Nitte University Journal of Health Science

S. Ramananda Shetty, Vice Chancellor
M.S. Moodithaya, Registrar

Editor-in-Chief: Indrani Karunasagar, Director (R & D), Nitte University
Editor: Raveendra U.S. Professor, Department of Anaesthesiology
Associate Editors: Ravi M.S., Harsha H.N., Patil Shrikant

Board of Advisors

G M. Shantharam Shetty, Pro-Chancellor, Nitte University
G U.S. Krishna Nayak, Dean, A.B. Shetty Memorial Institute of Dental Sciences
G Satheesh Kumar Bhandary, Dean, K.S. Hegde Medical Academy

G C. S. Shastri, Principal, Nitte Gulabhi Shetty Pharmaceutical Sciences
G M Rajashekar, Director Curriculum Development
G Ramesh Bhat, Professor & Head, Father Muller Medical College

G U. G. Satyanarayana, Former Senior Scientist, Texas University
G Avinash Shetty, USA
G Anantharam Shetty Asude, UK
G Prakash, Singapore National University
G Raman Shivasankaran, Brunei
G Nanda Kishore Avasarala, USA

Editorial Office: editornujhs@nitte.edu.in/ web: nitte.edu.in/journal
Phone: 0824-2204300 Fax: 0824-2204305
Address: Editor, Nitte University Journal of Health Science, University Enclave, Health Science Complex, Deralakatte, Mangalore 575018, India

The opinions and observations contained the journal are those of the authors/s and not of the NUJHS Editorial Board
Subscription: Annual (4 issues) Rs. 1000 / Single copy: Rs. 300:
For subscriptions or copies contact: editornujhs@nitte.edu.in

INDEXED / CITED
in Index Copernicus, Google Scholar, GFMER, Nursesmeet, HINARI, Mosbys, getCITED, EBSCOhost, Summon by Serial Solutions, SCOPUS, Genamics JournalSeek, EMBASE / Excerpta Medica, ProQuest, ProQuest Pharma Collection, WAME, ResearchGate, SciVerse, Biobase-CABS, DOAJ, Journal Rate, Research Bib, World Cat, Universal Impact Factor, CIRRIE, CiteFactor, Ulrich’s International Periodical Directory, Biblioteca Informa, SCIRUS & Health Science Research Network.

The Nitte University Journal of Health Science (NUJHS) is a peer-reviewed indexed, open access, quarterly research publication. The annual subscription for NUJHS is Rs. 1,000/- (4 issues). DDs / Checks payable to Nitte University Journal of Health Sciences, Syndicate Bank, ABSMIDS Branch, Deralakatte can be mailed to Dr. Raveendra U.S., Editor, Nitte University Journal of Health Science Office, University Enclave, Health Science Complex, Deralakatte, Mangalore 585018, India. Single copies are available on payment of Rs. 300 each, by cash or check at the Journal Office.
Contents

Original Articles

Comparative study on the antimicrobial activity of partitioned fractions of the stem-bark of *ceiba pentandra* (bombacaceae)

Effectiveness of academic stress management programme on academic stress and academic performance among higher secondary students in selected schools of Udupi District
Nikitha S, Tessy Treesa Jose & Blessy Prabha Valsaraj  

Knowledge and Attitude on Care of Child during Common Childhood Illnesses among the Koraga Tribes
Shrisha, Binu Margaret E & Sheela Shetty  

Extent of awareness regarding periodontal disease in diabetic patients among medical interns
Roshni Jaiswal, Nina Shenoy & Biju Thomas  

Looking beyond tobacco and alcohol for oral squamous cell carcinoma
Manav Chaturvedi, Sreelatha S.V. & Pushparaja Shetty  

Knowledge, awareness and compliance among dental professionals regarding percutaneous exposure incidents as occupational hazard
Shwethashri R. Permi, Rahul Bhandary & Biju Thomas  

Substance abuse and practices and their consequences among adolescents and young adults in Mangalore
Alka Prakash, Vidya B, Wan Nur Suhailah, Anjali Mohanan, Ravi, Rashmi Kundapur & Sanjeev Badiger  

A cross sectional study on community prevalence and treatment practice of hypertension with household awareness about it in semi urban Mangalore - A pilot study
Navya N., Rashmi Kundapur & N. Udaya Kiran  

Upper gastro intestinal foreign bodies in pediatrics patients
Venkatesh M. Annigeri, Bahubali D Gadgade, Rashmi V. Annigeri & Anil B. Halgeri  

Bacterial Contamination Associated with Retail Chicken Carcasses in Osogbo, Nigeria.
Adesiji Yemisi Olukemi, Igbinigie Mavis Osas, Olaitan Janet Olubukola & Ogah Ikhevha Jeremiah  

Awareness regarding body and organ donation amongst the population of an urban city in India
Vaishaly K. Bharame, Rathod H., Paranjape V. M., Kanaskar N., Shevade S., Survase K., Arole V., Singh Sakshi, Brahmbhatt Gaurav & Alam Feroz  

Role of item analysis in post validation of multiple choice questions in formative assessment of medical students
Sajitha K., Harish S. Permi, Chandrika Rao & Kishan Prasad H.L.  

A study of functional outcome of laminectomy and discectomy in lumbar intervertebral disc prolapse (a comparison of retrospective and prospective analysis)
Sanath Kumar Shetty, Arjun Ballal, Lawrence John Mathias & H. Ravindranath Rai  

Review Articles

Factors affecting psychosocial well-being and quality of life among women living with HIV/AIDS
Case Reports

A case of Fahr’s syndrome with rare atypical presentation as hemiplegia.
Venkata Ravikumar Chepuri & Himabindu Panta 77

Sight threatening to life threatening parainfectious optic neuritis
Sowmya V., Vijnna B. Kamath, Nelly E. P. Nazareth & F. E. A. Rodrigues 80

Fibroma - A misnomer : Case Series
Riya Verghese, Amitha Ramesh, Rahul Bhandary, Biju Thomas & Nishita L. Philip 83

Variation in the area of distribution of the lateral pectoral nerve and a communicating branch between musculocutaneous and median nerve : A case report
Divia Paul A. & Manisha Rajanand Gaikwad 88

Fluorescence in situ hybridization on Peripheral blood for Chronic Myeloid Leukaemia - Rapid and reliable method
Meenakshi A., Prashanth Shetty D., Suchetha Kumari N., Michelle Mathias, Karuna Ramesh Kumar & Jayaprakash Shetty 92

Endovascular stenting for treatment of superior vena cava syndrome
Subramanyam K, Janardhan Kamath, Dilip Johny & Paul T. Joyes 96

Hyper IgE syndrome (hies; job syndrome): A case report
Priyanka Ameta, Anuj Dhyani, Vignesh Hebri Nayak & Suresh Goyal 99

Chondrosarcoma of the anterior chest wall : surgical resection and reconstruction using a two layer polypropylene mesh and bone cement sandwich
Amol Amonkar, Mundayat Gopalakrishnan, AmithKiran Naik, Vishwanath S, Vimaladhithan & Saquib Sultan 102

Instructions to Authors 105

Nujhs Declaration and Right Transfer Form 112
Comparative study on the antimicrobial activity of partitioned fractions of the stem-bark of ceiba pentandra (bombacaceae)

Njinga N. S.¹, Sule M. I.², Pateh U. U.³, Hassan, H. S.², Ache R. N.², Abdullahi S. T.⁴ & Danja B. A.⁵

¹²³⁴⁵⁶⁷ Lecturer, Professor, Department of Pharmaceutical & Medicinal Chemistry, University of Ilorin, Associate Professor & Dean, Faculty of Pharmaceutical Sciences, Senior Lecturer, Department of Pharmaceutical & Medicinal Chemistry, Ahmadu Bello University, Zaria, Research Scholar, Department of Chemistry, Faculty of Sciences, University of Yaounde I. Cameroon, Lecturer, Department of Chemical Sciences, Faculty of Science, Federal University Kashere, Gombe, Nigeria.

Correspondence
Njingga N.S.
Lecturer, Department of Pharmaceutical & Medicinal Chemistry, Faculty of Pharmaceutical Sciences, University of Ilorin.
E-mail : ngastanjin@yahoo.com

Abstract
Due to the emergence of more and more drug resistance bacteria and the reported antibacterial activity of Ceiba pentandra, the antimicrobial activity of the partitioned ethyl-acetate and n-butanol fractions of the stem-bark of this plant were carried out on the following clinical isolates: Staphylococcus aureus; Streptococcus pyogenes; Corynebacterium ulcerans; Escherichia coli; Salmonella typhi; Shigella dysenteriae; Enterococcus aerogenes; Pseudomonas aeruginosa; klebsiella pneumonia and the fungi Trichophyton rubrum, Microsporum sp., Aspergillus fumigatus and Aspergillus niger. Agar diffusion and broth delusion methods were used in this study. The ethyl acetate fraction showed wide spectrum antibacteria activity (with zones of inhibition between 27mm and 37mm) while the n-butanol extract showed activity only against the gram negative bacteria (zones of inhibition between 20mm and 21mm). The MIC ranged from 0.65 to 2.5 mg/ml and 2.5 to 5 mg/ml and MBC ranged from 2.5 mg/ml and 5 – 10 mg/ml for the ethylacetate and n-butanol respectively. Both fractions showed no activity against the fungi used in this study. The preliminary phytochemistry of the ethyl acetate showed the presence of only flavonoid and this may explain the activity against all the bacteria. The n-butanol showed the presence of carbohydrates, saponins, tannins and cardiac glycoside and the absence of flavonoid and alkaloids. This study justifies the use of this plant in herbal medicine.

Keywords: antimicrobial, Ceiba pentandra, minimum inhibitory concentration, bacteria

Introduction
Emergence of multidrug resistant pathogens has been reported to be one of the leading causes of death worldwide with infectious diseases responsible for 68% of all deaths globally in 2012. Many infectious microorganisms are resistant to synthetic drugs and it has become the major concern for health institutions, pharmaceutical companies and governments all over the world; thus there is need for an alternative therapy. Medicinal plants contain numerous active constituents of great therapeutic value and have been used as an exemplary source for centuries as an alternative remedy for treating human disease.

Approximately 80% of the third world population depend on traditional medicines for maintaining general health and combating many diseases.

One of such plant widely used in traditional medicine in Nigeria is Ceiba pentandra. The bark decoction has been used as a diuretic, aphrodisiac, and to treat headache, as well as type II diabetes. The stem bark of Ceiba pentandra, is used locally in the treatment of wounds, cough, high blood pressures, diarrhoea, dysentery, yellow fever and tumours, diabetes mellitus and malaria. This plant is a tree that grows as much as 65m high and can be 10m or more in girth, with long cylindrical bole and huge wide-spreading buttresses that can be up to 8m high. They belong to secondary forests, and are seldom (if ever) found in virgin forests, but conspicuous in savanna.

C. pentandra have been reported to contain bioactive
substances such as glycosides, tannins, tannins, saponins, sesquiterpene lactones, flavonoids, polyuronoids, reducing sugars, phlobatannins etc. [7,9]. Some compounds isolated from the bark of this plant include vavain 3’-O-B-D-glucoside, and its aglycone, vavain; flavan-3-ol, (+)-catechin [10], pentandrin and pentandrin glucoside and beta-sistosterol and 3-beta-D-glucopyranoside [11].

This plant has been shown to possess antimicrobial activity [12] but there is no information on the phytochemistry, MIC and MBC of the partitioned ethyl acetate and n-butanol fractions of the methanolic extract of the stem bark of this plant.

Materials and Methods
Plant collection and identification
The plant sample was collected in Zaria City, Kaduna State, Nigeria, in October, 2008. The plant was authenticated in the Herbarium of the Department of Biological Sciences, Ahmadu Bello University, Zaria, Nigeria, where a voucher specimen (7059) was deposited.

Preparation and Extraction of Plant material
The stem-barks were removed and air-dried for several weeks and size reduced using mortar and pestle. Four hundred grams (800 g) was defatted exhaustively with petroleum ether (60–80 °C) in a soxhlet extractor. The marc was then extracted with methanol using maceration method. The extract was concentrated in vacuo to solid residue. The methanol extract (15g) was then partitioned (wet portioning) using ethyl acetate and n-butanol. The fractions were concentrated under reduced pressure to solid residue [13].

Test organisms
The clinical isolates viz; Staphylococcus aureus; Streptococcus pyogenes; Corynebacterium ulcerans; Escherichia coli; Salmonella typhi; Shigella dysenteria; Enterococcus aerogenes; Pseudomonas aeruginosa; klebsiella pneumonia and the fungi Trichophyton rubrum, Microsporum sp., Aspergillus fumigatus and Aspergillus niger were gotten from the Ahmadu Bello University Teaching Hospital, Zaria. All the micro-organisms were checked for purity and maintained in slants of agar.

Phytochemical screening
Phytochemical screening was carried out on the methanolic, ethylacetate, and n-butanol extract of the stem bark of Ceiba pentandra using standard procedures of analysis [13,14].

Cultivation and standardization of test organism
A loop full of each of the test organisms was taken from the agar slant and sub cultured into test tubes containing 20 ml of sterile nutrient agar (for bacteria) and sabouraud dextrose agar medium (for the fungi). The test tubes were then incubated for 24 hours at 37°C for bacteria and 27°C for 48hours for the fungi. The growth culture was standardized using sterile normal saline to obtain a density of 10^6 cfu/ml for bacteria. A sporulated test fungal spores was harvested with 0.05% Tween80 in sterile normal saline and standardized to 10^6 spores/ml.

Preparation of culture media
The prescribed quantities of the dehydrated bacteriological culture media was weighed and hydrated with distilled water according to the manufacturers specification. Where necessary, gentle heat was applied to aid dissolution and the resultant suspensions were dispensed into clean bottles and sterilized at 121°C for 15 minutes in an Adelphi bench autoclave.

Assay of Antimicrobial activity
The antibacterial screening was carried out using agar diffusion method [15]. The test organisms were first inoculated into tubes of nutrient broth (for the bacteria) and sabouraud dextrose agar (for the fungi) separately and incubated at 37°C for 18h. Each of the cultures were then adjusted to 0.5 McFarland turbidity standard and (0.2ml) inoculated onto Mueller Hinton Agar (MHA, Oxoid) in petri plates (diameter 15cm). A sterile cork borer was then used to make wells (6mm diameter) for the extracts on each of the plates containing cultures of the different test organisms. The extracts were separately re-dissolved in dimethyl suphoxide (DMSO) to obtain initial concentrations of 20mg/ml. 0.5ml of each of the extract
were then introduced into the wells using sterile Pasteur pipettes. 0.5 ml of DMSO only was introduced in another well to serve as negative control. Wells containing the standard antimicrobials sparfloxin and fluconazole (0.5mg/ml) were included as positive control. The culture plates were allowed to stand on the working bench for 30 min for pre diffusion and were then incubated at 37 °C and 27 °C for 24 hrs and 48 hours for the bacteria and fungi respectively. The Zones of inhibition were determined by measurement of diameter zones of inhibition (mm) (against the test organisms) around each of the extracts and the antibiotics.

