



APPENDICES

CHAPTER 11
APPENDIX

Appendix 11.1
Questionnaire

GENERAL PROFILE-

1. Name: _____ 2. Address: _____
3. Age: _____ 4. Occupation: _____
5. Family Monthly Income: _____ 6. Family Members: _____
7. Marital status: a) Single () b) Married () c) Divorce ()
d) Widow ()
8. Education Level: a) Illiterate () b) Primary () c) High school ()
d) Higher Secondary () e) Graduate () f) Post-Graduate ()
9. Activity pattern: a) Moderate () b) Sedentary () c) Heavy ()
10. Exercise: a) Yes () b) No ()
11. If yes: a) Daily () b) Weekly () c) < 3 times in a week ()
d) Occasionally ()
12. What type of exercise?

Exercise type	Daily	Weekly	Occasionally	Never
Yoga				
Brisk walking				
Jogging				
Cycling				
Swimming				

13. Anthropometric Measurements:
- a) Weight: (kg) _____
- b) Height: (cms) _____
- c) BMI - Weight(kg)/Height(m²) _____

MORBIDITY PROFILE		Since when	levels
14. Do you have Diabetes?	Yes / No		
15. Are you suffering from Hypertension?	Yes / No		
16. Are you suffering from any chronic degenerative disease?	Yes / No		
17. Have you ever suffered from liver disease?	Yes / No		
18. Do you have gastrointestinal problems?	Yes / No		

FOOD HABITS

19. Likes and Dislikes- Foods preferred during a meal and their frequency-

Cooking method	Daily	2-3 times a week	Weekly	Fortnightly	Monthly	Rarely	Yearly
Steamed							
Boiled							
Sautéed							
Shallow fried							
Deep fried							
Grilled							
Roasted							

20. Type of OIL used for cooking:

Type of oil	Daily	2-3 times a week	Weekly	Fortnightly	Monthly
Saturated					
Ghee					
Butter					
Cheese					
Vanaspati ghee					
Other					
Monounsaturated					
Groundnut oil					
Palmolein					
Mustard oil					
Rice bran oil					
Other					
Polyunsaturated					
Cottonseed oil					
Corn oil					
Sunflower oil					
Safflower oil					
Soybean					
Other					

21. Total amount of oil stored/purchased in a: (amounts in liters (Approx amts)

Week _____ Month _____ Year _____

22. How often you prepare fried food at home?

Deep-Fried Foods	Daily	2-3 times a week	Weekly	Fortnightly	Monthly	Rarely	Yearly
Chips/ French fries							
Samosa/C utlets/ Breadrolls / Kachori							
Bhajia/Pa koda							
Vada/Me duvada/ Mathri/N amakpara							
Undia							
Chiwda/ Chana dal/Moon g dal							
Other Specify-							
Shallow fried-							
Parantha							
Pav bhaji							
Bhalle							
Sev							
Khamni							
Burgers/ Hotdogs							
Cheela							
Other Specify-							
Sweets-							
Gulabjam un							
Jalebi							
Mysorepa k							
Boondi laddo							
Other specify-							

23. How often you purchase fried foods from the market?

Deep-Fried Foods	Daily	2-3 times a week	Weekly	Fortnightly	Monthly	Rarely	Yearly
Chips/ French fries							
Samosa/C utlets/ Breadrolls / Kachori							
Bhajia/Pa koda							
Vada/Me duvada/ Mathri/N amakpara							
Undia							
Chiwda/ Chana dal/Moon g dal							
Other Specify-							
Shallow fried-							
Parantha							
Pav bhaji							
Bhalle							
Sev							
Khamni							
Burgers/ Hotdogs							
Cheela							
Other Specify-							
Sweets-							
Gulabjam un							
Jalebi							
Mysorepa k							
Boondi laddo							
Other specify-							

24. Do you like to dine in restaurants/parties? If yes, how often:

- a) Daily () b) Weekly () c) Once in a month ()
d) Occasionally () e) Never ()

