

APPENDICES

APPENDIX – I

INTERVIEW SCHEDULE TO ELICIT INFORMATION ON SOCIOECONOMIC AND OTHER DETAILS

A. SOCIO-ECONOMIC PROFILE

1. Name :
2. Residential Address :
3. Age in years :
4. Educational qualification :
 Illiterate Primary Secondary
 Higher Secondary Graduate
5. Occupation : Yes No
 If Yes, indicate the type of occupation.
 Profession Employed Self employment Others
6. Marital status : Married Unmarried
7. Type of the family : Nuclear Joint
8. Total income of the family :
 Rs.3,301 – Rs.7,300 Rs.7,301 –14,500 Rs.≥14,501
9. Monthly expenditure pattern

S.No.	Items	Rupees spent	Percentage of income
	Food		
	Clothing		
	House rent		
	Education		
	Medicine		
	Other services		
	Savings		
	Recreation		

B. LIFE STYLE PATTERN

10. Do you drink coffee / tea ?

Yes No

If yes, No of cups / day : < 2 2 – 4 > 4

11. Do you have the habit of chewing ? Yes No

If yes, No. of time / day :

Tobacco Betal leaves + chunna Supari

12. Do you have the habit of doing exercise regularly ?

Yes No

If yes, indicate the type and duration of exercise.

Outdoor In presence of sunlight

13. Do you practise yoga / meditation ?

Yes No

If yes, Indicate the type and duration.

14. How many hours do you sleep daily ?

< 6 hours 6-8 hours > 8 hours

15. What sort of life do you spend ?

a. relaxed b. familial stress c. occupational stress

d. Under both familial and occupational stress

16. How do you spend your leisure time ?

Reading books Watching T.V Hearing music

Others

C. FOOD CONSUMPTION PATTERN

17. Are you a :

Vegetarian Non-vegetarian Ova-vegetarian

18. Number of meals consumed per day.

2 meals 3 meals Above 3 meals

19. Do you avoid any foods ? If yes give reasons.

Foods	Reasons
Avoided	
1.	
2.	
3.	

20. How often do you consume the following foods

Calcium rich foods

Food items	Daily	Monthly	Rarely	Not at all

21. Vitamin D rich foods

Food items	Daily	Weekly	Rarely	Not at all

22. How often do you eat from outside ?
 Not at all Weekly once
 Once in a fortnight Once in a month
23. Do you eat fast foods ?
 Yes No
 If Yes,
 Weekly once Weekly twice
 Once in fortnight Once in a month
24. Which food do you generally eat in fast food centers ?
 a.
 b.
 c.
 d.
25. Do you consume any supplements ?
 Vitamins Minerals others eg. horlicks boost etc.,
 Any other, specify _____

D. ANTHROPOMETRIC MEASUREMENTS

- Height (cm)
- Weight (kg)
- Body Mass Index (BMI)
- Waist circumference (cm)
- Hip circumference(cm)
- Waist hip ratio (WHR)
- Bio chemical assessment
 - Haemoglobin level (g/dl)
 - Serum calcium (mg/dl)
- Bio physical assessment
 - Blood Pressure
 - Bone Mineral Density (BMD)

E. DETAILS REGARDING HEALTH STATUS

26. Do you have any nutritional deficiency symptoms ?

Deficiency symptoms	Yes	No

27. Did you suffer from any of the following common ailments within six months ?

S.No.	Illness	Yes	No
1.	Cold		
2.	Fever		
3.	Diarrhea		
4.	Measles		
5.	Allergy		
6.	Jaundice		
7.	Any other		

28. Do you have any thyroid problems? Yes No
 If Yes, mention the type

29. Do you suffer from any of the following chronic diseases ?

Yes No

If Yes, duration_____

S.No.	Disease	Yes	No	Duration	Medications
1.	Diabetes mellitus				
2.	Stroke				
3.	Hypertension				
4.	Kidney Stones				
5.	Asthma				
6.	Arthritis				
7.	Hyperthyroidism				
8.	Stomach ulcer				