**Minimum Inhibitory Concentration (MIC)**

Broth dilution method was used to determine the MIC\[16\]. 10ml nutrient broth (prepared using manufacturer's specifications) was dispensed into test tubes and sterilized at 121 °C for 10 minutes and allowed to cool. Mc-Farland's turbidity standard scale number 0.5 was prepared to give a turbid solution. Normal saline was inoculated with each of the test micro-organism and incubated at 37 °C for 6 hrs to make a turbid suspension of the micro-organisms. After incubations, dilution of the micro-organism in normal saline was done until the turbidity (1.5 x 10⁶ cfu/ml) matched that of the Mc-Farland scale by visual comparism. A 5 ml solution of the extract (ethyl acetate extract and n-butanol of concentrations 10, 5, 2.5, 1.25, 0.625, 0.312 mg/ml) were mixed with 5 ml of nutrient broth. From the suspension of the micro-organism in normal saline, 0.1 ml was inoculated into the different concentrations of the extract in the nutrient broth. The broths were incubated at 37°C for 24hrs and The results after 24 hrs were recorded.

**Determination of Minimum Bactericidal Concentration (MBC)**

Blood agar was prepared according to manufacturer's instruction, sterilized at 121 °C for 15 minutes. It was poured into sterile petri-dishes. The plates were allowed to cool and solidify. The contents of the MIC test tubes in the serial dilution were then sub-cultured on to the prepared plates and the plates were then incubated at 37 °C for 24 hours. After 24 hours and the results recorded\[16\].

**Results**

Table 1 indicates that the plant does not contain much methanol soluble components. The methanol extract of this plant contain more water soluble content since most of the components remained in the aqueous portion followed by the n-butanol and ethyl acetate (Table 1). The ethyl acetate fraction was found to contain only flavonoids while the n-butanol fraction was found to contain carbohydrate, saponin, tannins and cardiac glycosides (Table 2).

The n-butanol fraction only showed activity against the gram negative bacteria (*Salmonella typhi*, *Escherichia coli*, *Shigella dysenteriae* and *Klebsiella pneumonae*) while the ethyl acetate was active against both the gram negative and gram positive bacteria tested. Both fractions were inactive against *Pseudomonas aerogenes* and the fungi tested (Table 3). Both fractions showed lower zones of inhibition against the test organisms compared to that of the standard sparfloxin (table 3). The MIC was in the ranged 0.65 – 1.25mg/l and 2.5 – 5mg/l for the ethyl acetate and n-butanol fraction respectively (Table 4). The MBC ranged between 2.5mg/ml to 5mg/ml and between 5mg/ml to 10mg/ml for the ethyl acetate fraction and the n-butanol fraction respectively (Table 4).

<table>
<thead>
<tr>
<th>Extract</th>
<th>Colour</th>
<th>Weight (g)</th>
<th>Percentage yield (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum ether</td>
<td>Dark green</td>
<td>3.00</td>
<td>0.375</td>
</tr>
<tr>
<td>Methanol</td>
<td>Brown</td>
<td>49.00</td>
<td>6.125</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>Pale green</td>
<td>2.40</td>
<td>16.000</td>
</tr>
<tr>
<td>n-butanol</td>
<td>Brown</td>
<td>4.20</td>
<td>28.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary metabolites</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrate</td>
<td>-</td>
</tr>
<tr>
<td>Anthraquinones</td>
<td>-</td>
</tr>
<tr>
<td>Saponin</td>
<td>-</td>
</tr>
<tr>
<td>Steroid and Triterpenes</td>
<td>-</td>
</tr>
<tr>
<td>Tannins</td>
<td>-</td>
</tr>
<tr>
<td>Alkaloids</td>
<td>-</td>
</tr>
<tr>
<td>Cardiac glycosides</td>
<td>-</td>
</tr>
<tr>
<td>Flavonoid</td>
<td>+</td>
</tr>
</tbody>
</table>

\[16\]
Table 3: shows the zone of inhibition of ethylacetate, n-butanol extract of *Ceiba pentandra* together with spafloxin and fluconzole on micro-organisms.

<table>
<thead>
<tr>
<th>Micro-organisms</th>
<th>Gram</th>
<th>Zone of Inhibition (mm)</th>
<th>Sterile water</th>
<th>Ethylacetate fraction</th>
<th>n-butanol fraction</th>
<th>Sparfloxin</th>
<th>Fluconazole</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>+</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Streptococcus pyogenes</em></td>
<td>+</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Corynebacterium ulcerans</em></td>
<td>+</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Enterococcus aerogenes</em></td>
<td>+</td>
<td>40</td>
<td>0</td>
<td>0</td>
<td>43</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>-</td>
<td>30</td>
<td>21</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Salmonella typhi</em></td>
<td>-</td>
<td>37</td>
<td>20</td>
<td>52</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Shigella dysenteriae</em></td>
<td>-</td>
<td>34</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>35</td>
<td>35</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Klebsiella pneumonia</em></td>
<td>-</td>
<td>37</td>
<td>20</td>
<td>28</td>
<td>28</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td><em>Trichophyton rubrum</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>27</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td><em>Candida albicans</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>44</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><em>Microsporan spp</em></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>30</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: shows the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of ethylacetate and n-butanol extract of *Ceiba pentandra* on micro-organisms.

<table>
<thead>
<tr>
<th>Micro-organisms</th>
<th>Ethyl acetate (mg/ml)</th>
<th>n-butanol (mg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MIC</td>
<td>MBC</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>1.25</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Streptococcus pyogenes</em></td>
<td>2.5</td>
<td>5.0</td>
</tr>
<tr>
<td><em>Corynebacterium ulcerans</em></td>
<td>2.5</td>
<td>5.0</td>
</tr>
<tr>
<td><em>Enterococcus aerogenes</em></td>
<td>0.62</td>
<td>5.0</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>1.25</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Salmonella typhi</em></td>
<td>1.25</td>
<td>2.5</td>
</tr>
<tr>
<td><em>Shigella dysenteriae</em></td>
<td>1.25</td>
<td>5.0</td>
</tr>
<tr>
<td><em>Klebsiella pneumonia</em></td>
<td>1.25</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Discussion
Results of phytochemical screening of the stem bark were consistent with previous investigations but the presence of flavonoid in this extract is not consistent with literature Kubmarawa et al. This may be due to the difference in environmental factors. The antibacterial activity of the ethyl acetate fraction was more than that of the n-butanol fraction.

Averagely, it can be concluded that the gram negative bacteria were more susceptible to both fractions than the gram positive bacteria. This is in contrast to report that gram positive bacteria are more susceptible to plant extracts than gram negative bacteria. Gilbert and Wight reported that gram negative micro-organisms are innately resistant to many antibacterial agents relative to gram positive bacteria due to the differences in their cell wall and membrane structure.

Kubmarawa et al. reported no activity of *Ceiba pentandra* on *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli* while this study showed activity against the afore mentioned bacteria. These differences can be due to the difference in climatic and soil conditions, age and period of plant collection. The MIC values of both extract were all lower than the MBC for all the micro-organisms. This suggest that both fractions were bacteriostatic at lower concentration and bactericidal at higher concentration.

Extracts of various medicinal plants containing phenolic and flavonoids have been previously reported to possess antimicrobial activity against human pathogenic microorganisms with some mechanisms of action such as inhibition of nucleic acid synthesis, cytoplasmic membrane function and energy metabolisms. The antimicrobial activity of the ethyl acetate fraction might be due to one of the mechanisms of action mentioned above since it contains only flavonoids.

Reports also showed that the antibacterial activity can depend on the saponins and tannins content present in a plant extract. Thus since the n-butanol fraction contains both saponins and tannins, these could account for it antibacterial activity of the n-butanol while the flavonoids in the ethyl acetate fraction is responsible for the antibacterial activity.

It is therefore recommended that further work be done on...
isolating and testing the antibacterial activity of the flavonoids compounds responsible for the wide antibacterial activity of the ethyl acetate fraction.

Conclusion

*Ceiba pentandra* possesses antibacterial activity with the ethyl acetate fraction showing wide spectrum antibacterial activity than the n-butanol fraction which is active only against gram positive bacteria. Both fractions showed no antifungal activity. This study further justifies the use of this plant in treating various ailments.

Acknowledgements

The authors acknowledge Mr Mikailu F. Abdullahi of Nigeian Institute of Leather and Science Technology, Zaria - Nigeria, the Ahmadu Bello University Teaching Hospital, Zaria – Nigeria and the staff of Department of Pharmaceutical and Medicinal Chemistry, University of Ilorin – Nigeria for their support and contribution to this work.

References

2. WHO. The top 10 causes of death. Retrieved August, 2014 from
Effectiveness of academic stress management programme on academic stress and academic performance among higher secondary students in selected schools of Udupi District

Nikitha S, Tessy Treesa Jose & Blessy Prabha Valsaraj

Abstract

Problem statement: “A study to assess the effectiveness of academic stress management programme on academic stress and academic performance among higher secondary students in a selected school of Udupi district, Karnataka, India”

Objective: To evaluate the effectiveness of academic stress management programme on academic stress and academic performance.

Materials and Methods: Study was conducted among 96 subjects. Data were collected using Demographic Proforma and Academic stress Rating Scale. Academic performance was assessed by verifying existing school records of formative evaluation test conducted in the month of January and February 2013. Academic stress management programme was provided one hour per day for three consecutive days.

Result: Data were analysed using t test and Wilcoxon signed rank test. Result showed a significant difference in pretest post test stress level and academic performance.

Conclusion: The findings of the study indicated that academic stress management programme was effective in reducing academic stress but not in improving academic performance.

Keywords: academic stress, academic stress management programme, academic performance, higher secondary students

Introduction

Adolescence can be a stressful time for parents and adults who work with teens. Children are dealing with the challenges of going through puberty, meeting changing expectations and coping with new feelings. Many also worry about moving from a middle or junior high school to secondary school level. Adults always underestimate the level of stress on teens and young adults. Adolescents experience a spectrum of stress ranging from ordinary to severe. Long term exposure to stress is associated with a variety of chronic psychological and physiological illness in addition to smoking, drug abuse and high risk sexual behaviour.

A cross sectional descriptive study was carried out by De Silva, Liyanage and Katulanda (2011) among 6000 grade 10 and 12 school children of Colombo District, selected by multi-staged Stratified random sampling, using Sheldon Cohen’s self-administered “Global Measure of Perceived Stress scale(PSS) to assess the prevalence of stress among adolescent school children. Mean Perceived Stress Scale score was 15.29 (SD=5.34). When compared to a student in grade 10 (mean: 13.2), students following Advanced Level (AL) mathematics (mean: 15.19, p<0.001) and biology (mean: 15.03, p<0.001) were less likely to have a higher stress score. Researcher found that students who had <69 marks for the previous term test had a higher stress when compared to students who had >90 marks.

A cross-sectional study was conducted by Feld (2011) among three hundred eighty students in grades 9 through 12 from two colleges preparatory high schools of Wesleyan
University, Middletown with a purpose to explore the effects and sources of stress in high-achieving environment. Tools used were students life satisfaction scale, school attitude assessment questionnaire revised, and questions about stress, health, coping, internal and external expectations, peers, support-seeking behaviour, and stress reduction. Eighty four percentage of students reported that their homework load had a major effect on increasing their stress level. Personal drive was also reported to have a high effect on stress level by 65.5% of students. College goals had a high effect on increasing stress level for 57.7% of students and expectations of their parents had a high effect on increasing their stress level for 51.1% of students. Students who experience more stress spend more time on their academic work \((r= 0.294, p<.001)\). Additionally, students who spend more time on their work tend to have higher GPAs \((r= 0.251, p<0.001)\).

The importance of academic success to themselves is positively correlated with stress level \((r= 0.195, p=0.01)\). More than 50% of students experiencing mood swings irritability, inability to initiate work and lack of concentration at least once in a week. More than 20% students experience inability to initiate work and lack of concentration and constant fatigue almost every day and 28% of students experience 5-10 symptoms of stress per week. The study found a significant but weak association between stress and the prevalence of symptoms per week \((r=0.387, p<0.001)\).

A study was conducted by Taragar (2008) in Dharwad taluk of Karnataka state to assess the stress among high school students and its relationship with demographic variables. A total of 538 students completed the stress scale prepared by the researcher. Among male students 66.00 %, 25.50 % and 8.50 % of the students experienced stress, high stress and low stress respectively, among female students 71.70 %, 21.90 % and 6.40 % of the students experienced stress, low stress and high stress respectively. On the whole, 69.00 %, 15.60 % and 15.40 % of the students experienced stress, high stress and low stress respectively. The chi-square value 47.34 indicated that there was a significant association between gender and stress \((p=0.01)\).

The Objective of the study was to evaluate the effectiveness of academic stress management programme on academic stress and academic performance.

**Materials and Methods**

Evaluative approach with quasi experimental design was considered for the study. The study was conducted among 96 higher secondary school students selected from selected pre university colleges of Udupi district. Private English medium schools following state syllabus and having monthly class test as a part of formative evaluation was included. Convenient sampling technique was adopted to select the samples. Formal administrative permission was taken from the Dean, Manipal College of nursing, Manipal. Institutional Ethics Committee (IEC) clearance and permission was obtained to conduct the study. Permission was also obtained from institutional research committee, MCON, Manipal. Written permission was taken from school authority. Purpose of the study was explained to the participants about the study and written consent was obtained from the subjects.

Demographic preforma was developed by the researcher to collect back ground information of the subjects selected for the study. Academic stress rating scale was developed by the researcher and it consists of 32 items. The items are expressed in the form of statements. Each item has 4 alternatives: strongly agree, agree, disagree and strongly disagree with the scoring of 1, 2, 3 and 4 respectively. Items are given under headings of examination stress, stress from peers, and stress from self, study habits and time management. The highest score was 128 and lowest score was 32. Academic stress were categorised as mild (32-64), moderate (65-90) and severe (91-128). Content validity of the demographic proforma and stress scale was ensured by giving to subject experts. The modifications made as per the experts suggestions are as follows. Reliability of the tool was established using Cronbach's alpha method and was established as 0.74.

Demographic Proforma and Academic Stress Rating Scale were administered to the subjects on the first day of the data collection and academic stress management
programme was conducted on three consecutive days. Intervention was provided two weeks before their examination. Average time taken to fill in the questionnaire was 15 minutes. After that one hour session was conducted. First session was on causes of stress among students, effects of stress on body and mind and time management. Students prepared time management plan for a week. Second day the session was on study habits. Third day dealt with examination preparation and demonstrated relaxation techniques such as meditation, deep breathing and JPMR. Post test was conducted 30 days after intervention, after participants' examination result published. For 48 subjects in the control group pre-test and post test only were conducted.