25. What type of food you prefer most during eating outside?

- a) Steamed () b) Boiled () c) Sautéed ()
d) Shallow fried () e) Deep fried () f) Grilled ()
g) Roasted ()

26. How often you travel? _____

27. What type of food you prefer during traveling?

- a) Homemade ()
b) Ready to eat ()
- Type of cooking method

28. Are you?

- a) Vegetarian () b) Non-vegetarian () c) Ovo-vegetarian ()

29. Type of cooking method preferred for egg-

- a) Boiled () b) Shallow fried () c) Deep fried ()
d) Other ()

30. Specify the cooking method preferred for preparing non-vegetarian foods-

- a) Boiled () b) Shallow fried () c) Deep fried ()
d) Other ()

FRYING PRACTICES-

31. How many times you use fried oil for refrying? _____

32. When you consider the fried oil as not fit for consumption?

- a) After 1st frying () b) After 2nd frying () c) After 3rd drying ()
d) After 4th frying ()

33. What do you do with left over fried oil?

- a) add more fresh oil for refrying () b) discard fried oil ()
c) use fried oil for any other purpose() d) Refry the same oil without adding more ()
e) use for sautéing and other cooking purposes ()

34. Changes noticed during frying-

- a) Gumming () b) Thickness () c) Color changes ()
d) Other ()

35. Practice of keeping/storing fried oil-

- a.) Filtered () b.) Without filtration ()

36. Type of utensil used for frying-

- a) Iron () b) Stainless steel () c) Teflon ()
d) Hindalium ()

FRYING AND STORAGE KNOWLEDGE**Please tick the correct answer:**

37.	Recommended amount of oil for per person/day? a) 10-20g () b) 20-30g () c) 40-60g () d) 60-80g () e) No limit () f) do not know ()	
38.	Are you aware that higher fat intake causes health problems?	Yes / No
39.	Do you know the harmful effects of excess fried food consumption?	Yes / No
	If yes, perception about ill effects of consuming excessively fried foods: a) Obesity () b) Heart disease () c) Gastrointestinal problems () d) Any other ()	
40.	Once fried oil can be refried again or not?	Yes / No
41.	If yes, for how many times: a) After 1 st frying () b) After 2 nd frying () c) After 3 rd drying () d) After 4 th frying ()	
42.	Do you know that refrying causes thickening in oil?	Yes / No
43.	Do you know that fried oil should be filtered before storage?	Yes / No
44.	Why fried oil should be filtered? a) To remove small fried particles () b) To remove dust () c) To clean oil ()	
45.	Does the fresh oil undergo any changes upon storage?	Yes / No
46.	If yes, state the changes- a) change in color () b) foul odor () c) oil thickens () d) any other ()	
47.	Have you ever noticed the oil manufacturing date before buying?	Yes / No
48.	What type of container should be used for storing the oils: a) Plastic transparent jars () b) Glass jars () c) Steel jars () d) Plastic containers (opaque) ()	
49.	Do you know about the oil blends?	Yes / No
50.	Are blended oil good for health?	Yes/No
51.	What are oil blends? a) Combination of one or more oil () b) Combination of two or more than two oils () c) Type of oil () d) Do not know ()	
52.	Do you know about trans fat is?	Yes / No
53.	If yes, a) form of fat which is harmful to health () b) form of fat which is beneficial to health () c) form of fat which adds taste to the diet () d) form of fat which has no effect on health () e) any other ()	
54.	Name the sources of trans fats a) baked, fried foods and edible oils () b) fruit juices () c) vegetables () d) do not know ()	

Appendix 11.2

SENSITIVITY THRESHOLD TEST

Name: _____

Date: _____

You are provided with a series of containers having solutions with increasing concentration of one of the tastes qualities (sweet and salty). Please start with Sr. No.1 and continue with the rest.

REASTING OF ALREADY TASTED SOLUTIONS IS NOT ALLOWED.

Describe the taste or give intensity scores.

