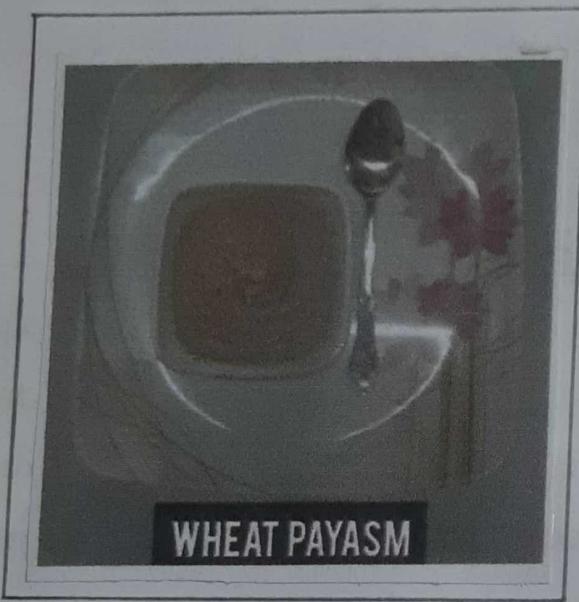
Whole wheat contains B₁-Thiamin, B₂-Riboflavin which meet up the requirement of B-Vitamin.

• MINERAL: Jaggery contains calcium, iron and other minerals needed for the growing children.

• It is a low cost food and can be prepared very easily.

ИНДИЙСКИЕ
СИНИ.

1079.



МЯСНЫЕ.

МАРУМБА.

• WHEAT PAYASAM:

- Ingredients:
 - i) Whole wheat - 30gm
 - ii) Roasted bengal gram flour - 20gm
 - iii) Sugar - 25gm
 - iv) Groundnut - 15 gm

• Recipes:

Whole wheat & bengal gram are roasted & then powdered separately. Sugar & crushed roasted groundnuts are added with roasted whole wheat & bengal gram flour. Water is added & the mixture is cooled for five minutes.

• NUTRITIVE VALUE & COST OF WHEAT PAYASAM:

Ingredients	Amount (gm)	Protein (gm)	Fat (gm)	Carbohydrate (gm)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Whole wheat	30	3.54	0.45	21.36	103.8	Free	Free
Bengal gram flour	20	4.5	1.04	11.62	73.8	135	2.7
Sugar	25	0.025	0	24.85	99.5	44	1.1
Groundnut	15	3.93	5.97	4.005	85.5	140	2.1
Total		11.995	7.46	61.835	362.6		5.9

Teacher's Signature

■ SIGNIFICANCE:

• ENERGY:

This food provides 362.6 kcal energy which we get from whole wheat bengal gram flour and Sugar, Groundnut. Sugar contains higher amount of carbohydrate than other ingredients present in the payasam. It gives intense energy to cope up the stress in many conditions especially in PEM.

• PROTEIN:

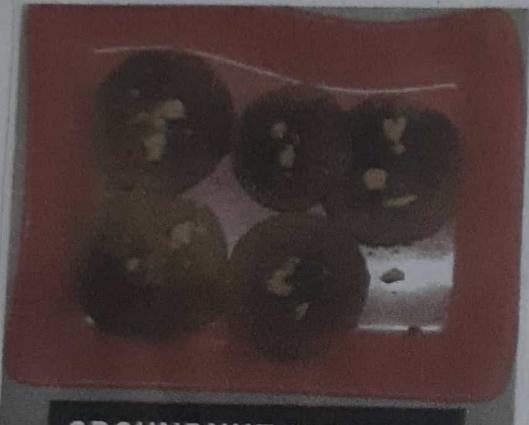
11.995 gm protein is provided from one serving of this food. Bengal gram dal, groundnut which are present in the food have high amount of protein.

■ MICRONUTRIENTS:

• B-VITAMIN:

Whole wheat contains Vitamin B1-Thiamin, B₂-Riboflavin which meet up the children's requirement of B-vitamins.

• It is a low cost food and prepared from easily available ingredients and can be prepared very easily.



GROUNDNUT BISCUITS

NUTRITIOUS SNACKS FOR INFANTS & PRE-SCHOOL CHILDREN:

• GROUNDNUT BISCUITS:

- Ingredients:
 - i) Roasted groundnut - 20 gm
 - ii) Wheat flour (whole) - 30 gm
 - iii) Sugar - 30 gm.

■ Recipes: At first roasted groundnut powder & wheat powder were mixed with sugar, then baking powder & salt were added with the mixture & it was kneaded to make a stiff dough. The dough was rolled like chapatis & cut out in desired shapes with tin lids or any other sharp instruments. The biscuits are placed on greased metal trays & baked in an oven or on heated and in a degchi [The degchi should be kept covered with a lid & pieces of live charcoal were kept on the lid to ensure uniform brown baking]. The biscuits were removed from the heat when they were golden brown & it usually takes about 20 min.