Statistical methods
Data were analysed using SPSS 16 version software. Data were analysed using descriptive and inferential statistics. Level of significance was 0.05. Normality of the data was tested using Shapiro Wilk test. Paired t test was used for comparing the pre-test and post-test stress score of intervention group. Man Whitney U test was used for comparing the post-test stress scores of intervention and control group as the data did not follow the normal distribution. Wilcoxon signed rank test was used for comparing the median pre-test and post-test academic score of intervention group as the data were not following normal distribution.

Results
Description of sample characteristics
Sample characteristics are given in table 1.

Description of stress
Majority (80.2%) of the students experienced moderate level of academic stress and only 6.2% students had severe academic stress. Moderate level of stress was experienced by 13.5% of the subjects. Majority (46.9%) of them were having poor academic performance and 40.6% subjects had average level of academic performance.

Effectiveness of academic stress management programme on academic stress
Findings are presented in table 2. Significant difference is found between mean pre-test and post-test stress scores as the p value is 0.001 and t value is 5.13. Hence it is inferred that academic stress management programme is effective in reducing academic stress among higher secondary students. Significant difference is also found between post-test median stress scores of intervention and control group (p=0.032).

Effectiveness of academic stress management programme on academic performance. Data in table 3 show that p value is statistically significant 0.05 level (p=0.002). Man Whitney U test was used for comparing the post-test academic scores of intervention and control group. Though there is increase in median scores, difference was not statistically significant (p=0.631). Hence it is inferred that academic stress management programme was not effective in improving academic performance among higher secondary students.

Acknowledgement
Authors acknowledge all the experts who gave their valuable time and suggestions for validating the tools. We also express my thanks to all the school authorities where we have done this study. Our special thanks to all the participants of the study for their co-operation.

Table 1: Frequency and percentage of sample characteristics

<table>
<thead>
<tr>
<th>Sample Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>45.8</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>54.2</td>
</tr>
<tr>
<td>Education of Father</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Upper primary</td>
<td>18</td>
<td>37.5</td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUC</td>
<td>15</td>
<td>31.2</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Post Graduate Degree</td>
<td>2</td>
<td>4.2</td>
</tr>
<tr>
<td>Education of mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>2</td>
<td>4.2</td>
</tr>
<tr>
<td>Upper primary</td>
<td>8</td>
<td>16.7</td>
</tr>
<tr>
<td>High School</td>
<td>14</td>
<td>29.2</td>
</tr>
<tr>
<td>PUC</td>
<td>14</td>
<td>29.2</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>9</td>
<td>18.8</td>
</tr>
<tr>
<td>Post Graduate Degree</td>
<td>1</td>
<td>2.1</td>
</tr>
</tbody>
</table>
Sample Characteristics | Frequency | Percentage
---|---|---
### Type of Family
Nuclear | 36 | 75
Joint | 9 | 18.8
Extended | 3 | 6.2
### Number of siblings
Only Child | 7 | 14.6
1 | 12 | 25
2 | 13 | 27.1
3 | 11 | 22.9
More than 3 | 5 | 10.4
### Birth Order
1 | 30 | 62.4
2 | 14 | 29.2
3 | 2 | 4.2
4 | 2 | 4.2
### Family income
<5000 | 3 | 6.2
5001-10000 | 10 | 20.8
10001-20000 | 29 | 60.4
>20000 | 6 | 12.5
### Occupation of father
Unemployed | 14 | 29.2
Self employed | 12 | 25
Unskilled | 4 | 8.3
Non professional | 12 | 25
Professional | 6 | 12.5
### Occupation of mother
Housewife | 41 | 85.4
Working | 7 | 14.6

Table 2: Mean, Standard deviation, Standard error and p value of pre-test and post-test stress level of intervention group.

<table>
<thead>
<tr>
<th>Stress</th>
<th>mean</th>
<th>Std. deviation</th>
<th>Std. error</th>
<th>t - value</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>78.5</td>
<td>10.69</td>
<td>1.54</td>
<td>5.14</td>
<td>0.001</td>
</tr>
<tr>
<td>Post test</td>
<td>75.20</td>
<td>9.18</td>
<td>1.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion
The present study concluded that academic stress management programme was effective in reducing academic stress (t=5.13, p=0.001) and not in improving academic performance (t= 0.480, p=0.631) Similar findings were reported in the study conducted by Tenenbaum (2012) among 17 school children from a private school in Atlanta to find out the effectiveness of a school based intervention on test anxiety. Self-reported anxiety collected before and after intervention and data analysed using paired t test. Result demonstrated significant reductions in anxiety disorders for the participants involved (MD: 3.63, t=2.31, p = .036). A meta-analysis done by Kraag, Zeegers, Kok, Hosman and Saad (2006) also supported the findings of present. They evaluated the effect of school programs targeting stress management or coping skills in school children. Overall effect size for the programs was - 1.51. Effect was calculated per intervention type, and positive effects were found for stress symptoms with a pooled effect size of - 0.865 (95% CI: - 1.229, - 0.502) and for coping with a pooled effect size of - 3.493 (95% CI: - 6.711, - 0.275).

Conclusion
The findings of the study indicated that academic stress management programme was effective in reducing academic stress but not effective in improving academic performance. It is concluded that there could be various other factors influencing academic performance of higher secondary students.

Table 3: Median, Inter quartile range, z value and p value of pre-test and post-test academic score of subjects.

<table>
<thead>
<tr>
<th>Academic score</th>
<th>mean</th>
<th>Inter quartile</th>
<th>z value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>334</td>
<td>277-416</td>
<td>3.08</td>
<td>0.002</td>
</tr>
<tr>
<td>Post test</td>
<td>342</td>
<td>290-419</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References
Knowledge and Attitude on Care of Child during Common Childhood Illnesses among the Koraga Tribes

Shrisha¹, Binu Margaret E² & Sheela Shetty²

¹MSc Nursing in Child Health Nursing, Manipal College of Nursing Manipal, Manipal University, ²Assistant Professor, Department of Child Health Nursing, Manipal College of Nursing Manipal, Manipal University, Manipal.

Abstract

Introduction: Every society follows different practices and beliefs in different traditional aspects related to health care. Majority of Indians have taken pleasure in using traditional beliefs and practices. There are limited numbers of studies related to knowledge and attitude towards care of the child during common childhood illnesses among Indian tribes.

Objectives: The objectives of the study were to assess the knowledge and attitude of the Koraga tribes towards care of the child during common childhood illnesses and to find the relationship between knowledge and attitude of tribes during common childhood illnesses.

Materials and Methods: A descriptive survey and face to face interview was undertaken among 200 Koraga tribal care takers using structured questionnaires and an attitude scale. SPSS 16.0 software was used for data analysis. Frequency, Percentage and Pearson correlation co-efficient were used.

Results: The findings of the study showed that, majority 155 (77.5%) of tribal care takers had good knowledge and majority 158 (79%) had favorable attitude on care of the child during common childhood illnesses like common cold, diarrhea, fever, tooth ache, ear ache and febrile convulsion. It was also found there was significant positive correlation (p<0.001) between knowledge and attitude.

Conclusion: The study concluded that majority of Koraga tribal care takers have good knowledge and favourable attitude towards care of the child during common childhood illnesses.

Keywords: Knowledge, Attitude, Common Childhood Illnesses, Koraga Tribes, care of child

Introduction

Healthy children can bring happiness to the society. Each society has different beliefs which includes beliefs in supernatural powers, beliefs in holy rituals, salvation, offerings and sacrifices etc. Majority of Indians have taken pleasure in following traditional beliefs and practices. Health workers must have concern for the people’s cultural values and beliefs.¹

India is famous for its cultural diversity. India has the longest unbroken health tradition which has not only a stream of practitioners but also a textual and theoretical backing in terms of the Ayurvedic and Siddha systems of Medicine.¹

Tribes constitute 8.2% of the Indian population.¹ According to the 2011 census, the tribal population of India was 1,04,281,034, in Karnataka it was 4,248,987 and in Udupi it was 20117.¹ Tribal communities are geographically distinct; with each tribe having its own unique customs, traditions, beliefs and practices. Tribal populations are isolated from the general population by their own life styles and practices.

A cross sectional study was conducted by Zyoud S, Jabi SW, Sweileh WM et al among 402 parents on beliefs regarding childhood fever in Palestine in 2012. They have conducted face to face interview with the parents with the help of structured questionnaire to gather information regarding their beliefs and practices during childhood fever. The result showed that most of the parents (77.4%) believed...
that fever in a child is the result of symptom of some of the illnesses and 19.4% of them believed that fever is natural result of child’s growth. And also parents believed that fever is dangerous and cause various harmful effects to the child if it is not treated properly. Most of them (38.1%) believed that it may cause brain damage, 15.7% of believed that it may result in dehydration and 14.2% believed that fever may results in damage to the vital organs like kidney, liver etc.

A study was conducted by Sreeramareddy CT, Shankar RP, Ravi P et al. in 2005, on care seeking behaviour for childhood illness among 292 mothers of children suffering from illness during the preceding 15 days in western Nepal. A cross sectional survey was conducted and mothers were interviewerd through structured questionnaire by trained health workers. The results showed that majority of mothers were aware of fever (51%), child becoming sicker (45.2%) and drinking poorly (42.5%) as the danger signs of childhood illness.

In today’s age of evidence-based medicine and continuing use of folk remedies for the treatment of medical conditions warrants evaluation. While going through the literatures, there are limited numbers of studies related to knowledge, attitude, and practices during common childhood illnesses among Indian tribes. Therefore an initial step is necessary to highlight the knowledge and attitude among the tribes during common childhood illnesses. This initiation gives in-depth information for the necessity to provide awareness programme if their knowledge and attitude are found unsatisfied.

The purpose of the study is to assess the knowledge and attitude of the Koraga tribes on care of the child during common childhood illnesses. This will help to get a baseline data and in depth information, so as to provide awareness on care of the child during common childhood illnesses.

Materials and method
A descriptive survey was conducted among 200 Koraga tribal care takers residing in selected tribal areas of Kundapur Taluk, Udupi District, Karnataka. Cluster random sampling technique was used to select the research settings and final sample were selected through purposive sampling technique. Face to face interview with the help of structured questionnaire was used to collect data.

Data were collected after obtaining permission from concerned authorities like Department of Scheduled Tribes, Udupi District and informed consent from the participants. Ethical clearance was taken from the institutional ethical committee of Kasturba Hospital. Pretested, valid and reliable tools developed by the investigator were used. The tools include: Background data for collecting background information of the Koraga tribes. It consisted of five items. The items included were age, gender, education level, type of family and previous information on care of the child during common illnesses and the source of information.

The knowledge questionnaire was developed to assess the knowledge level of Koraga tribes on care of the child during common childhood illnesses. It consisted a total of 40 items and divided into section A, which had 35 multiple choice questions and section B, which had five true or false types of questions. The areas included in the tool were knowledge on care of the child during common cold, fever, diarrhea, tooth ache, ear ache and febrile convulsion. Each item was carrying a score of one for correct answer and a score of zero for wrong answer. The knowledge score was arbitrarily classified as: Poor knowledge = 0 to 13, Average knowledge = 14 to 26, and Good knowledge = 27 to 40. The reliability co-efficient of knowledge questionnaire was found to be $r = 0.82$ by spilt half method.

A five point likert type of Attitude scale on care of the child during common childhood illnesses which consisted of 14 items was developed to assess the attitude of the Koraga tribes towards care of the child during common childhood illnesses. The areas included were, attitude towards care of the child during common cold, fever, diarrhea, tooth ache, ear ache and febrile convulsion. The scoring for each positive item was given as: 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree and 5 = strongly agree. Reverse scoring was given for the negative items. The...
attitude score was arbitrarily classified as: 14 to 31 = unfavorable, 32 to 50 = moderately favorable and 51 to 70 = favorable. The reliability coefficient of attitude scale was found to be $r = 1$ by Cronbach's alpha method.

The data was collected by the investigator using face to face interview technique, after giving the subject information sheet about the study and obtaining informed consent from each participant. The data collected were analysed using descriptive and inferential statistics.

**Results**

The findings of the study were discussed under the following headings:

**Description of Sample Characteristics:**

The analysis of the baseline characteristics presented in table 1 revealed that majority of the care takers 139 (69.5%) belonged to the age group of 36-52 years, majority 168 (84%) were female care takers, majority 116 (58.0%) had educational qualification of primary school, majority of them 148 (74%) were living in nuclear families. Majority 197 (98.5%) had previous information related to care of the children during common childhood illnesses and source of information was from health personnel for majority 155 (77.5%) of them.

**Description of level of Knowledge regarding common childhood illness among the Koraga tribes:**

The study findings revealed that majority 155 (77.5%) of the sample had good knowledge, most of them 45 (22.5%) had average knowledge and none of them had poor knowledge.

The mean and standard deviation of the knowledge score regarding the common childhood illness is 29.23 ± 4.06. The area wise level of knowledge regarding the common childhood illness is depicted in table 2.

**Description of attitude regarding common childhood illness among the Koraga tribes:**

Majority 158 (79%) of the sample had favourable attitude, 42 (21%) of them had moderately favourable attitude and none of them had unfavourable attitude on care of the child during common childhood illnesses. The mean attitude score regarding the common childhood illness is 52.75 ± 3.82.

**Relationship between knowledge and attitude score regarding common childhood illness among the Koraga tribes:**

The relationship between knowledge and attitude on common childhood illness was computed using Pearson's correlation coefficient. It revealed that there was a significant positive correlation ($r = .334$, $p<0.001$) between knowledge and attitude, which indicates that as knowledge level increases attitude level also increases.

**Discussion**

The findings of the present study showed that, majority 155 (77.5%) of tribal care taker had good knowledge with a mean score of 29.235 ± 4.066 and 158 (79%) had favorable attitude with a mean score of 52.755 ± 3.825 on care of the child during common childhood illnesses. These findings are supported by another study conducted by Khalili M, Mirshahi M et al. in 2012 in Zahedan, Iran on maternal knowledge regarding childhood diarrhea and diet, showed that knowledge of the majority of mothers (64.3%) regarding diarrhea and diet was moderate and only 3.7% had good knowledge. The majority of mothers (56%) had a moderate practicing knowledge of diarrhea and diet and only 2.3% had a good practice. This study partially supports the findings of present study.

The findings of the present study is contradicted by a study conducted by Srikanth SI, Isaac R, Rebekah G, et al on Knowledge, attitudes and practices with respect to risk factors for otitis media in a rural South Indian community. The result showed that around 50% of care givers are lacking in regard to risk factors for the occurrence of earache and ear infections. Caregivers from nuclear families were slightly less knowledgeable regarding lack of immunization and household smoke as risk factors for the disease.
Conclusion
Koraga tribal care takers knowledge and attitude level on caring the child during common childhood illnesses is comparatively good. It has given a base to look into their different practices during various common childhood illnesses.