30. Do you have any of the following symptoms ?

S.No.	Symptoms	Yes	No
	Joint pain		
	Leg pain		
	Back pain		
	Neck pain		
	Difficulty in walking		
	Difficulty in standing		
	Difficulty in bending		
	Fatigue / lassitude		
	Fracture		
	Others		

31. Do you take any of the following treatment for pain ?

Naturopathy

Allopathy

Siddha

Ayurvedic

32. Did any of your family members suffer from osteoporosis problem ?

Father	Grand Father	
Mother	Grand Mother	Others

F. REPRODUCTIVE HISTORY

33. Age at puberty

< 13 years 13 years > 13 years

34. What are the menstruation problems you faced during menstruation.

Menorrhagia (excessive bleeding)

Dysmenorrhea (Painful menstruation)

Emotional disturbance

Oligomenorrhea (Irregularity of periods)

Physical discomfort

Other problems....

35. Age at marriage :

36. Age at first pregnancy :

37. Number of children :

38. Age at menopause :

39. The problems faced during premenopausal period ?

Excessive bleeding	Extreme tiredness	Hot flashes
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Irregular menstruation	Sleep disorder
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Emotional disturbance	Infections
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40. Do you face any problem after menopause ?

Yes No

If Yes, indicate

Hot flashes	Insomnia	Nervousness
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Extreme tiredness	Excitability	Frequent urination
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Mental depression	Fatigue / Apathy	Palpitation of heart
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APPENDIX – II

BONE DENSITOMETRY PROCEDURE (ULTRA SOUND METHOD)

Principle :

Bone density testing is a good way to determine whether one have any age related bone loss and if so, the extent of it. It's a great tool for assessing the risk of osteoporosis and bone loss.

Ultrasound is one of the portable techniques that is used to examine structures inside the body. Sound waves of extremely high frequency, inaudible to the human ear are beamed into the body. The echoes of reflected sound, or the rate and path of transmission of the sound are used to build up an electronic image or measurement of the structure being examined. Ultrasound does not use radiation.

Portable and relatively inexpensive ultrasound machines have been developed, which are designed to look at bone structure and strength, usually of the heel bone (calcaneus), wrist or finger. They measurements of the speed of the ultrasound wave through the bone or the absorption of the beam is measured. The measurement is referred to as quantitative ultrasound to distinguish it from ultrasound used for imaging body structures.

Heel ultrasound is useful in predicting osteoporotic fracture risk in men and women around the time of the menopause and adults. A heel ultrasound is a simple and painless procedure, taking a few minutes. In some machines, the heel is placed into a small water bath machine. In others, gel is applied to the heel, finger or wrist area and a dry machine is used.

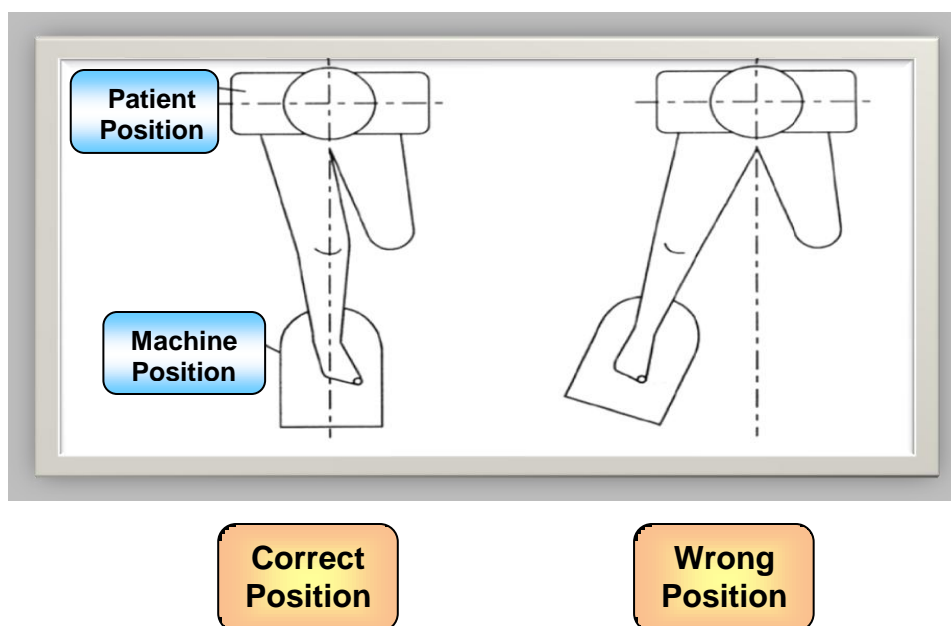
Procedure :