Use the following intensity scale:

0= None or the taste of pure water

?= Different from water, but taste quality not identifiable

x= Threshold very weak (Taste identifiable)

1= Weak Taste

2= Medium

3= Strong

4= Very strong

5= Extremely strong

<u>Set no.</u>	<u>Description of taste and feeling</u>
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____

Signature

Appendix 11.3

SCORE CARD FOR PRODUCT EVALUATION

PANELIST No. - _____

DATE- _____

NAME- _____

PRODUCT- _____

You are being given the samples of fried product. Kindly grade the samples (SC and SG) for the sensory attributes listed under each parameter.

You are requested to score the product using the following scale:

- 1-Dislike extremely 2-Dislike very much 3-Dislike slightly 4-Neither like or dislike 5-Like slightly
- 6-Like very much 7-Like extremely 8-Like very much 9-Like extremely

ORGANOLEPTIC EVALUATION

Sample No.	Attributes											
	Appearance		Color		Crispness		Greasiness		Flavor		Taste	
	SC	SG	SC	SG	SC	SG	SC	SG	SC	SG	SC	SG
0												
6												
11												
16												
21												

COMMENTS:- _____

Signature

Appendix 11.4a

Comparison of peroxide value between CSO and GNO at intermittent intervals of french fries frying

Duration of frying	CSO	GNO	't'
0 h	9.9±3.89	4±0.84	2.92*
5 h	14.9±0.84	15.3±3.57	0.26 ^{NS}
10 h	11.4±0.97	19.5±2.57	5.88**
15 h	13.5±1.81	17.9±4.08	2.00 ^{NS}
20 h	13.4±2.90	16.2±1.68	1.67 ^{NS}
25 h	19.6±2.08	16.5±2.72	1.80 ^{NS}

Comparison of p-anisidine value between CSO and GNO at intermittent intervals of french fries frying

Duration of frying	CSO	GNO	't'
0 h	9.1±0.61	0.73±0.77	19.96***
5 h	93.3±0.43	53.6±2.72	28.86***
10 h	144.3±0.93	88.2±1.60	61.08***
15 h	191.0±1.90	103.1±1.49	72.85***
20 h	213.4±2.85	137.1±1.86	44.75***
25 h	231.9±2.2	127±1.63	69.66***

Comparison of TPC between CSO and GNO at intermittent intervals of french fries frying

Duration of frying	CSO	GNO	't'
0 h	1.9±0.01	1.1±0.01	104.65***
15 h	6.8±0.02	3.4±0.02	159.33***
25 h	11.5±0.01	10.6±0.07	17.21**

Appendix 11.4b

Comparison of peroxide value between CSO and GNO at intermittent intervals of bhajias frying

Duration of frying	GNO	CSO	't'
0 h	8.4±0.25	13.9±0.40	23.04***
5 h	13.1±1.28	9.1±0.62	5.64**
10 h	8.5±0.40	8.1±0.08	1.70NS
15 h	9.4±0.45	6.9±0.49	7.55***
20 h	9.6±0.68	7.2±0.48	5.84**
25 h	9.5±0.57	10.4±0.15	3.04*

Comparison of p-anisidine value between CSO and GNO at intermittent intervals of bhajias frying

Duration of frying	GNO	CSO	't'
0 h	0.6±0.28	8.7±0.27	41.34***
5 h	61.5±1.42	62.1±0.64	0.72NS
10 h	82.6±3.32	85.5±3.53	1.17NS
15 h	91.9±1.09	109.2±1.74	16.89***
20 h	95.6±0.77	123.2±3.17	16.91***
25 h	108.8±2.14	129.9±4.28	8.80***

Comparison of TPC between CSO and GNO at intermittent intervals of bhajias frying

Duration of frying	CSO	GNO	't'
0 h	4±0.07	3.1±0.02	22.88***
15 h	7±0.10	9.2±0.27	15.49***
25 h	14.4±0.69	7.6±0.19	19.06***