Table 1: Description of sample characteristics in frequency and percentage

<table>
<thead>
<tr>
<th>S.N</th>
<th>Sample characteristics</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>18-35</td>
<td>51</td>
<td>25.5</td>
</tr>
<tr>
<td>2</td>
<td>36-52</td>
<td>139</td>
<td>69.5</td>
</tr>
<tr>
<td>3</td>
<td>53-70</td>
<td>10</td>
<td>05</td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>168</td>
<td>Female</td>
<td></td>
<td>84.0</td>
</tr>
<tr>
<td>32</td>
<td>Male</td>
<td></td>
<td>16.0</td>
</tr>
<tr>
<td>3</td>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>No formal education</td>
<td></td>
<td>27.0</td>
</tr>
<tr>
<td>116</td>
<td>Primary</td>
<td></td>
<td>58.0</td>
</tr>
<tr>
<td>26</td>
<td>High school</td>
<td></td>
<td>13.0</td>
</tr>
<tr>
<td>1</td>
<td>PUC</td>
<td></td>
<td>.5</td>
</tr>
<tr>
<td>3</td>
<td>Graduation</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>4</td>
<td>Type of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>Nuclear</td>
<td></td>
<td>74.0</td>
</tr>
<tr>
<td>52</td>
<td>Joint</td>
<td></td>
<td>26.0</td>
</tr>
<tr>
<td>5</td>
<td>Previous information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>197</td>
<td>Yes</td>
<td></td>
<td>98.5</td>
</tr>
<tr>
<td>6</td>
<td>Source of information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Family member</td>
<td></td>
<td>21.0</td>
</tr>
<tr>
<td>155</td>
<td>Healthcare professionals</td>
<td></td>
<td>77.5</td>
</tr>
<tr>
<td>3</td>
<td>Mass medias</td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>

Acknowledgement
Our gratitude to Dr. Anice George, Dean, Manipal College of Nursing Manipal, Dr. Baby S Nayak, Head of the department, Department of Child Health Nursing, Manipal College of Nursing Manipal for their timely help and support. We extend our gratitude to all the validators of tools and the friends who provided the technical support for the study.

Table 2 : Mean and standard deviation of area wise knowledge level on care of the child during common childhood illnesses.

<table>
<thead>
<tr>
<th>Areas of knowledge</th>
<th>Maximum possible score</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common childhood illness</td>
<td>2</td>
<td>1.7100</td>
<td>0.45490</td>
</tr>
<tr>
<td>Common cold</td>
<td>8</td>
<td>6.8250</td>
<td>0.94809</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>12</td>
<td>8.8050</td>
<td>1.22658</td>
</tr>
<tr>
<td>Fever</td>
<td>5</td>
<td>3.9200</td>
<td>0.81666</td>
</tr>
<tr>
<td>Tooth ache</td>
<td>5</td>
<td>3.9000</td>
<td>0.92969</td>
</tr>
<tr>
<td>Ear ache</td>
<td>2</td>
<td>1.4400</td>
<td>0.49763</td>
</tr>
<tr>
<td>Febrile convulsion</td>
<td>6</td>
<td>2.4950</td>
<td>1.06094</td>
</tr>
</tbody>
</table>

References
Introduction
The Expert Committee of the American Diabetes Association in 2003 defined diabetes mellitus as a group of chronic metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. It leads to complications such as microangiopathy, retinopathy, nephropathy, microvascular disease and delayed wound healing.

Individuals with poorly controlled diabetes have also been found to be more susceptible to oral infections including periodontitis being its 6th complication).

It has been reported that subjects with diabetes have a greater prevalence and severity of periodontal disease compared with subjects without diabetes in all age groups.

In these subjects, diabetes also increases the progression of bone loss and attachment loss over time. There have been various studies which have demonstrated a bidirectional relationship between periodontal disease and diabetes.

The relationship between oral diseases and type 2 diabetes has become a recent focus of attention among health care professionals because of substantial evidence supporting the role of diabetes and poor glycemic control as important risk factors for periodontal disease. Furthermore, it appears that periodontal diseases can contribute to poorer glycemic control in people with diabetes and that treating periodontal infections could have a beneficial effect on glycemic control in either type 1 or type 2 diabetes.

Additionally, there is growing evidence that clinical practitioners should incorporate education concerning the risk of periodontal disease into the management regimens
of their patients with diabetes. It is also important to communicate with physicians and others involved in diabetes care about the importance of referring patients with diabetes for thorough oral health evaluations. Thus, medical practitioners should also possess basic dental knowledge to uncover signs and symptoms of dental diseases from patients, to provide appropriate treatment or advice to these patients and to act as public health educators.

Hence the present study seeks to assess the knowledge of periodontal disease and awareness of its inter-relationship with diabetes among medical interns, as they can also play a pivotal role in preventing the further progression of periodontal disease in such patients.

Aims & Objectives
- To assess the knowledge of periodontal disease among medical interns.
- To assess their awareness of periodontal disease in diabetic patients.

Material & Methods
A cross sectional questionnaire survey containing 21 questions was used to assess the extent of awareness of periodontal disease in diabetic patients among medical interns. A non-probability sampling, or convenience sampling method was used to chose participants. Convenient sample size of 150 medical interns from Mangalore, Karnataka were chosen. Ethical clearance certificate was obtained from the institution for the same.

Statistical Analysis
Data obtained was analyzed using the SPSS (Statistical package for social sciences) version 16.

Results
Following pie charts depict 14 most relevant questions from the questionnaire survey.

Table 1: Depicting pie diagram with response in (%) Q1-8
Table 2: Depicting Pie diagram with response in (%) Q9-14

Discussion
As per the results depicted in pie charts, this study indicates that more than half (>50%) of medical interns are thorough with the knowledge of diabetes in general and its systemic complications.

A majority of respondents i.e. 68% were not aware if diabetic patients develop periodontal disease (Q6). Also around 50% of medical interns could not specify periodontal manifestations diabetic patients can present with (Q8&Q9)

Around 70% of the interns felt that they have limited knowledge about periodontal disease and its association with systemic disease like diabetes (Q13), though 30% strongly agree to the idea that discussing or evaluating periodontal status should be an important part of their examination.

As per this study its evident that medical interns have good knowledge about diabetes and its complications, though there is a need to emphasize the importance of oral health care in patients suffering from diabetes and also understand the bi-directional relationship between diabetes and periodontal disease so that they can also play a significant role in preventing its further progression by timely referral to the dentist / periodontist.
3. What is the range of normal fasting blood glucose level?

- 50-69 mg/dl: 16.00%
- 70-99 mg/dl: 7.33%
- 100-125 mg/dl: 57.33%
- 126 mg/dl or higher on separate tests: 19.33%

4. As per ADA fasting blood glucose test level which indicates diabetes is?

- 50-69 mg/dl: 19.33%
- 70-99 mg/dl: 7.33%
- 100-125 mg/dl: 71.33%
- ≥126 mg/dl or higher on separate tests: 3.33%

5. Periodontitis is the ________ complication of diabetes mellitus.

- 1st: 32%
- 2nd: 14.67%
- 3rd: 10.67%
- 6th: 41.33%

6. Are you aware that diabetics are prone to develop periodontal disease?

- Yes: 32%
- No: 68%

7. Do you ask your patients if they have ever been diagnosed with a periodontal disease?

- Never: 18.00%
- Often: 12.00%
- Always: 12.67%
- Sometimes: 57.33%

8. Which is the most common periodontal manifestation seen in an uncontrolled diabetic patient?

- Periodontal abscess: 23.33%
- Bleeding gums: 32.00%
- Ulcers: 17.33%
- Atrophic glossitis: 27.33%

9. Which is the most common oral micro vascular complications observed in diabetes mellitus?

- Xerostomia: 18.00%
- Gingivitis: 14.00%
- Leukoplakia: 18.67%
- Gingival Enlargement: 49.33%

10. Rapid destruction of periodontal structures in poorly controlled diabetic is due to?

- Increased collagenase activity: 18.67%
- Decreased collagen synthesis: 16.67%
- Decreased collagenase activity: 13.33%
- Both a & b: 51.33%
Conclusion

As per the results of this study it can be concluded that although medical interns have thorough knowledge about diabetes, their knowledge about periodontal disease is finite. Also, they are unaware of the periodontal manifestations in such patients. Furthermore, they have limited knowledge about the inter-relationship of the diabetes and periodontal disease.

Medical interns are budding physicians of the future who have an opportunity to encourage oral health and thus can make a significant difference because of their access to families as a family physician. It is also incumbent upon medical practitioners to keep their knowledge updated with time and get actively involved in oral health, as oral cavity is a mirror of systemic conditions.

Recommendations

- To encourage newly graduated medical practitioners to examine the oral cavity (including teeth and gums) during their general examination for patients.\(^{[14]}\)
- To promote the setting up of associate clinics, which will include both medical practitioners and dental practitioners for the benefit of providing medical and dental services under one roof.

To conduct continuing education programmes to improve their knowledge, attitude and awareness about various dental diseases.

References

Periodontology, 74, 97-102.
Looking beyond tobacco and alcohol for oral squamous cell carcinoma

Manav Chaturvedi¹, Sreelatha S.V.² & Pushparaja Shetty³

¹Post Graduate, ²Reader, ³Professor & HOD, Department of Oral Pathology & Microbiology, A.B. Shetty Memorial Institute of Dental Sciences, Nitte University, Mangalore, Karnataka, India.

Abstract
Squamous cell carcinoma is the most common malignant neoplasm of the oral cavity. Betel nut chewing, cigarette smoking and alcohol drinking are thought to be the major environment risk factors responsible for the development of oral squamous cell carcinoma (OSCC). Reports of OSCC in patients who never used tobacco and alcohol are infrequent.

The aim of this article is to review the current data concerning the possible etiological factors causing OSCC other than tobacco like viral infections, diet, nutrition, chronic irritation, genetic mutations and other. Although it is well known that the incidence of OSCC increases with age, recent trends for a rising incidence particularly relates to cancer in young individuals. Investigations can be routine ranging from simple oral examination, blood test, bone marrow analysis, diet chart analysis as well as molecular analysis through techniques like PCR, ISH (in situ hybridization), DNA sequencing, southern blot and antibody test.

This review critically examines numerous publications devoted to oral cancer in young individuals who never used tobacco and alcohol. Most studies suggest that 4-6% of oral cancer occur in such individuals.

Awareness of this possibility is important since it can lead to potentially fatal consequences. Thus providing clinicians a broader vision for diagnosis which will lead to effective treatment and prevention in the future.

Keywords: Viral infections, chronic mechanical trauma, diet size.

Introduction
Sixth most common type of cancer in the world is oral squamous cell carcinoma (OSCC).¹ The effect of some etiological factors such as usage of tobacco and alcohol has been well established in the literature.²

However, numerous cases of OSCC occurring in non-smokers and non-alcoholic consumers or patients who were not associated with the traditional risk factors were seen in approximately 15-20% of all oral cancer cases as reported in some literature.³ Identification of these uncommon risk factors is vital for the diagnosis of oral squamous cell carcinoma especially in cases where there is a long-standing ulcer or a smaller tumour size.⁴

The factors are as following
1.) Chronic Mechanical Trauma
It has been shown in the literature that causation of oral squamous cell carcinoma can be due to chronic mechanical trauma from sharp remaining teeth, improper dental fillings, ill-fitting dentures and loose anchoring attachments.

A report by Randhawa et al describes a case of squamous cell carcinoma, involving the posterolateral border of the tongue of a young female patient, with no deleterious habits usually associated with oral cancer. The report focuses on the etiological factors and prognosis related to the case. The elucidating factor in the patient was the history of chronic trauma due to sharp edges of the carious broken lower first molar which was considered as one of the possible mechanism of her tongue cancer.⁴
2.) Diet and Nutrition
The significance of diet and nutrition has been identified in numerous epidemiological studies. Iron which is a very crucial constituent of our diet has a very crucial role in maintaining the thickness of the epithelium and its deficiency may cause epithelial atrophy and the Plummer Vinson (Patterson brown Kelly) syndrome seen in iron deficiency anemia which is associated with dysphagia, gastric achlorhydria, splenomegaly, spooning of nails, esophageal web formation and most importantly it may lead to the cancer of upper respiratory tract and food passages. There are food items present in fruits and vegetables which could be protective or risky in oral neoplasia. The risk factors in diet could be the excessive usage of red chilli powder and meat.\(^5\)

3.) Viral Infection
Viruses like Human papillomavirus and its subtypes, Herpes group viruses, Adenoviruses and the Hepatitis C viruses can infect the oral cavity and develop cancer.\(^6\)

**Human papilloma virus (HPV)**
Studies have shown oral cancer patients with no exposure to smoking and/or drinking were 6.1 times more likely to have HPV DNA in the tumors than the Non Smoking/Non Drinking benign controls.

Predictors of oral HPV infections have increased in recent population as a result of high-risk sexual behaviour in the form of practice of premarital sex, average number of lifetime sex partners, oral sex, and a history of sexually transmitted diseases. It may arise from the oropharynx, including the base of tongue and tonsil as HPV has been found out to be an etiological agent specifically in those areas.

With more than 120 different types identified till now, HPV’s are epitheliotropic, oncogenic DNA viruses. Low-risk, episomal HPV’s (HPV6/11) induce benign proliferation of epithelium whereas, high-risk oncogenic types HPV16/18, are commonly found integrated with the host DNA. In 20% of HNSCCs overall High-risk HPV DNA has been consistently detected and in 20–72% of the OSCC subset.\(^3\) High-risk HPV has been closely associated in many benign and malignant oral lesions like condyloma, squamous papilloma, focal epithelial hyperplasia and malignant lesions.

**HPV Test**
Many head and neck oncologists consider p16 overexpression as an indirect marker of HPV infection in stratifying patient and thus considers it to be the most important marker as it negatively regulates cell proliferation by suppressing inactivation of pRb protein. Only p16-positive patients undergo further investigation with a more specific HR-HPV detection method, and p16-negative patients are considered HPV-negative. Thus, p16 can be used as a first-line assay provided that its sensitivity approaches 100%. These detection methods must be technically feasible, accurate and cost effective in order to provide a widespread clinical implementation.