The measurement is taken through the heel bone using ultrasound (sound waves) rather than radiation (x-ray). Primarily clean the surface of the coupling pad with an alcohol and apply enough gel. Then clean both side of patient's heel with an alcohol pad and apply the gel. Avoid this if specific wound or cut persists in heel. Gel is applied to both sides of the heel, before

the individual place the foot in the ultrasound machine. The procedure is quick, painless and non-invasive. The precise measurement has been accomplished with heel temperature, compensation of speed measurement and assisted by a height adjustable footplate to accurately align a different size heel to the optimized position of the measuring device. Measuring procedure is very simple, apply gel to a standoff and position the foot, align the cylinder then press start key. Within 10 seconds, result is printed out from onboard printer and displayed on a LCD. Because the size and weight are so small, it can be carried to any place for measurement.

While it is connected to PC with an optional data management software installed, remote operation and management of database for measured data is available. A report about the individual bone quality and risk of fracture, along with advice on how to prevent or halt the onset of osteoporosis is received. The heel bone is very similar to the bone in the hip. It is also easy to get to the heel, the procedure is quick and it will usually cost less than the traditional x ray method.

Bone Mineral Density Testing Procedure





BMD test paper is attached for reference

Bone Densitometry Report

Registration No. : _____

Name : _____

Date : _____

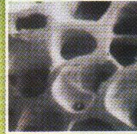
Gender : M / F _____ Age : _____

Foot Size : _____ Right / Left _____


Height : _____ Weight : _____

Referring Doctor : _____

Normal Bone

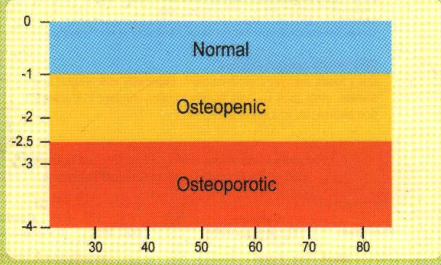


Osteoporotic Bone

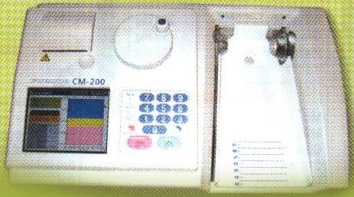


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of the reading here

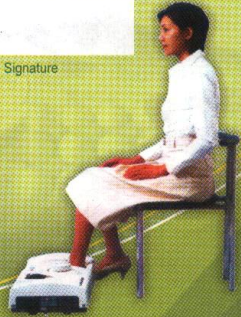
Est. Heel BMD*



T Score upto	-1	Normal
T Score between	-1.1 to -2.5	Osteopenia
T Score below	-2.5	Osteoporosis



Dr. Signature _____



APPENDIX III

Scorecard for Sensory Evaluation

ACCEPTABILITY TEST – HEDONIC SCORES

Judge Name :
 Product name :
 Attribute : Colour

Attribute	Score	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Like extremely	9					
Like very much	8					
Like moderately	7					
Like slightly	6					
Neither like nor dislike	5					
Dislike slightly	4					
Dislike moderately	3					
Dislike very much	2					
Dislike extremely	1					