• NUTRITIVE VALUE & COST OF GROUNDNUT BISCUITS:

Ingredients	Amount (gm)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Groundnut	20	5.24	7.96	5.34	114	140	2.8
wheat flour	30	3.6	0.51	20.82	102.3	34	1.02
Sugar	30	0.03	-	29.82	119.4	44	1.32
Total		8.87	8.47	55.98	335.7		5.14

Teacher's Signature

■ SIGNIFICANCE:

i) ENERGY:

Ground nut biscuit supplies our body with a quick source of energy. Ground nut and wheat flour are the major source of energy.

ii) PROTEIN: Ground nuts are the great sources of plant based protein, which are essential to health.

iii) VITAMIN:

In addition to being major source of energy, wheat flour also provides vitamins mostly B-vitamins which play a crucial function in releasing energy.

- Along with health benefits ground nut biscuit are also low cost food which may prepared easily.



✓

• BENGAL SESAME BISCUITS:

- Ingredients:
 - i) Bengal gram flour - 10 gm.
 - ii) Maida - 15 gm
 - iii) Sesame - 15 gm
 - iv) Sugar - 25 gm
 - v) oil - 10 gm.

■ Recipe: Bengal gram flour, maida & sesame seeds are powdered & mixed well. Then baking powder & salt are added to the mixture and mixed thoroughly. The mixture is kneaded with oil to prepare stiff dough. Small dough are rolled like chapatis & cut out in desired shapes with tins-lids. The biscuits are placed on metal trays & the tray is placed on the heated out in a degchi & baked well. After 20-30 mins the biscuits are removed from the degchi, when they are golden-brown.

• NUTRITIVE VALUE & COST OF BENGAL SESAME BISCUITS:

Ingredients	Amount (gm)	Protein (g)	Fat (g)	Carbohydrate (g)	Energy (Kcal)	Cost (₹) Per Kg	Actual
Bengal Gram flour	10	2.08	0.56	5.98	37.2	135	1.35
Maida	15	1.65	0.135	11.085	52.2	34	0.51
Sesame	15	2.745	6.435	3.75	84.45	240	3.6
Sugar	25	0.025	-	24.85	99.5	44	1.1
oil	10	-	10	-	90	16.5	1.65
Total		6.5	17.19	45.665	363.35		8.21

Teacher's Signature

■ SIGNIFICANCE :

• ENERGY:

Bengal sesame biscuit are full of nutrient that our body requires to generate energy. It is a high energy food. One serving of Bengal sesame food provide 363.35 Kcal energy.

• RICH IN PROTEIN:

Bengal gram are rich source of plant protein. They are also a very good source of folic acid and fibre and contain phytochemical called saponins, which act as antioxidants. Sesame also contain methionine.

• LOADED WITH CALCIUM:

Sesame seeds are one of the major non-dairy foods that contains high amount of calcium and also a excellent source of manganese which helps our bones grow healthy and strong.

- It is low cost supplementary food which can be prepared easily.

Ans
22/12/22

Date - 16/12/2022 P-30

INTEGRATED CHILD DEVELOPMENT SERVICE SCHEME (ICDS)

Date of Visit: 16/12/2022

Teacher Accompanied: Dr. Shruti Agrawal

Address: ICDS Centre
Budge Budge, South 24 Parganas,
West Bengal-700137



INTEGRATED CHILD DEVELOPMENT SERVICE SCHEME (ICDS)

The Integrated Child Development Service Scheme (ICDS) is the country's most comprehensive and multi-dimensional programme. The ICDS was launched on 2nd October 1975 under the 5th five-year plan and in pursuance of the National Policy for children in 33 experimental blocks.

The ICDS is the foremost symbol of India's commitment to her children; India's response to the challenge of providing pre-school education on one hand and breaking the vicious cycle of malnutrition, morbidity, reduced learning capacity and mortality on the other.

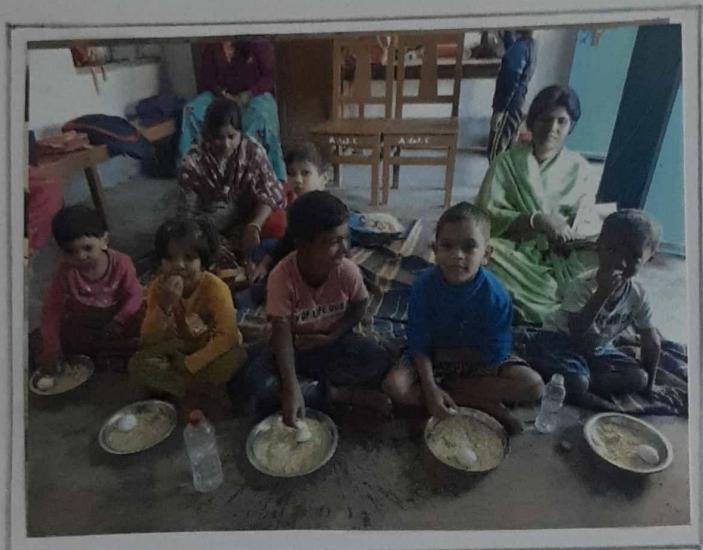
Objectives

The objectives of the scheme are-

- to improve the nutritional and health status of children in the age-group 0-6 years
- to lay the foundation for proper psychological, physical and social development of the child
- to reduce the incidence of mortality, morbidity, malnutrition and school dropout
- to achieve effective co-ordination of policy and implementation amongst the various departments to promote child development and
- to enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