The strategy behind HPV detection lies in its ability to recognize the High-risk type HPV-E6 and E7 oncoproteins target the p53 and pRB tumor suppressor pathways. The final goal of any presence of HPV is the detection of these high-risk proteins as they have an important role in oncogenesis since they render these pathways dysfunctional in the majority of HPV-related human cancers. Thus, inhibition of TP53 and pRb by E6 and E7 viral oncogenes respectively, play a key role in the ablation of cell cycle control, apoptosis, and promotion of instability in the genetic makeup contributing towards the development of cancer.\(^6\) HPV testing is mainly based on PCR method. Others tests which can be used for HPV testing are in-situ hybridization and in situ oncogenic protein staining techniques as they also have shown increased sensitivity and specificity.\(^6\)

When dealing with limited amounts of tissue or nucleic acid the use of multiplex real-time PCR comes as a potential diagnostic tool as it is able to multiplex providing a significant advantage.
HPV Serology is not that precise as it only provides data based on prior exposure to HPV. They are useful in identification of a subset of HPV-associated oral cancers in which HPV is active biologically. HPV viral load in oral biopsies is used in conjunction with serological markers. It is believed that some viruses, mostly the high-risk HPVs, have significant roles in the initiation as well as progression of cancers and their continued expression of their viral transforming activities is necessary in the maintenance of the transformed phenotype.\textsuperscript{(6)}

The most widely used techniques include viral DNA detection, with polymerase chain reaction (PCR) or In Situ Hybridization, and p16 detected by immunohistochemistry. The latest developments in HPV testing, such as the RNAscope HPV test are also reported these days.\textsuperscript{(7)}

**Herpes Simplex Virus**

Exists in two forms HSV1 and HSV2. HSV1 is mainly involved with oral and ocular infections whereas HSV2 is involved with genital infections. Pathogenesis by HSV involves the following steps namely:

a.) Induction of cellular protein: HSV induces the expression of stress or heat shock proteins which might transform cells.

b.) Host cell shutoff process: Protein synthesis is ceased and RNA is degraded located in the same region where the genome which mediates in cell transformation is located.

c.) Stimulation of other viruses: HSV may act as co-carcinogen along with other viruses such as HPV as seen in cervical carcinogenesis.

d.) Chromosomes as targets: HSV target chromosome at restricted sites such as on chromosome 1q and on chromosomes 3, 9 and 16 and possibly cause chromosomal rearrangements and ultimately cell transformation.

Although its presence has been detected in various studies and the fact that it could transform some animal cells to a malignant phenotype in vitro, still its carcinogenic activity is unknown.\textsuperscript{(4)}

HSV can be detected by PCR/DNA sequencing, immunohistochemical detection of HSY-2 protein, IgsA and IgM antibodies against HSV.\textsuperscript{(4)}

**Epstein-Barr virus**

EBV is known to cause nasopharyngeal carcinoma, Burkitt’s lymphoma, post-transplant lymphoma and gastric carcinoma. It is believed that EBV encodes viral proteins that have transforming potential.

Several epidemiological studies done in finding the role of EBV in HNSCC have been successful in identifying EBV DNA or EBV-encoded small messenger RNA either through PCR or in situ hybridization.\textsuperscript{(6)}

**4.) Genetic and Familial Factors**

Family history possibly could be a risk factor as there have been cases reported in some patients of Head and neck squamous cell carcinoma (HNSCC) where the ability to repair DNA damage is defective.\textsuperscript{(5)} Villaret et al using cDNA assay identified genes such as keratin 17 and 19, laminin-5, connexin-26 and VEGF which were differentially expressed in HNSCC cases in comparison with normal tissue.\textsuperscript{(8)}

**5.) Immune Deficiency**

Transplant recipient undergoing immunosuppressive therapy developing OSCC of the lip has been seen to occur in individuals.\textsuperscript{(5)} However, similar defective response as seen in HIV individuals developing oral cancer like Kaposi sarcoma caused due to HHV-8 and Non-Hodgkins B-cell lymphoma due to EBV has not been able to be involved in the causation of OSCC.

**Conclusion**

In the light of evidence of an absence of traditional factors in significant proportion of younger patients and the relatively short time span for these behaviour to exert a detrimental effect, it is now of importance to examine and investigate other potential risk factors such as chronic mechanical trauma, diet and nutrition, previous viral infections, familial episodes of cancer. These investigations may prove to be valuable in future for an insight of the risk factors other than the commonly known risk factors for oral squamous cell carcinoma.
References


Knowledge, awareness and compliance among dental professionals regarding percutaneous exposure incidents as occupational hazard

Shwethashri R. Permi¹, Rahul Bhandary² & Biju Thomas³

¹Post Graduate, ²Professor, ³Professor & HOD, Department of Periodontics, A.B. Shetty Memorial Institute of Dental Sciences, Nitte University, Mangaluru, Karnataka, India.

Abstract

Percutaneous injuries constitute one of the most common occupational health hazards in healthcare profession. Dental professionals are at more risk of acquiring these injuries due to their limited and restricted working area in mouth. This was a cross-sectional study done among dental professionals in Mangaluru, Dakshina Kannada, Karnataka state India to access Knowledge awareness and compliance among dental professionals regarding percutaneous exposure incidents. This study concludes that Dental professionals are at a high risk of occupational disease due to accidental exposure to infected blood and body fluids. For which appropriate measures not taken after one such exposure. There is a need of clearing the present misconceptions through educational training programs early in the study period and providing facilities for reporting, documenting, supportive and proper guidelines regarding percutaneous injuries in work place for healthy community.

Keywords: Percutaneous exposure, Body fluids contamination, post exposure prophylaxis

Introduction

Percutaneous exposure incident (PEI) is a very broad term that includes needle stick and sharps injuries, as well as cutaneous and mucous exposures to blood and serum. From an occupational point, PEI represents the most common route for transmission of blood-borne infections from patients to dentist and supporting dental staff.

During dental procedures it is known that saliva becomes contaminated with blood. Even if blood is not visible, it is still likely that very small quantities of blood are present, but high risk for transmission of HBV, HCV, or HIV is highly uncommon. Even though there is small transmission risk, dentist should be cautious to any occupational exposure to saliva in dental settings, regardless of clear visible blood. However, the transmission risk is influenced by the type and number of microorganisms present in the blood, presence of infected visible blood on the needle, depth of the injury site and size and type of needle used, scalpel used for incident.

Efforts to prevent percutaneous injuries and other occupational exposures to blood and other body fluids have resulted in a growing number of initiatives to ensure safe working conditions in health care settings. CDC’s Health care Safety Challenge and Healthy People 2010 objectives call for the elimination or prevention of needle stick injuries among Health Care Professionals.

All patients should be considered to pose a potentially high risk of infection also, all standard recommended precautionary measures should be followed at all times. An effective and multifaceted management protocol must be prepared for prevention and management of percutaneous injuries in healthcare setup. After an occupational exposure, the healthcare provider should be aware about the degree of risk associated with exposure, percutaneous injuries pose a greater risk than splashes,
and those from hollow-bore needles. Hence this study was designed to assess the compliance and knowledge among dental professionals regarding percutaneous injuries which can pose as occupational threat.

**Objective**
To assess knowledge, awareness and compliance among dental professionals regarding percutaneous exposure incidents as occupational hazard

**Materials and methods**
A cross-sectional questionnaire study was conducted among 500 dental professionals. Who voluntarily participated in the study. The subjects were fully informed, written consent was obtained and anonymity of the participants was maintained throughout the study. Institutional ethical clearance was obtained. Data collected was based on structured questionnaire distributed among the dental professionals, the questionnaire included a full range of response options designed to identify the professional’s knowledge and compliance regarding universal precautions in the health care sector.

**Results**
A total of 500 respondents completed the questionnaire, of these students 66.67% were female and 33.33% were male. Mean age of total respondents was 20.66 years (males, 21.14 years; females, 20.18 years), of 500 respondents 93.4% were aware of percutaneous injuries and 48.4% respondents have experienced, 73.6% have experienced at least once during their study period or during practice 77.6% have not reported about injuries to institutional board nor regional centres, as depicted in Table I

Table II depicts various instruments through which respondents experienced injuries of which 43.6% were due to injection needle, 52.2% during recapping of needle and followed by burs 19.6% these injuries can be prevented by certain precautionary measures followed during procedure. Respondents attitude regarding disposal of these needle were poor as 19.8% disposed in dustbin.

Table III depicts knowledge regarding management after percutaneous injuries of them 31% believed in promoting active bleeding at site of injury and 27.2% respondents believed in wiping with anti-infective agents this knowledge of management is poor among professionals in managing of one such injuries experienced by them which has to be emphasised. 82.6% respondents were aware of blood born transmission of disease which included HIV, Hepatitis B, Hepatitis C.

Table IV depicts knowledge regarding immunization of Hepatitis B 92.2% respondents are immunised and 0.6% were not aware of it, 64% of them have not checked their anti Hbs titre and 21.8% of the respondents are not aware of anti Hbs, but 79.2% of them consider its essential to evaluate anti Hbs antibody titre regularly and immunize themselves accordingly.

Table V depicts knowledge and awareness of post exposure prophylaxis employed in case of accidental percutaneous injuries 66% of respondents were aware of group of drugs administered in PEP protocol. 35.4% believed it should be initiated within half an hour after exposure.

Table VI depicts compliance regarding percutaneous injuries 29.8% practised universal precautions depending upon medical risk before treating any patients. 96.4% respondent showed positive attitude regarding immunization protocols should be stressed on dental professionals during study period or continuing education programmes for healthy dental fraternity.

**Discussion**
Occupational disease burden is increasing at an unprecedented rate. Proportionate training of human resources in occupational health and safety has not taken place at same pace. The dental fraternity has systematically ignored the importance of occupational health and safety and disaster management in teaching, training and epidemiological research. In 1985, in order to increase awareness among health care workers of the dangers of sharp injuries and other types of disease transmission, the Centres for Disease Control (CDC) and the Occupational Safety and Health Administration (OSHA) in the United
Table I: statistical results regarding awareness of percutaneous injuries

<table>
<thead>
<tr>
<th>Question</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know what is percutaneous injuries are</td>
<td>Yes: 467</td>
<td>93.4</td>
</tr>
<tr>
<td></td>
<td>No: 33</td>
<td>6.6</td>
</tr>
<tr>
<td>Have you ever experienced percutaneous injuries during study period or during practice</td>
<td>Yes: 242</td>
<td>48.4</td>
</tr>
<tr>
<td></td>
<td>No: 258</td>
<td>51.6</td>
</tr>
<tr>
<td>Number of injuries experienced in one year period</td>
<td>0-1: 368</td>
<td>73.6</td>
</tr>
<tr>
<td></td>
<td>2-5: 129</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>6 and above: 3</td>
<td>.6</td>
</tr>
<tr>
<td>Have you reported to concerned authorities regarding percutaneous injuries in your institution or regional centres</td>
<td>Yes: 112</td>
<td>22.4</td>
</tr>
<tr>
<td></td>
<td>No: 388</td>
<td>77.6</td>
</tr>
</tbody>
</table>

Table II: Statistical results regarding injuries experienced

<table>
<thead>
<tr>
<th>Percutaneous exposures using what type of devices</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scalers</td>
<td>63</td>
<td>12.6</td>
</tr>
<tr>
<td>Injection needles</td>
<td>218</td>
<td>43.6</td>
</tr>
<tr>
<td>Burs</td>
<td>98</td>
<td>19.6</td>
</tr>
<tr>
<td>Scalpel blade</td>
<td>26</td>
<td>5.2</td>
</tr>
<tr>
<td>Elevators</td>
<td>18</td>
<td>3.6</td>
</tr>
<tr>
<td>Soiled gloves</td>
<td>3</td>
<td>.6</td>
</tr>
<tr>
<td>Curettes</td>
<td>74</td>
<td>14.8</td>
</tr>
<tr>
<td>Timing of injury when using disposable injections</td>
<td>188</td>
<td>37.6</td>
</tr>
<tr>
<td>During injecting</td>
<td>261</td>
<td>52.2</td>
</tr>
<tr>
<td>During recapping</td>
<td>51</td>
<td>10.2</td>
</tr>
<tr>
<td>Correct route of disposal of needles and other sharps</td>
<td>Dispose in puncture resistant containers: 172</td>
<td>34.4</td>
</tr>
<tr>
<td></td>
<td>Bend the sharps and put in dustbin: 99</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>Destroy in sharp destroyer containers: 229</td>
<td>45.8</td>
</tr>
</tbody>
</table>

Table III: knowledge based evaluation regarding percutaneous injuries

<table>
<thead>
<tr>
<th>Precautions to be taken after accidental exposure</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote active bleeding at site of injury</td>
<td>155</td>
<td>31.0</td>
</tr>
<tr>
<td>Wash in running water and detergent</td>
<td>102</td>
<td>20.4</td>
</tr>
<tr>
<td>Wipe with sprit or any other anti infective agents</td>
<td>136</td>
<td>27.2</td>
</tr>
<tr>
<td>Taking post exposure prophylaxis immediately after initial scrubbing</td>
<td>107</td>
<td>21.4</td>
</tr>
<tr>
<td>Occupational blood borne diseases transmitted through accidental exposure</td>
<td>Hiv: 29</td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td>Hepatitis b: 55</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>Hepatitis c: 3</td>
<td>.6</td>
</tr>
<tr>
<td></td>
<td>All the above: 413</td>
<td>82.6</td>
</tr>
</tbody>
</table>

Table IV: knowledge regarding immunization

<table>
<thead>
<tr>
<th>Are you immunized for hepatitis b vaccination</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>461</td>
<td>92.2</td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>7.2</td>
</tr>
<tr>
<td>Not aware of the immunization</td>
<td>3</td>
<td>.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Your anti hbs antibody titer is in what range</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected range</td>
<td>43</td>
<td>8.6</td>
</tr>
<tr>
<td>Unprotected range</td>
<td>28</td>
<td>5.6</td>
</tr>
<tr>
<td>Not checked</td>
<td>320</td>
<td>64.0</td>
</tr>
<tr>
<td>Not aware</td>
<td>109</td>
<td>21.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you think its essential to evaluate anti hbs antibody titer regularly</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>396</td>
<td>79.2</td>
</tr>
<tr>
<td>No</td>
<td>104</td>
<td>20.8</td>
</tr>
</tbody>
</table>
Table V: Awareness regarding post exposures measures

<table>
<thead>
<tr>
<th>Are you aware of post exposure prophylaxis pep</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>312</td>
<td>62.4</td>
</tr>
<tr>
<td>No</td>
<td>188</td>
<td>37.6</td>
</tr>
</tbody>
</table>

Pep protocol employs which group of drugs

<table>
<thead>
<tr>
<th></th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti microbial</td>
<td>96</td>
<td>19.2</td>
</tr>
<tr>
<td>Anti retro viral</td>
<td>330</td>
<td>66.0</td>
</tr>
<tr>
<td>Anti fungal</td>
<td>20</td>
<td>4.0</td>
</tr>
<tr>
<td>Immunosuppressant's</td>
<td>54</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Chemoprophylaxis following percutaneous injury should commence

<table>
<thead>
<tr>
<th></th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within half an hour</td>
<td>177</td>
<td>35.4</td>
</tr>
<tr>
<td>Within one hour</td>
<td>162</td>
<td>32.4</td>
</tr>
<tr>
<td>Within 24 hours</td>
<td>161</td>
<td>32.2</td>
</tr>
</tbody>
</table>


Table VI: Compliance regarding percutaneous injuries

<table>
<thead>
<tr>
<th>Do you practice all universal precautions before treating any patients</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>328</td>
<td>65.6</td>
</tr>
<tr>
<td>No</td>
<td>23</td>
<td>4.6</td>
</tr>
<tr>
<td>Depends on medical risk of patient</td>
<td>149</td>
<td>29.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you think compliance regarding immunization protocols should be stressed on dental professionals</th>
<th>Frequency(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>482</td>
<td>96.4</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>3.6</td>
</tr>
</tbody>
</table>

States introduced the “Universal Precaution Guidelines,” which have become the worldwide standards in both hospital and community care settings.