Comments _____

ACCEPTABILITY TEST – HEDONIC SCORES

Judge Name :
 Product name :
 Attribute : Taste

Attribute	Score	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Like extremely	9					
Like very much	8					
Like moderately	7					
Like slightly	6					
Neither like nor dislike	5					
Dislike slightly	4					
Dislike moderately	3					
Dislike very much	2					
Dislike extremely	1					

Comments _____

ACCEPTABILITY TEST – HEDONIC SCORES

Judge Name :
Product name :
Attribute : Texture

Attribute	Score	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Like extremely	9					
Like very much	8					
Like moderately	7					
Like slightly	6					
Neither like nor dislike	5					
Dislike slightly	4					
Dislike moderately	3					
Dislike very much	2					
Dislike extremely	1					

Comments _____

ACCEPTABILITY TEST – HEDONIC SCORES

Scorecard :
Judge Name :
Product name :
Attribute : Flavour

Attribute	Score	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Like extremely	9					
Like very much	8					
Like moderately	7					
Like slightly	6					
Neither like nor dislike	5					
Dislike slightly	4					
Dislike moderately	3					
Dislike very much	2					
Dislike extremely	1					

Comments _____

ACCEPTABILITY TEST – HEDONIC SCORES

Judge Name :
Product name :
Attribute : Appearance

Attribute	Score	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Like extremely	9					
Like very much	8					
Like moderately	7					
Like slightly	6					
Neither like nor dislike	5					
Dislike slightly	4					
Dislike moderately	3					
Dislike very much	2					
Dislike extremely	1					

Comments _____



Avinashilingam Deemed University for Women

Coimbatore - 641 043, Tamil Nadu, India

Certificate of Appreciation

This is to certify ~~Mrs.~~ / Ms. D. Radhapsiga, Ph.D Scholar (P.T.), Dept. of Food Science & Nutrition
of Avinashilingam Deemed University for Women, Coimbatore.

was a Participant of the Workshop "PATH FINDER - EXPLORE, EXPERIMENT, ELUCIDATE RESEARCH :

A COLLOQUIUM - 2010" held on December 22nd & 23rd, 2010 at Avinashilingam Deemed University for Women,

Coimbatore.

G.P. Jayanthi

Dr. G.P. Jayanthi
Convenor, Professor of Biochemistry

Dr. Gowri Ramakrishnan

Dr. Gowri Ramakrishnan
Registrar

Dr. Sheela Ramachandran

Dr. Sheela Ramachandran
Vice-Chancellor



75

PONDICHERRY UNIVERSITY

(A Central University)
Puducherry

University Grants Commission **ACADEMIC STAFF COLLEGE**

UGC SPONSORED ALL INDIA WORKSHOP ON
RESEARCH METHODOLOGY FOR RESEARCH SCHOLARS

Certificate of Participation

This is to certify that *D. Radha priya*


..... *Research Scholar in Food Science & Nutrition*

..... *Arinashilingam Deemed University, Coimbatore*

participated in the **All India Workshop on Research Methodology for Research**

Scholars held from 04-08-2011 & 05-08-2011.


Prof. **S. Hariharan**
Director


Prof. **J.A.K. Tareen**
Vice - Chancellor

Avinashilingam

Institute for Home Science and Higher Education for Women

University

(Estd. u/s 3 of UGC Act 1956)

Coimbatore - 641 043, Tamil Nadu, India



Certificate of Participation

This is to certify Mrs. / Ms. Dr. Radhappriya, Ph. D. Part time Scholar
of Department of Food Science and Nutrition.

was a participant of Research Convention "Research Ethics & Post Research Perspectives" on August 10th & 11th, 2011 at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore.