Appendix 11.5**Questionnaire for 'JANA AHAR'****1. General Information**

a) Name _____ b) Age _____ c) Sex _____

d) Education level:

i) Illiterate () ii) up to primary () iii) Primary to HS ()

iv) HS to Graduate () v) Above graduate ()

e) How many hours you work from morning till night?

i) up to 8 hrs () ii) 8-12 hrs () iii) above 12 hrs ()

f) Wages monthly:

i) Below 1500 () ii) 1500-2000 () iii) 2000-2500 () iv) 2500-3000 ()

v) Above 3000 ()

g) Which work you are doing:

i) Cook () ii) Waiter () iii) Cleaner () iv) Supervisor ()

h) Number of people employed in the unit _____

i) How many people are catered in a day _____

j) Have you ever trained for food safety training: Yes () No ()

2. Observation table for unit and cooking staff

Sr. No	Practices	Unsatisfactory	Average	Satisfactory
	Personal Hygiene of the staff			
1	The food handlers have uniform, head gear, apron and towel			
2	Overall appearance of food handlers is clean			
3	Washing with soap after toilet/personal work			
4	Dresses of the employees are clean			
5	Nails of the workers are clean			
6	No smoking, gutka eating and tobacco chewing by the staff while working			
7	Dry hands with separate towel/napkins for the same			

8	Use of mask while cooking and serving			
9	Whether health check up was done before or during service			
	Food hygiene			
1.	Use of running water for washing of raw materials			
2.	Sorting and removal of unwanted portion, ingredient before cooking and processing			
3.	Chopping and peeling only after proper washing			
4.	Use of clean knives, cutter and chopping board for vegetables, salads			
5.	Every item is covered before cooking, during cooking and after cooking			
6.	The restaurants had separate store for raw materials			
7.	Spices, food ingredients were clean and labeled			
8.	Take away service available in aluminum foil, butter paper, green leaf or dry leaf cups/plates			
9.	Avoiding plastic/ceramic vessels for eating, serving, drinking, storage etc.			
10.	Use of stainless steel knives			
11.	Use of chilling facilities/refrigerator for storage			
12.	Cooked food was stored in stainless steel vessels			
13.	All serving and dining vessels were covered and kept at a dry place			
14.	Running water was provided for washing and cooking			
	Unit hygiene			
1	Commercial detergents are used for washing utensils			
2	Utensils are washed immediately after use			
3	Clean cloth is used for moping of tables, counters etc.			
4	Presence of neat and clean wash basin			
5	Wash basin has running tap water facility			
6	Wash basin has soap/liquid soap			
7	Wash basin has clean and dry towels			
8	Food service unit is dust, dirt and smoke free			
9	Use of smokeless fire and fuel for cooking			
10	The kitchen had exhaust fan, ventilators and chimney			
11	Hot water/ geysers facility is available			
12	Water purifier facility was provided for drinking water			
13	Service counter had glazed surface			
14	Service counter was cleaned frequently			
15	Washing and mopping of floor after every shift			
16	Detergent and tools used for washing of kitchen top, ground floor, sinks, stores etc. after every shift			

17	White wash of walls, roofs, stores, kitchen etc.			
	Environmental hygiene			
1	Dining place covered, ventilated and lighted			
2	Dining table and hall is free from flies and insects			
3	Surrounding are clean and free from flies and insects			
4	Daily use of disinfectant for cleaning of surrounding			
5	No garbage near the restaurant			
6	No pets and street dogs near restaurant			
7	No animal/human disposal near restaurant			
8	Disposal of garbage in waste bins having proper lids			

3. Knowledge of cooks on food hygiene, nutrition and health and personal hygiene

Keys: 0: Wrong answer; 1: one correct answer; 2: two correct answers; 3: three correct answers; 4: all correct answers