The field of dentistry has responded to the challenge of the frequent needle stick injuries and other sharps with more revolutionary engineering technologic solutions, thus eliminating injuries taking place either during re sheathing or during disposal of the used needle with the introduction of safety dental syringes and appropriate use of sharp instruments with safety measures. In our study 52.2% experienced injuries during recapping needles this incidence is slightly higher than that found in a study by Norsayani et al. The influence of under reporting percutaneous injuries has been demonstrated in study done by chaco et al. showed that 23.7% respondents never reported the incident of injury but in our study its 77.6% which is high.

Attitude regarding needle disposal in our study 19.8% threw in dustbin, others have reported in their study that 12.5% of respondents threw needles directly into dustbin, correct disposal of needles and sharps should be emphasised in practice. regarding awareness of managing percutaneous injuries in our study 31% believed in promoting active bleeding at site of injury whereas, others reported 26% respondents would promote active bleeding at site of injury.

The CDC recommends testing for antibody after completion of three injections of HBV vaccine, and if negative, gives a second three-dose vaccine and test again for anti-HBsAg antibodies. If there is no antibody response, no further vaccination is recommended. If an employee has a blood exposure to a patient known or suspected to be at high risk of HBs Ag sero- positivity, he should be given HBIGx2 (one month apart) or HBIG and initiate revaccination. Many respondents even though are vaccinated, the sero conversion status after vaccination is not assessed in them timely, as reported by Barone et al.

Our study revealed that knowledge, awareness and compliance about the risks associated with percutaneous injuries and use of preventive measures was inadequate. Guidelines should be formulated and it should outline precautions to be taken when dealing with blood and body fluids. It also contains reporting procedures and management of all percutaneous injuries. Lectures, CDE programme on hazards, prevention and post-exposure prophylaxis to dental fraternity should be conducted regularly, there is a need for more emphasis on creating awareness on these issues. An effective occupational
health and safety program should be emphasised that includes immunization, PEP and dental surveillance.

Conclusion
All dental professionals should undergo a comprehensive Training program regarding awareness of percutaneous injuries, that describes procedures for identifying, screening and, when appropriate, adopting safety devices, mechanisms for reporting and providing medical help for individuals and a system for training them to practice in safe work place and the proper use of safety devices for self, patient protection and for well being of community.

References
Substance abuse and practices and their consequences among adolescents and young adults in Mangalore

Alka Prakash¹, Vidya B², Wan Nur Suhailah³, Anjali Mohanan¹, Ravi³, Rashmi Kundapur³ & Sanjeev Badiger⁴

¹MBBS Students, ²Medico Social Worker, ³Professor, ⁴Professor, Department of Community Medicine, K. S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India.

Abstract

Introduction: Substance abuse is the recent trend among college students. Studies conducted in India shows clear indications of increasing prevalence of substance abuse among adolescents.

Aims and Objectives: To assess the practice prevalence and consequences of drug abuse among adolescent students.

Materials and Method: This Institution based cross-sectional study conducted in different schools and colleges of Mangalore. Institutions were randomly picked with pen drop method and 5 institution students were selected as study subjects. Totally 487 students between institutions were selected, the age group of 15-25 years were included in the study. The data was collected by means of answering a pretested validated questionnaire with anonymity.

Results: According to our study the results showed that 8.60% have tried some substance of abuse such as marijuana (5.51%), LSD (1.10%), cocaine (1.32%) and others (1.76%). Among the Substance users, 1.54% used it regularly, 1.76% occasionally and 2.20% only once. 33.03% said it has affected their daily activities and academics 21.05% had picked up a quarrel with friends, family or detained by police.

Conclusion: Caffeine consumption in the form coffee is quite common amongst the students as a habit. Marijuana is the most popular drug among the small fraction of students who have tried drugs. Most of them tried it first in college, mainly being influenced by peers.

Keywords: Substance abuse, adolescents, caffeine use

Introduction

The abuse of alcohol and illicit and prescription drugs continues to be a major health problem internationally. The United Nations Office on Drugs and Crime (UNODC) reports that approximately 5 per cent of the world’s population used an illicit drug in 2010 and 27 million people, or 0.6 per cent of the world’s adult population, can be classified as problem drug users. It is estimated that heroin, cocaine and other drugs are responsible for 0.1 to 0.2 million deaths per year. In addition to causing death, substance abuse is also responsible for significant morbidity and the treatment of drug addiction creates a tremendous burden on society.¹

Existing studies have found a high correlation between adolescent abuse and becoming a problem drug user in adulthood;¹ therefore, it can be inferred that many problem drug users start abusing drugs at an early age. Additionally, accidental and intentional fatalities that are associated with drug and alcohol use represent one of the leading preventable causes of death for the 15 to 24-year-old population. Alcohol and other drug use in the adolescent population carries a high risk for school underachievement, delinquency, teenage pregnancy, and depression.¹ Drug dependence is described as a state, psychic and sometimes also physical, resulting from the interaction between a living organism and a drug, characterize by behavioral and other responses that always include a compulsion to take a drug on a continuous or
periodic basis. The intention of this study was to estimate the prevalence of the problem status among the college going young adults and the knowledge about the de-addiction. The study was conducted with the objective to study the practices and consequences of substance abuse among adolescents and young adults.

Material Methods

The research approach adopted for the study was a simple descriptive design to assess the practice and consequences among adolescent with regards to substance abuse. The substance abuse definition of WHO includes hazardous use of psychoactive substances, including alcohol and illicit drugs - various drugs including illicit drugs, alcohol, tobacco, caffeine come under this category. We in this study have not considered alcohol and tobacco as they were part of other study. So we included all drugs including illicit drugs and caffeine use and abuse in our study. Institution based cross-sectional study conducted in different colleges of Mangalore. Institutions were randomly picked with pen drop method and 5 institution students were selected as study subjects. Taking 20% practice (by pilot study) as baseline the sample size was calculated with 80% power of the study and 95% confidence interval, the sample size was calculated to be 400 with relative precision being 20% (power of study 80%). Considering 20% non-response, we considered to interview 480 students. Universal sampling method was for the selection of students. Our total sample was 487. A questionnaire with questions on the practices and consequences of drug abuse was prepared. Face validation and linguistic validation of the questionnaire was done. Reliability was checked for the questionnaire. The questionnaire was to be filled anonymously after getting an informed verbal consent. The students were allowed to give back the questionnaire empty, or they could half fill it. The questionnaire was asked to take home get parents consent and fill it. Institutional ethical clearance was obtained. Sufficient time was given to the students to complete the questionnaire. Only students willing to participate with consent given were included. The data obtained were compiled in Microsoft excel and the results were tabulated.

Results

Among the students included in our study 67.55% consumed tea, 39.42% consumed coffee, 29.77% consumed aerated drinks. When we asked about reason for consuming caffeine 45.58% said because of habit and 12.73% due to stress (table: 1). 40.02% of students intended to reduce consumption of caffeine. But 36.75% refused to reduce the consumption of caffeine. Proportion of adolescent students intending to reduce caffeine consumption was different in different institutions in Mangalore. (Shown in Fig 2).

Among our subjects 8.41% have tried some substance of abuse such as marijuana (12.19%), LSD (2.43%), cocaine (12.19%) and others (48.78%) (Fig no: 1). When asked about the age at which they had first tried, 48.78% said in college (after 18 years) but 12.19% in secondary schools (09-12years) (Table no :3). Of the above 7.31% of subjects were influenced by friends and 9.75% used it to try something new and 7.31% was due to stress.

Among the users, 21.95% use it regularly. Majority of the users afford these by means of their pocket money (56.09%), loans from others (12.19%) and few of them also resorted to stealing (14.63%).

Among the sample 31.7% said it had affected their daily activities and academics. 12.19% had picked up a quarrel with friends, family or detained by police.

Table 1 : Reason for consuming beverages containing caffeine among adolescents  

<table>
<thead>
<tr>
<th>Reasons</th>
<th>No. of students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>62</td>
<td>12.73</td>
</tr>
<tr>
<td>Habit</td>
<td>226</td>
<td>45.58</td>
</tr>
<tr>
<td>Socializing with peers</td>
<td>39</td>
<td>8</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
<td>6.57</td>
</tr>
<tr>
<td>Not answered</td>
<td>135</td>
<td>27.72</td>
</tr>
</tbody>
</table>
Table 2: Showing the regularity in substance of abuse consumption (n=41)

<table>
<thead>
<tr>
<th>Regularity</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULARLY</td>
<td>9</td>
<td>21.95%</td>
</tr>
<tr>
<td>OCCASIONALLY</td>
<td>8</td>
<td>19.51%</td>
</tr>
<tr>
<td>RARELY</td>
<td>7</td>
<td>17.07%</td>
</tr>
<tr>
<td>ONLY ONCE</td>
<td>8</td>
<td>19.51%</td>
</tr>
<tr>
<td>NOT ANSWERED</td>
<td>9</td>
<td>21.95%</td>
</tr>
</tbody>
</table>

Table 3: Showing percentage of adolescents practicing substance of abuse with age of onset (n=41)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECONDARY (9-12 years)</td>
<td>5</td>
<td>12.19%</td>
</tr>
<tr>
<td>HIGH SCHOOL (13-15 years)</td>
<td>1</td>
<td>2.43%</td>
</tr>
<tr>
<td>PUC (16-17 years)</td>
<td>5</td>
<td>12.19%</td>
</tr>
<tr>
<td>COLLEGE (18-25 years)</td>
<td>20</td>
<td>48.78%</td>
</tr>
<tr>
<td>NOT ANSWERED</td>
<td>10</td>
<td>24.39%</td>
</tr>
</tbody>
</table>

Discussion

Caffeine is a bitter substance found in coffee, tea, soft drinks, cola, nuts, and medicines. It has many effects on the body’s metabolism including stimulating central nervous system. This can make you more alert and give you boost of energy. For most people, the amount of caffeine in 2-4 cups of coffee a day is not harmful. However, too much of caffeine can cause problems. According to our study 12.58% consume caffeine due to stress, 44.37% as a habit, 7.50% when socializing with peers and other reasons 3.97%. A research done by the University of Puerto Rico on their students in the year 2013 showed that 54% consumed caffeine to stay awake, 18% as a part of their routine, other reasons – 19%, for concentration 12% and as meal substitutes 8%. The research showed that there was increase in the consumption of aerated drinks (65.4%) and coffee (55%) in account of stress. This tells us that in our study majority of the students consume it as a habit and the association of caffeine consumption and stress is less whereas in University of Puerto Rico, the association of caffeine consumption and stress is of great significance.

Whatever the reason maybe, with repetitive use, physical dependence or addiction may occur. As caffeine is a psychoactive drug, it is often regulated. In the United States, FDA restricts beverages to containing less than 0.02% caffeine; it would be beneficial if such policies were to be implemented in developing countries as well.

Substance abuse is a patterned use of a substance in which the user consumes the substance in amounts or with methods which are harmful to themselves or others. The exact cause of substance misuse is impossible because there is not just one direct cause. However substance abuse and addiction is known to run in families. In the present study use of substances as well as distribution among the students were comparable to the finding of studies of other authors, where we noted both similar and dissimilar results with that of other studies. 0.8% adolescents gave the history of their initiation to abuse substances started during their secondary schooling. Most of them started during their college time that is about 4.8%. 1.10% started from PUC & 0.2% started from high school. Poor decision-making and impulsive behaviour in the teenage years can then have lasting effects. Teens that start abusing alcohol or drugs at an early age are at much greater risk of developing an addiction later in life compared to those who misuse drugs later. In our study 5.51% of students were using marijuana, 1.10% were using...
LSD, 1.32% were using cocaine & 1.76% were using other substances. Some people are able to use recreational or prescription drugs without experiencing negative consequences or addiction. For many others, substance use can cause problems at work, home, school & in relationships. Many, try drugs for the first time out of curiosity, to have good time, because friends are doing it, an effort to improve athletic performance or ease another problems like stress, anxiety, depression etc. Use does not automatically lead to abuse and there is no specific level at which drug moves from casual to problematic. It varies with individual. Drug abuse & addiction is less about the amount of substance consumed or the frequency and more to do with the consequences of drug use. Parents need to be aware of the increased risk for teens, and the factors that increase risk. Avoidance of drugs and alcohol at an early age, and friends who use them, is crucial to not becoming an addict.

Limitations
This study do not have representative sample from all colleges and all the questions were self administered so final truth being unknown.

Conclusion
Caffeine consumption in the form coffee is quite common amongst the students as a habit. Marijuana is the most popular drug among the small fraction of students who have tried drugs. Most of them tried it first in college, mainly being influenced by peers. The study shows that it has some affect on their daily activities and academics mainly because almost all of them have tried it at least once

Acknowledgement
We thank the head of the department, Dr. Uday Kiran Nalam and all the staff of Community Medicine for their immense support during the study.

References
3. Josue L Rios, MNSN: Jesmari Betancourt, MHSN:Ideliz Pagan- Caffeinated-beverage Consumption and its association with Socio-demographic Characteristics and Stress in First and Second Year students at the University of Puerto Rico Medical Sciences Campus (UPR-MSC); PRHSJ Vol .32 No.2. June ,2013
A cross sectional study on community prevalence and treatment practice of hypertension with household awareness about it in semi urban Mangalore - A pilot study

Navya N.¹, Rashmi Kundapur² & N. Udaya Kiran³
¹Postgraduate, ²Professor, ³Professor & HOD, Department of Community Medicine
K.S. Hegde Medical Academy, Nitte University, Mangalore

Correspondence
Navya N.
Post Graduate, Department of Community Medicine, K.S. Hegde Medical Academy,
Nitte University, Mangalore - 575 018, Karnataka, India.
E-mail : navya1211@yahoo.com

Abstract
Introduction: Hypertension, also known as high or raised blood pressure, is a global public health issue and is the major contributory factor for the burden of heart disease, stroke, renal failure, premature mortality and morbidity worldwide.