Parvatham R. Parvatham
Dr. R. Parvatham
Dean, Faculty of Science

Dr. P. Santhanakrishnan
Dr. P. Santhanakrishnan
Director (Research & Consultancy)



INTERNATIONAL SYMPOSIUM

ON

FUNCTIONAL FOODS AND HEALTH

(ISFAH - 2011)

Certificate



ICMR
Celebrating
hundred years
in the service of the nation
1911-2011

This is to certify that Dr. / Mr. / Ms. / Mrs. *D. Radhapriva.....Ph.D.Scholar.....Dept. of Food Science.....*

.....Nutrition.....Avinashilingam Institute For Home Science.....Coimbatore..... has participated

as delegate / lead speaker / poster judge / poster presenter in the International Symposium on Functional Foods and Health

organized by the Department of Food Science, Periyar University, Salem, Tamil Nadu, India On 19th November 2011.

Title of the Paper : *.....Functional Food.....Ingredients In.....Improving Bone Health.....*

Sponsored by



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Convenor of the Conference

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Coimbatore - 641 043, Tamil Nadu, India

Certificate of Participation

This is to certify that Mrs. / Ms. Radhapriya. S. Ph.D Scholar,
of Department of Food science & Nutrition was a participant of
the Research Convention titled "**Research Ethics & Post Research Methods**" held during **13th to 15th**
September 2012 at Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore.

Parratham R.
Dr. R. Parvatham
Dean, Faculty of Science

Dr. Gowri Ramakrishnan
Dr. Gowri Ramakrishnan
Registrar



Narayana Medical College

Nellore - Andhra Pradesh

1st National Conference on Micronutrients

Certificate

This is to certify that Dr / Mr / Mrs

.....
D. Radha Priya.....

has delivered a ~~guest lecturer~~ / attended / presented a paper / ~~chaired a session~~ in the

1st National Conference on Micronutrient,

held at Narayana Medical College, Nellore on 16th & 17th June, 2012

[Signature]
Dr. M. Veera Prasad
Org. Secretary

[Signature]
Dr. B.A. Kamakrishna
Principal

[Signature]
Dr. G. Subramanyam
President - Org. Committee

NUTRITION SOCIETY OF INDIA

National Institute of Nutrition Campus, Hyderabad-500 007

44th National Conference

Theme: Current Trends in Food Security to Meet National Nutritional Challenges

16 - 17 November, 2012

Organized by

NSI Tirupati Chapter, Dept. of Home Science, SV University, Tirupati



This is to certify that D. RADHAPRIYA
has been awarded the **Dr. K. SEETHARAM BHAT MEMORIAL PRIZE** for the best
poster presentation during the 44th National Conference of the Nutrition Society of
India held at Sri Venkateswara University, Tirupati.

Title of poster: "Incidence of Osteopenia & Osteoporosis Among Selected
kloomen in Coimbatore District"


President



Avinashilingam
Institute for Home Science and Higher Education for Women
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Coimbatore - 641 043, Tamil Nadu, India

Women's Studies Centre
NATIONAL SYMPOSIUM

on

**"Access and Participation of Women and Girls to Nutrition & Health,
Education & Training, Science & Technology on 13th - 14th March 2014"**

Certificate

This is to certify that **Dr./Mr./Mrs./Ms. D. Radhapriya**,
has participated/presented paper on... **Dietary habits and Life style pattern of women**
in the Symposium on "Access and Participation of Women and Girls to Nutrition & Health, Education & Training, Science &
Technology" held on 13th-14th March 2014 at Avinashilingam Institute for Home Science and Higher Education for Women,
Coimbatore, Tamil Nadu.

Director
Women's Studies Centre

Registrar

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INSTITUTIONAL HUMAN ETHICS COMMITTEE



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Biochemistry, Biotechnology and
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Mrs. Judith Justin
Dr. S. Kowsalya
Dr. Subhashini K. Sripathi

24th December 2014

To
Ms. Radhapriya D
Department of Food Science and Nutrition
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Madam,

Ref : Our letter dt. 21st February 2014 in response to your proposal
No. AUW.IHEC.2013:35 entitled "Bone mineral health of
women of different ages and impact of intervention
strategies"

With reference to the above letter, in continuation with the
documents submitted by you in support of your proposal and the
revisions made in the work plan, as per the suggestions made by the
IHEC, the Institutional Human Ethics Committee of our University
hereby grants approval to your research proposal
No. AUW.IHEC.2013:35 entitled "Bone mineral health of women of
different ages and impact of intervention strategies". The Approval
number for the same is AUW/IHEC-13-14/FHP-08.