Beneficiaries

- Children below six years
- Expectant and nursing mothers
- Adolescent girls
- Women in the age group of 15 to 45 years



Programme Components

The package of services provided by ICDS scheme includes-

- *Supplementary Nutrition*

Supplementary Nutrition Programme is provided to children below 6 year of age, pregnant and nursing mothers and adolescent girls of low income group to improve health and nutritional status. The provision of supplementary nutrition includes supplementary feeding and distribution of nutrient supplements. The scheme is implemented through the network of Anganwadi workers under the ICDS.

Nutritional Contribution of Supplementary Foods Provided By ICDS

Beneficiaries	Energy (Kcal)	Protein (g)
Children (6 months to 72 months)	500	12-15
Severely malnourished Children (6 months- 72 months)	800	20-25
Pregnant and lactating mothers/ adolescent girls (under KSY)	600	18-20

Cost of Supplementary Nutrition provided at Anganwadis

Beneficiaries	Cost of Supplementary Meal (Rs./day/beneficiary)
Children (6-72 months)	8.00
Children (6-72 months) Severely Malnourished	12.00
Pregnant and nursing mothers	9.50

- *Vitamin A Supplementation*

At the AWC children are administered vitamin A at periodic intervals according to their age to prevent vitamin A deficiency.

Age	Dose of Vitamin A
Children (6-11 months)	One dose of 1,00,000 IU of vitamin A orally (measles immunization is good to give a routine dose)
Children (1-5 years)	One dose of 2,00,000 IU of vitamin A orally every six months

- ***Iron and Folic acid supplementation***

All pregnant women and children are given Iron and Folic acid (IFA) tablets to prevent anaemia as per the following recommended dose irrespective of their haemoglobin status.

Beneficiaries	Dose	Quantity
Pregnant women	1 Big tablet containing 100 mg elemental iron and 500 microgram Folic acid	1 tablet per day for 100 days (in 3 rd trimester of pregnancy)
Children (1-5 years)	1 Small tablet containing 20 mg elemental iron and 100 microgram Folic acid	1 tablet per day for 100 days

- Growth Monitoring
- Pre-school non-formal education
- Nutrition & health education
- Immunization
- Health check-up and
- Referral services

Conclusion

The ICDS has a huge potential as a platform to provide comprehensive child and maternal services. This visit to the ICDS centre or anganwadi was beneficial for us as we got the opportunity to watch implementation of the low cost supplementary feeding programme where several low cost food ingredients are used to prepare the nutrient dense foods for children and mothers.

1/23/22/12/22
 Sem I ✓
 B.Sc. Part III/H (Hons./Gen) Examination 20.23.(CU)
 Dept. of Food & Nutrition
 Behala College

EXAMINED

B.Sc SEMESTER-III(HONOURS) PRACTICAL
EXAMINATION-2022

ROLL NO-213561-11-0013

REGISTRATION NO-561-1211-0310-21

SUBJECT-FOOD & NUTRITION

PAPER-COMMUNITY NUTRITION-[CCG]

UNIVERSITY OF CALCUTTA

B.Sc. SEMESTER-III(HONOURS) EXAMINATION-2022

- ROLL NO - 213561-11-0013
- REGISTRATION NO - 561-1211-0310-21
- DEPARTMENT - FOOD & NUTRITION
- PAPER - CC6
- SUBJECT - COMMUNITY NUTRITION

SL No	TOPICS	Page. No	Date	Signature
1.	Introduction to Community	1-3	9/9/22	✓ ✓ ✓ ✓ ✓
2.	Anthropometric Measurement of Infants weight, Height, chest circumference, MUAC, Underweight, Stunting, Wasting, Overweight	4-21	9/9/22	✓ ✓ ✓ ✓ ✓
3.	Nutritional Assessment Comparison with norms and interpretation	22-27	13/9/22	✓ ✓ ✓ ✓ ✓
	<ul style="list-style-type: none"> • Weight for Age • Height for Age • Weight for Height • MUAC 			
4.	Body Mass Index (BMI)	68-79	20/9/22	✓ ✓ ✓ ✓ ✓
5.	Waist-Hip- Ratio (WHR)	80-89	20/9/22	✓ ✓ ✓ ✓ ✓
6.	Growth chart and Poverty	90-101	22/9/22	✓ ✓ ✓ ✓ ✓
7.	Clinical Assessment and Signs of nutrient deficiencies of PEM, vitamin-A and Anaemia	102-105	20/9/22	✓ ✓ ✓ ✓ ✓
8.	Diet Survey - 24 hours dietary recall methods (3 days)	106-128	10/11/22	✓ ✓ ✓ ✓ ✓
9.	Integrated child Development Services Scheme (ICDS)	129-138	21/11/22	✓ ✓ ✓ ✓ ✓
Lenger				