Objectives: 1. To determine the community prevalence of hypertension.
2. To Assess the Household Awareness Of hypertension.
3. To study the pattern and regularity of treatment in hypertensives.

Methodology: A cross sectional study was carried out in 40 Households of Grama-Kshema Project in Kuthar and Manjanady villages (semi urban ) which belong to the field practice area of K.S. Hegde Medical Academy, Mangalore. A structured Questionnaire was used to collect data. Questions on awareness were scored and analyzed.

Results: The community prevalence of hypertension among the households surveyed was 9.6 percent out of which 12.5 % were female and 5.9 % were male. Among them 46.7% were in the age group 51-70 years, 40% in the age group 31-50 years and 13.3% in the age group above 70 years.40 % of hypertensive visit their doctor on monthly basis.66.7% of the hypertensives visit private dispensary for their treatment and follow up. 93.3% are on antihypertensives of which 33.3 % use calcium channel blockers. Awareness scoring showed that 40% had poor score and 37.5 % average score.

Conclusions: In the present study the prevalence of hypertension was found to be low. Among those diagnosed of hypertension, majority of them were females. Most of the hypertensive’s visit private dispensaries on monthly basis. Awareness of Hypertension among the households was poor.

Key words: Hypertension, Awareness, Prevalence

Introduction
Hypertension, also known as high or raised blood pressure, is a global public health issue. It is one of the major contributory factor to the burden of heart disease, stroke, renal failure and premature mortality and disability. The health systems being weak in low and middle income countries results in affecting the population disproportionately. In 2008, worldwide, approximately 40% of adults aged 25 and above had been diagnosed with hypertension.¹ Prevalence of hypertension has increased in both urban and rural subjects and presently is 25% in urban adults and 10-15% among rural adults.² The size of the elderly segment of the population is increasing in developing countries as the latter undergo a demographic transition, with a concomitant increase in life expectancy. It is estimated that majority of the elderly people worldwide will reside in developing countries by the year 2025. Developing countries are thus likely to face an enormous burden of chronic non-communicable Diseases like hypertension in the near future.³ Early detection of hypertension minimizes the risk of heart attack, cardiac failure, stroke and renal
failure. As with other non-communicable diseases, self-care can facilitate early detection of hypertension, adherence to medication and healthy behaviours, better control and awareness of the importance of seeking medical advice when necessary. Hence there is a need to assess the present burden of the disease as well as the awareness regarding the same among the general population.

Hence we have undertaken this study with the following objectives:
1. To determine the community prevalence of hypertension.
2. To Assess the Household Awareness Of hypertension.
3. To study the pattern and regularity of treatment in hypertensive's.

Materials and Methods
This is a cross sectional study which was carried out in 40 Households of Kuthar and Manjanady villages (semi urban) in Mangalore. Kuthar and Manjanady villages belong to the field practice area of K.S. Hegde Medical Academy, Mangalore. The households selected for this pilot study belong to the GramaKshema project.

The project involves allotment of 40 needy families in Kuthar and Manjanady villages to 1st year MBBS students, where a group of 3 students are allotted one family each and the progress of the project is monitored by a staff and 2 postgraduate students. They make regular visits to the family and obtain information on their health status and provide continuous care till they complete their MBBS course. These families are covered under the KSHEMA health card and necessary support is given by K.S.Hegde Charitable hospital.

A structured questionnaire was used to gather information regarding prevalence of diagnosed hypertensives in the households, their treatment seeking behavior, treatment patterns and lifestyle modifications. The questionnaire also had 12 questions to assess the awareness regarding hypertension among the households.

The questions were categorized into 2 categories based on priority. There were 8 high priority questions and 4 low priority ones. Each correct answer for question belonging to high priority category was awarded 1.5 marks, for every wrong answer 1.5 marks was deducted and for those who gave answer as don't know were awarded 0 mark. Low priority questions were awarded +1, -1 and 0 mark each. The total score was calculated which ranged between 0 to 28. Likert scale was used to categorize the awareness scoring.

Data was entered in MS excel and statistical analysis was done using SPSS version 16. Frequencies and percentages were calculated. Association between hypertension and gender was calculated using Chi square analysis. Mann whitney test was used to check association between gender and awareness scoring, Kruskal- wallis H test used for age groups and awareness scoring.

Results
Our study showed that out of the 156 people surveyed hypertension had been diagnosed in 15 of them, thereby giving the community prevalence rate of 9.6% (Fig 1). The duration of hypertension was 0-5 years in 40%, 6-10 years in 33.3%, 11-15 years in 20% and more than 16 years in 6.7% of the hypertensive population (Table3).

Hypertension was observed in 5.9% of males and 12.5% of females. There was no statistical difference in the prevalence of hypertension between males and females. Among the general population 46.7% of people in age group 51-70 years, 40% in the age group 31-50 years and 13.3% in the age group above 70 years had hypertension (Table 2). Among those diagnosed with hypertension 26.7% are in the age group of 41-50 years, 26.7% in age group of 61-70 years, 20% in age group of 51-60 years, 13.3% in the age group of 30-40 years and more than 71 years each.

93.3% of those diagnosed of hypertension are on anti-hypertensives and 6.7% are not on any medication. 33.3% are on calcium channel blockers, 20% on beta blockers, 13.3% on ACE inhibitors, 6.7% on angiotensin receptor blockers, 6.7% on Calcium channel blockers + beta blockers, 6.7% on
Calcium channel blockers + angiotensin receptor blockers, 6.7% on others and no treatment (Table 3).

Complications due to hypertension were seen in 6.67% of the hypertensives. Ischemic heart disease was the common complication seen in this study (Table 3).

Frequency of visit to health care facilities showed that 40% visit on monthly basis, 26.7% on weekly basis, 13.3% once in 6 months and 20% visit irregularly (Table 3). In our study we found that 66.7% utilize health care facilities from private dispensaries, 26.6% from KSHEMA and 6.7% from nearby PHCs (Fig 3).

Majority of the hypertensives (73.3%) do not exercise and there was no difference in physical activity before and after diagnosis. Diet modification was reported by 53.3% of hypertensives whereas 46.7% had no modifications in their diet.

Awareness scoring showed that 40% had poor knowledge, 37% had average knowledge, 17.5% had very poor knowledge and only 5% had good knowledge regarding hypertension (Fig 4). There was no statistically significant difference in the awareness between males and females, as well as in different age groups.

**Fig. 1 : Prevalence of Hypertension (n=156)**

**Table 1:** GENDER WISE DISTRIBUTION OF HYPERTENSION (n=156)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Hypertension</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>absent</td>
<td>present</td>
</tr>
<tr>
<td>Male</td>
<td>64</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>45.4%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Female</td>
<td>77</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>54.6%</td>
<td>73.3%</td>
</tr>
<tr>
<td>Total</td>
<td>141</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Fig. 2 : Hypertensives With Diabetes Mellitus (n=1256)**

**Fig. 3 : Health care Facility Utilized (n=15)**

**Fig. 3 : Household Awareness of Hypertension (n=40)**

<table>
<thead>
<tr>
<th>Variable (n=15)</th>
<th>Categories</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage of Antihypertensives</td>
<td>Use</td>
<td>93.3%</td>
</tr>
<tr>
<td></td>
<td>Do not use</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

**Table 2 : DISTRIBUTION OF HYPERTENSION WITH RESPECT TO AGE GROUPS (n=156)**

<table>
<thead>
<tr>
<th>Hypertension</th>
<th>Age Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18-30</td>
<td>31-50</td>
</tr>
<tr>
<td>Absent</td>
<td>58</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>41.1%</td>
<td>42.6%</td>
</tr>
<tr>
<td>Present</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>0%</td>
<td>40.0%</td>
</tr>
<tr>
<td>Total</td>
<td>58</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>37.2%</td>
<td>42.3%</td>
</tr>
</tbody>
</table>
Discussion
Our study showed the community prevalence rate of hypertension to be 9.6% which was similar to a study done in Tirupathi but lower compared to other studies. This may be due to the fact that our sample size was low and our study was based on diagnosed hypertensives, as BP recordings were not taken it may have led to underestimation of prevalence of hypertension.

Hypertension was observed in 5.9% of males and 12.5% of females contrary to other studies where prevalence was higher in males compared to females. This may be due to the fact that ratio of female to male population is higher in our field practice area and also the proportion of older women is higher.

In our study 46.7% of people in age group 51-70 years, 40% in the age group 31-50 years were hypertensives which was similar to another study, whereas in the study conducted in Davangere higher prevalence of hypertensives were in the age group of over 70 years.

In our study we found that majority of hypertensives were on regular treatment which was similar to other studies, but was better than the treatment pattern in a study conducted in Davangere where it was just 32.1%. This may be due to the good literacy rate, awareness of health and presence of many medical college hospitals in the vicinity.

Majority of the hypertensives in our study use calcium channel blockers followed by beta blockers, ACE inhibitors and combination therapy was used least, when compared to a study conducted by Malhotra et al where majority of the patients used combination therapy followed by beta blockers, calcium channel blockers and ACE inhibitors. It's good to know that this study population has been prescribed anti-hypertensives as per their indications which was the problem in earlier studies. Probably the health care access being not a problem in our setting has led to the evidence based treatment.

In our study household awareness about hypertension was low which was similar to other studies which may be due to the fact that although the population is aware about the disease, they are unaware of the causation, risk factors, role of lifestyle modification and complications associated with it, as many approach private clinics for their treatment where health education is not imparted appropriately.

Conclusion
In our study the prevalence of hypertension was found to be low and awareness regarding the same was poor. Treatment pattern showed that majority of the hypertensives were on regular treatment. It was noted that most of the hypertensives do not exercise, and there was no modification in the physical activity following diagnosis although diet modifications were seen in more than half of those diagnosed of hypertension. In our study we found that majority of the hypertensive population prefer private dispensaries over other healthcare facilities available.

Limitations
In our study only diagnosed hypertensives were included and BP recordings were not taken, as a result it may have led to underestimation of the prevalence of hypertension in the community.

Recommendation
Since the awareness about hypertension was found to be
poor, there is a need for health education activities and awareness programme to be carried out in the community. These activities should emphasize on risk factors, physical activity and diet modifications.

Implications

This pilot study would add on to form a population based registry for cardiovascular diseases.

Acknowledgements

We would like to acknowledge II year MBBS students and Medicsosocial workers Mr Santhosh, Mr Ravi and Mr Harsharaj for extending their help in data collection.

References

Upper gastro intestinal foreign bodies in pediatrics patients

Venkatesh M. Annigeri¹, Bahubali D Gadgade², Rashmi V. Annigeri³ & Anil B. Halgeri⁴

¹²³Professors, ²³Assistant Professors, Department of Pediatrics, ³Department of Anaesthesiology, SDM College of Medical Sciences & Hospital, Sattur, Dharwad, Karnataka, India.

Abstract

Aim: Analyze experience with presentation, diagnosis and management of accidental ingested upper digestive tract foreign bodies in children.

Materials: A prospective study of 60 pediatric patients from July 2009 to July 2014 with history of accidental ingested upper gastrointestinal foreign bodies. All patients were studied for age, gender, complaints, duration, site of impaction, type and complications. Radiological investigations were taken according to the case. Direct laryngoscopy and Magill forceps or flexible esophagoscopy has been used for retrieval of foreign bodies.

Results: Sixty cases were analyzed age between 6 months to 13 years. Male 42 and female 18. Age group 6 months to 6 years constitutes 85%. Thirty six (60%) patients arrived to hospital within 24 hours. Difficulty in swallowing (70%) was the most frequent symptom. Most foreign bodies were coin in the upper esophagus (70%). Preexisting esophageal disease was present in 20%. Out of 60 patients twenty four (40%) FB retrieved using Magill forceps and rest with Flexible esophagoscopy (60%). Foreign bodies were successfully removed without major complication in all cases. Mucosal erosions were seen in four patients after extraction. All patients except 4 were discharged within 24 hours after the procedure.

Conclusion: Children between 6 month to 6 years is the commonest age group affected. Magill forceps with the aid of a direct laryngoscope is a safe and effective method for proximal esophageal foreign body removal. But flexible esophagoscopy remains the safest method of upper digestive tract foreign body extraction.

Keywords: Foreign body, Coin, Esophagoscopy, Magill forceps
esophagoscope has been used for retrieval of foreign bodies. All patients were fasting for not less than 4 hours. All procedures were performed as inpatients procedure under general anesthesia which was delivered via mask for Magill forceps procedure, while those undergoing oesophagoscopy had anesthesia delivered via endotracheal tube. There were no anesthesia related complications. After the procedure completion, type and site of the foreign body and state of mucosa at the site of impaction were recorded. All patients except 4 were discharged within 24 hours after the procedure. The study was approved by the institutional review board and had informed consent of all the parents.

Results
There were a total of sixty children. Out of 60 cases forty two (70%) were males and eighteen (30%) were females. Fifty one (85%) patients were aged six months to six years. Nine (15%) were more than 6 years old. (Table-1)

At presentation, the foreign bodies had been in the upper gastrointestinal fewer than 24 hr in 36 patients (60%), between 1 day and 1 week in 12 patients (20%), and from 1 week to 4 months in 6 patients (10%). In 6(10%) the duration was unknown. Fifty one (85%) patients had definitive history of FB ingestion. Predisposing esophageal disease seen in 20% of patients. Most commonly postoperative esophageal atresia seen in 6 (10%) patients and the history of caustic stricture and postoperative fundoplication present in one patient each.

The commonest presenting complaints were difficulty of swallowing occurring in forty two (70%) followed by vomiting in 30 (50.6%) patient, drooling of saliva in 12(20%) and repeated respiratory tract infections in 3(5%). Whereas twelve (20%) patients were asymptomatic. The most common FB ingested was coin recorded in 48(80%) patients, followed by metallic and food materials 12(20%). Metallic and food materials included seeds in five (8%) patients, battery in three (5%). safety pin in three (5%) and shaving blade in one patient.

Radiopaque objects were detected in fifty five (92%) patients, while the radiology investigation was negative in five (8%). Depending on the plain x rays majority of the foreign bodies were impacted in the upper 1/3 of the esophagus (just below the cricopharyngeal muscle) 70% (42 patient), and the second most common site was the lower 1/3 of esophagus 20%. While the least number 5% (5 patients) each FB were recorded in the Middle 1/3 of esophagus and stomach.

Total sixty patient have been subjected to intervention for the removal of their impacted foreign bodies. Twenty four (40%) FB were removed by direct laryngoscope and Magill forceps and thirty six (60%) patient were removed by flexible esophagoscopy. All of the cases had smooth uneventful intervention apart from two of the patients. One of them developed bleeding due to mucosal injury during extraction of a razor, in which the patient kept on nothing by mouth, i.v fluid, systemic antibiotic and monitoring clinically and radiologically. There was one patient of lower esophageal FB (tamarid seed) which was difficult to grasp, which was removed with multiple attempts. Foreign bodies were successfully removed without major complication in all cases. Significant mucosal erosions were seen in four (6%) patients after extraction all were improved with conservative treatment.