Sr. no	Questions	Response
	Food Hygiene	
1.	Name any four food borne illnesses	
a.		
b.		
c.		
d.		
	(Cholera, jaundice/hepatitis, typhoid, gastroenteritis, diarrhea, amoebiasis and any other)	
2.	Name four characteristics of spoiled food	
a.		
b.		
c.		
d.		
	(Discolouration of food, foul smell, deformity in texture, sour taste, gas formation, bubbling and any other)	
3.	Name four immediate symptoms of food borne illnesses	
a.		
b.		
c.		
d.		
	(Nausea & vomiting, heart burn, giddiness, diarrhea, stomach pain, loss of appetite, high fever and any other)	
4.	Name four ways to prevent bacterial contamination while handling food	
a.		
b.		
c.		
d.		
	(Buying fresh, avoiding cross contamination while cooking and serving, storing in safe environment, proper cleaning and sanitizing of equipment and surface area, proper management of drinking water, holding left over food out of danger zone and any other)	

5.	Name four food contaminants which make a food unsafe and unfit for consumption	
a.		
b.		
c.		
d.		
	(Dust, dirty hands, dirty mops, insects, bacteria, dirty water and any other)	
6.	Name four biological sources of food contamination	
a.		
b.		
c.		
d.		
	(Bacteria, insects, germs, amoeba, flies, fungus and any other)	
7.	Name four ways to manage left over food	
a.		
b.		
c.		
d.		
	(Do not hold for more than 2 hrs. at room temperature; DO not serve spoiled food; Storage at low temperature; Avoid mixing of left over food with fresh food; Reheat thoroughly and then serve and any other)	
8.	Name four ways of serving safe drinking water	
a.		
b.		
c.		
d.		
	(Always use clean vessels for holding and drinking; Raw water should not be added in cooked food; Use water purifier; Do not dip fingers in water; Serve water preferably in disposables; Use running tap water for drinking purposes and any other)	
9	Give four reasons to store raw material at dry place	
a.		
b.		
c.		
d.		
	(to protect from insects, to protect from spoilage, to keep them safe, to prevent from insects and micro organisms, to increase their shelf life, it is safe to keep at dry place, any other)	
10.	Give four reasons to cover cooked food after cooking	
a.		
b.		
c.		
d.		
	(to prevent from flies, to prevent from dirt, to prevent micro organisms to fall in food present in air, prevent from mixing to other food, to prevent the smell of food and anyother)	
	Nutrition and Health	
11.	Name four energy foods	
a.		
b.		
c.		
d.		

	(Cereals and cereal products, fats and oils, sugar, roots and tubers and any other)	
12.	Name four ways to conserve nutrients while processing and cooking food	
a.		
b.		
c.		
d.		
	(Washing before cutting and soaking, minimum peeling, use of just enough water for cooking, cooking at reduced temperature, use of pressure cooker and any other)	
13.	Name four nutrients which are essential for growth and maintenance	
a.		
b.		
c.		
d.		
	(Carbohydrate, protein, fat, mineral, vitamins and any other)	
14.	Name four food sources of protein	
a.		
b.		
c.		
d.		
	(Pulses and legumes, meat, fish, egg, milk and any other)	
15.	Name four rich sources of vitamins	
a.		
b.		
c.		
d.		
	(Orange and yellow fruits, green leafy vegetables, egg, butter, aonla, guava and any other)	
16.	Name any four food adulterants	
a.		
b.		
c.		
d.		
	(Water, liquid urea with detergent, starch, sawdust, artificial colour, marble powder, sand, metanil yellow and any other)	
17.	Name four common sources and minerals	
a.		
b.		
c.		
d.		
	(Food grain, green leafy vegetables, iodized salt, banana, fish, meat and any other)	
18.	Name four ways for value addition of the food products	
a.		
b.		
c.		
d.		
19.	List four harmful effects of excessive heating of oil	
a.		
b.		
c.		
d.		