We wish you all the best in your research endeavours.

Regards,

Dr. P. R. Padma
Member Secretary



APPENDIX V

QUESTIONNAIRE TO ELICIT NUTRITION KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) AMONG THE SUBJECTS

1. Which nutrient is essential for bone health ?
 - a. Fibre
 - b. Water
 - c. Calcium
 - d. Iron
2. Which vitamin helps in making healthy and strong bones ?
 - a. Vitamin D
 - b. Vitamin K
 - c. Vitamin C
 - d. Vitamin A
3. Among the following cereals which is good source source of calcium?
 - a. Rice
 - b. Ragi
 - c. Wheat
 - d. Barley
4. Green leafy vegetables are rich in _____
 - a. Proteins
 - b. Vitamins
 - c. Fat
 - d. Calories
5. Milk and milk products help in providing _____
 - a. Calcium
 - b. Energy
 - d. Minerals
 - d. Iron
6. Osteopenia is caused due to _____
 - a. Increased energy intake
 - b. Poor calcium intake
 - c. Intake of more fats
 - d. Intake of more cereals
7. Why you should include dairy products in the diet ?
 - a. More Fibre
 - b. More calcium
 - c. More energy
 - d. More vitamins
8. Which of the following food contains high calcium
 - a. Apple
 - b. Egg
 - c. Milk
 - d. Dates
10. Sea foods are good source of which nutrient
 - a. Calories
 - b. Vitamin D
 - c. Fibre
 - d. Vitamin B

11. How can you improve bone health ?
- a. Exercise b. Nutritious diet c. Food supplements d. All the above
12. What is osteoporosis ?
- a. Joint pain b. Increased body weight c. Weak and fragile bone
- d. Physical inactivity
13. What are the signs and symptoms of osteoporosis ?
- a. Reduced weight b. Back pain c. Vision problem d. Low blood sugar
14. What is the sign of bone weakness and diseases ?
- a. Fracture risk b. Swelling c. Joint pains d. All the above
15. What would be the reason for bone problems ?
- a. Family history b. Menopause c. Lack of exercise d. All the above
16. Do smoking and alcohol habits related to osteoporosis ?
- a. No b. Yes c. Might be d. No idea
17. At what stage a women's bone become more weak ?
- a. At puberty b. Adulthood c. After menopause d. Pregnancy
18. How much calcium per day is recommended for adults ?
- a. 500 mg b. 1000 mg c. 200 mg d. 400 mg
19. Soya, badam and groundnuts are a good source of which nutrient ?
- a. Minerals b. Protein c. Vitamins d. Energy
20. Which type of exercise is not recommended for osteoporosis ?
- a. Weight bearing b. Muscle building c. Relaxation d. Stretching
21. Early menopause may cause_____
- a. Anaemia b. Dental problems c. Bone diseases d. Allergy

22. Weight bearing exercises leads to _____
- a. Weak bones b. Muscle weakness c. Strong bones d. Joint pain
23. Which nutrient combination is essential for skeletal strength ?
- a. Vitamin A & protein b. Vitamin D & Calcium c. Vitamin C & Iron
- d. Vitamin K & Fat
24. In a human body the calcium content is approximately _____
- a. 500 mg b. 750 g c. 2 kg d. 1 kg
25. Prolonged periods of immobility increases the risk of _____
- a. Heart problem b. Obesity c. Diabetes d. Osteoporosis.

Publications

- Radhapriya, D. and Lakshmi, U.K., (2014), Incidence and risk factors of bone disorders among selected working women, *International Journal of Scientific Research*, Vol.3, Issue.2, Pp.56 - 59