	(Pungent fumes are evolved, generation of trans-fatty acids, enhanced cardio-vascular diseases, carcinogenic effect, indigestion; off-taste and bad odor in food product and any other)	
	Personal Hygiene	
20.	Name four protective clothes necessary for a food handler	
a.		
b.		
c.		
d.		
	(Hair restraints, apron, gloves, napkin, wrist cover and any other)	
21.	Name four bad habits which should be prohibited by food handlers	
a.		
b.		
c.		
d.		
	(Gutka eating/tobacco chewing, smoking, food tasting, scratching of body part, sweat/nose wiping and any other)	
22.	Name four activities which may contaminate food with harmful germs / bacteria	
a.		
b.		
c.		
d.		
	(Sneezing, coughing, vomiting, spitting, touching food with bare hands, wounds in your hand, nose wiping, sweat wiping and any other)	
23.	Name four activities after which hand wash with soap is a must	
a.		
b.		
c.		
d.		
	(Using the toilet, handling raw food, mopping, handling waste, changing soiled clothes, blowing nose and any other)	

Information on oil

4. Procurement and storage practice of oil

a) Oil used for frying

- i) Cottonseed oil []
 iii) Palmolein oil []

- ii) Groundnut oil []
 iv) Any other, Specify _____

b) From where you buy the oil

- i) Wholesale shop []
 iii) Contract basis []

- ii) Retail shop []
 iv) Any other, Specify _____

c) Purchasing practice

- i) Loose oil []
 iii) Jerry cans []

- ii) Tins []
 iv) Any other, Specify _____

d) Reasons for not purchasing loose oil

- i) Due to adulteration [] ii) Due to rancidity []
 iii) Due to presence of impurities [] iv) Any other, Specify _____

e) Have you ever noticed expiry date of oil?

- i) Yes [] ii) No []

f) If yes, what was it?

- i) 6 months [] ii) 12 months []
 iii) 24 months [] iv) More than 24 months []

g) Amount of oil purchased at a time _____

h) Do you store fresh oil?

- i) Yes [] ii) No []

i) How long do you store purchased oil?

- i) 1 month [] ii) 2 months []
 iii) 3 months [] iv) 6 months []

j) Where do you store purchased oil?

- i) Dark room [] ii) Open place []
 iii) Inside the cupboard [] iv) Any other specify []

5. Frying practice

a) Have you ever measured frying temperature

- i) Yes [] ii) No []

b) Are you aware of correct frying temperature?

- i) Yes [] ii) No []

c) If yes, what is the correct frying temperature?

- i) 100°C [] ii) 160°C []
 iii) 180°C [] iv) 250°C []

d) Do you know how frying temperature is measured?

e) What type of frying vessel is used for frying?

- i) Iron [] ii) Stainless steel []
 iii) Hindalium []

f) How often you clean your frying vessel?

- i) Daily [] ii) 2-3 times a week []
 iii) Once a week [] iv) After a week, specify _____

g) Do you know how frying vessel should be cleaned?

- i) Yes [] ii) No []

h) If yes, how?

- i) with water only [] ii) with water and dish cleaning soap []
 iii) with water and caustic [] iv) Any other specify _____

i) Do you know change in color is an indicator of deterioration of oil quality?

i) Yes [] ii) No []

j) Do you know foaming in is an indicator of deterioration of oil quality?

i) Yes [] ii) No []

k) Do you know change in consistency is an indicator of deterioration of oil quality?

i) Yes [] ii) No []

l) Is the presence of food particles in fried oil is an indicator of deterioration of oil quality?

i) Yes [] ii) No []

m) What do you do with food particles in oil?

i) separate them from oil before frying every time []

ii) do not separate them from oil and fry in same oil []

n) Do you add fresh oil in fried oil?

i) Yes [] ii) No []

o) One batch of oil should be continuously or intermittently fried for how many hours?

i) 2 h [] ii) 4 h [] iii) 8 h [] iv) More []

6. Storage of fried oil

a) Do you store leftover fried oil?

i) Yes [] ii) No []

b) If yes, in which utensil

i) Same pan in which the food was fried []

ii) Plastic container []

iii) Stainless steel jar []

iv) Other utensil []

c) Practice of storing fried oil

i) Filtered [] ii) Without filter []