Table 1 : Age and Sex distribution of cases

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Male (n=42)</th>
<th>Female (n=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 month (n=0)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6month – 6 years(n=51)</td>
<td>36</td>
<td>15</td>
</tr>
<tr>
<td>&gt;6years (n=9)</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Discussion
The majority of foreign body ingestions occur in the pediatric population, with a peak incidence between the ages of 6 months and 6 years. (1,2) In our study also FB ingestion is common in children between 6 months to 6 years. The presence of symptoms is significantly associated with gastrointestinal FB, but the absence of symptoms does not reliably exclude the possibility of an esophageal foreign body where a patient may have a foreign body lodged in the esophagus and be completely asymptomatic, for these reason radiological studies can be beneficial in
In our study twelve (20%) were asymptomatic and fifteen percentage of patients do not have history of FB ingestion. This result is recorded in other studies and consistent with our present study (4,5).

Common signs and symptom in patients with a foreign body include dysphagia, drooling, vomiting, gagging and anorexia. Significant respiratory symptoms such as coughing, chest pain, stridor, hemoptysis and chronic upper respiratory tract infection are more common weeks or months after ingestion (6,7). In our study most of our patients presented with Dysphagia (70%), Vomiting(50%), Drooling(20%). This result is recorded in other studies and consistent with our present study (7,8).

Types of the foreign bodies ingested by the patient were versatile but the most common type was metallic objects 70% including coins, pins etc. However, all types of foreign bodies could be found in any age group, but the frequency of the type is very much age related. Coins were the most common reported foreign body.(7,8) Our series also confirmed that the most commonly retained esophageal foreign body in these infants and children.

Predisposing esophageal disease like esophageal strictures, particularly those related to esophageal atresia after surgery, were a common predisposing factor to recurrent esophageal foreign body retention in infants and children. This result is recorded in other studies and consistent with our present study (2,3). Site of foreign body impaction in the esophagus was consistent with the results of other similar studies (2,3) where the most common site was at the lower border of cricopharyngeal muscle (70%), and this is expected anatomically because the upper esophageal sphincter is the first narrowing which faces the ingested foreign body (2,3). Next common site is the middle esophagus. The site of impaction also could be influenced by preexisting esophageal pathology.

In symptomatic patients, diagnosis and treatment are usually straightforward. Because foreign bodies impacted in the upper or mid esophagus have little prospect of the management of suspected foreign body ingestions. (1)
passing spontaneously, instrumentation should be pursued immediately (9). Therefore, all patients with suspected foreign body ingestions should undergo immediate chest radiography or esophagoscopy to exclude retention, even if the child is asymptomatic. Biplane radiographs identify most true foreign objects. Radiographs can confirm the location, size, shape, and number of ingested foreign bodies and help exclude aspirated objects. However, food particles, wood, plastic, glass, and thin metal objects are not readily seen. The benefits of obtaining x-ray on a patient with known or suspected foreign body ingestion are well described. An important role of x-ray especially in radiopaque objects is that it can help to determine if there is more than one foreign body ingested. An important point to remember is that the patient still can have esophageal foreign body despite a normal x-ray and asymptomatic patient (4,5,9). In our study 80% of the patient had the positive x-ray findings.

The method of intervention used in our study was either Magill forceps procedure or flexible oesophagoscopy, similar as other studies. (9,10,11) Several different treatment options exist for impacted upper gastrointestinal FBs. These include observation, esophageal bougienage, Foley catheter extraction, and penny pincher technique, flexible and rigid esophagoscopy. (12,13,14,15) But we did not use any of them because with the long accumulating experience in our institute in adults patients with the upper gastrointestinal FBs they found that flexible esophagoscopy safer, more reliable and quick technique for removal of all types of foreign bodies with very high success rate.

Direct laryngoscopy and Magill forceps is an option to remove objects lodged at or above the cricopharyngeus. Otherwise flexible endoscopy may be performed when laryngoscopy is unsuccessful or for treatment of objects lodged below this area. The current technique is predicated on the fact that coins lodged in the upper esophagus generally are firmly, not rigidly, impacted, and they always are situated in the coronal plane. Only if coin seen clearly. If the coin is not seen, the anesthetic administration is converted from mask to endotracheal, and the coin is extracted using a flexible esophoscope. Removal with flexible endoscopes has a high success rate. Endoscopic retrieval of sharp objects may be accomplished with retrieval forceps, a retrieval net, or a polypectomy snare. Foreign body forceps, snare, or retrieval net. The risk of mucosal injury during retrieval can be minimized by orienting the object with its point trailing during extraction, by using an overtube, or by fitting the endoscope with a protector hood. We used over tube for sharp blade which present in stomach. None of our patients required surgery for the extraction of his foreign body compared to other studies where 1.66% and 2% required surgery. (15,16) May be this is because the more cases are collected the more difficult and rare cases will appear. Only four of our patient developed mucosal injury following extraction of sharp objects, all were improved with conservative treatment.

Acknowledgement

We are grateful to the Medical Director, SDM hospital Dharwad for permission to use the hospital data and records.

Conclusion

Children between 6 month to 6 years were the commonest age group affected by gastrointestinal FB impaction. Upper third of esophagus was the commonest site of foreign body impaction. Direct laryngoscopy using Magill forceps is a safe and effective method in removing upper esophageal foreign bodies minimizing the need for muscle relaxant and endotracheal intubation in selected cases. Flexible esophagoscopy remains the safest method of esophageal foreign body removal in infants and children.

References

5. Eisen GM, Baron TH, Dominitz JA. Guideline for the management of
Introduction

Some microorganisms such as *Salmonella*, *Listeria* and *Campylobacter* cause food borne diseases in human, which some control and food safety measures are not able to prevent.1 In recent years, food borne infections and intoxications have assumed significance as a health hazard.2 Food production occurs in several stages, each of which provides potential opportunities for bacterial contamination. Poultry processing plants (PPPS) are favorable environments for the survival and transmission of various commensal spoilage and potentially pathogenic bacteria throughout the human food chain.3 Epidemiological reports suggest that poultry meat is one of the major causes of human food poisoning,4 with humans often infected through consumption of contaminated foods of animal origin.5 *Staphylococcus aureus* is a very common organism capable of producing several enterotoxins (SEs) that cause intoxication symptoms of varying intensity in humans when ingested through food.
and also in the evaluation of safety and hygienic quality of chicken meat. The presence of *Escherichia coli* on the chicken carcass usually indicates a direct or indirect faecal contamination of meat. The genus *Arcobacter* has become increasingly important in recent years because its members have been considered potential emerging food and water borne pathogens. This genus is an atypical group within the epsilon subdivision of the proteobacteria because of its wide diversity of habitats and hosts. In animals, arcobacters have been implicated in abortions, mastitis, and gastrointestinal disorders but have also been recovered from asymptomatic animals. The recent increase in isolation of *Arcobacter* from clinical, food and animals sources, has led to it been classified as a serious hazard to human health by the International Commission on Microbiological Specifications for Foods.

*Arcobacter* have been detected in chicken meat much more than other bacterial organism. In developing countries, food borne illness causes human sufferings and loss of productivity and adds significantly to the cost of food production and health care. In Nigeria, unhygienic sanitary conditions of our abattoirs is a matter of concern. Since microbiological examination of meat is an important aspect of meat inspection and meat hygiene for food security, as chicken is one of the meats consumed in Osogbo and there is a dearth of information on bacterial contamination of raw chicken meat. The aim of this study was to report the prevalence of *Staphylococcus aureus*, *Escherichia coli* and *Arcobacter* species in chicken carcass sold at two major processing units in Osogbo.

**Materials and Method**

**Sample collection**

A total of 100 samples (neck skin of chicken carcasses being the site with probable highest concentration of Arcobacter) were purchased from major market and supermarket in Osogbo, Nigeria for a six month period. Clean and sterile universal bottle was used to collect the neck skin of chicken carcasses used.

**Method of isolation**

*Arcobacter*

One gram (1g) of the neck skin was inoculated directly into 9 ml of an *Arcobacter* enrichment broth containing 24 g/L of *Arcobacter* base broth (Oxoid) supplemented with cepoferazone (12 mg), amphotericin B (10 mg) and teicoplanin (8 mg) -CAT for enrichment and incubate at 37 °C in air 48 hours. And later grown on *Arcobacter* selective agar plate (containing 24 g/l *Arcobacter* broth, 12g/l Agar Technical No.3 [L13-Oxoid] for 24 hours in a micro aerophilic atmosphere for 48°C. Plate cultures were later examined for presence of bacterial colonies with morphological features similar to those already described for *Arcobacter* spp.

*Escherichia coli*

One gram of neck skin of chicken carcass was inoculated in 9 ml of peptone water and homogenized properly. A loopful of the enrichment was streaked on MacConkey agar plate using a sterile wire loop and incubated aerobically at 37 °C for 24 hours. Lactose fermenting colonies that appeared pink were later plated on Eosin Methylene Blue Agar, those that appeared as metallic sheen with further biochemical tests were confirmed positive for *Escherichia coli*.

*Staphylococcus aureus*

One gram of neck skin of chicken carcass was inoculated in 9 ml of peptone water, the sample was homogenized in a sterile blender for 2 min. The homogenate were transferred into a sterile wide mouth, screw capped jar and incubated for 6 hours at room temperature. After this pre-enrichment step, 1 ml from this homogenate were transferred into enrichment broth consisting of 10 g tryptone/L, 75 g sodium chloride (NaCl)/L, 10 g mannitol / L, and 2.5 g of yeast extract/ L. After 24 hours incubation at 37°C, 100 μL of broth were introduced into enrichment broth MHB (Mueller Hinton Broth) +6.5%NaCl and homogenized. The suspension was incubated for 16–20 hours at 37°C. One ml of the enriched broth followed by incubation for 16–20 hours at 37 °C were plated on the surface of Mannitol salt agar. The plates were examined for typical staphylococcal colonies after incubation. For confirmation, typical colonies per plate were selected and
sub-cultured on Blood agar and MRSA ID (bioMérieux) agar plates and later confirmed as *S. aureus* by colony morphology, Gram stain appearance, catalase, coagulase reactions and were also confirmed using API biomerix (France).

**Antimicrobial Susceptibility testing**

The following antibiotics discs were used for Gram negative organisms: amoxicillin (30µg), augumentin (10µg), chloramphenicol (30µg), ciprofloxacin (10µg), gentamicin (10µg), ofloxacine (10µg), pefloxacin (30µg), Trimethoprim sulhamethoxazole (30µg), sparfloxacin (10µg) and streptomycin (30µg) while ampiclox (30 g), erythromycin (10µg), pefloxacin (10µg), gentamicin (10 g), ciprofloxacin (10µg), streptomycin (30µg) and Trimethoprim sulhamethoxide (30µg) were used for Gram positive organism in antimicrobial susceptibility testing.

Antimicrobial susceptibility test was performed using the disk diffusion method and isolates categorized as susceptible and resistant were based upon interpretative criteria developed by the Clinical and Laboratory Standards Institute.16

**Results**

A total of hundred samples of chicken carcasses were collected from two major processing points in Osogbo. Twenty five chicken meat samples were from fresh market and 75 frozen chicken meat samples from processing farm. Results of isolation of bacteria from chicken carcasses in Osogbo are summarized in Table 1. Frozen chicken samples from location A was obtained from a processing farm while fresh chicken samples from location B was from the traditional market. Out of 100 necks skin samples studied, 38 (38 %) tested positive for *Arcobacter*, 38 (38 %) for *Escherichia coli* and 60 (60%) for *Staphylococcus aureus*.

Antimicrobial susceptibility testing was also performed on the isolates and the result is summarized in table 2. Ninety percent of *Arcobacter* spp isolates were susceptible to ciprofloxacin, 85% to gentamicin, and pefloxacin, 70% to chloramphenicol and 90% were resistant to amoxicillin, 85% to augmentin and 80% to streptomycin. Hundred percent of *E. coli* isolates were susceptible to ciprofloxacin, pefloxacin, 95% to gentamicin and 100% were resistant to streptomycin, 85 % resistant to amoxicillin, augmentin, while 100% of *S. aureus* isolates were susceptible to

**Table 1 :** Occurrence rates of bacterial isolates in chicken from fresh market and processing unit

<table>
<thead>
<tr>
<th>Sample isolates</th>
<th>Fresh Chicken market n=25</th>
<th>% occurrence</th>
<th>Chicken Processing unit n=75</th>
<th>% occurrence</th>
<th>f-value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arcobacter spp.</td>
<td>13</td>
<td>52</td>
<td>25</td>
<td>33.3</td>
<td>P&lt;0.05</td>
<td></td>
</tr>
<tr>
<td>E.coli</td>
<td>14</td>
<td>56</td>
<td>24</td>
<td>32</td>
<td>9.87</td>
<td>P=0.0000</td>
</tr>
<tr>
<td>S. aureus</td>
<td>21</td>
<td>84</td>
<td>39</td>
<td>53</td>
<td>P=0.003</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2 :** Antibiotics susceptibility of isolates from chicken carcasses

<table>
<thead>
<tr>
<th>Class of Antibiotics</th>
<th>Arcobacter</th>
<th>E. coli</th>
<th>S. aureus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S(%)</td>
<td>R(%)</td>
<td>S(%)</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>2 (10)</td>
<td>18 (90)</td>
<td>3 (15)</td>
</tr>
<tr>
<td>Augmentin</td>
<td>3 (15)</td>
<td>17 (85)</td>
<td>3 (15)</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>14 (70)</td>
<td>6 (30)</td>
<td>10 (50)</td>
</tr>
<tr>
<td>Ofloxacin</td>
<td>16 (80)</td>
<td>4 (20)</td>
<td>20 (100)</td>
</tr>
<tr>
<td>Sparfloxacin</td>
<td>17 (85)</td>
<td>3 (15)</td>
<td>16 (80)</td>
</tr>
<tr>
<td>Pefloxin</td>
<td>17 (85)</td>
<td>3 (15)</td>
<td>20 (100)</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>17 (85)</td>
<td>3 (15)</td>
<td>19 (95)</td>
</tr>
<tr>
<td>Streptomycin</td>
<td>4 (20)</td>
<td>16 (80)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Trimethoprim/sulphamethoxazole</td>
<td>5 (25)</td>
<td>15 (75)</td>
<td>10 (50)</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>18 (90)</td>
<td>2 (10)</td>
<td>20 (100)</td>
</tr>
<tr>
<td>Ampiclopx</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erythromycin</td>
<td></td>
<td>18 (90)</td>
<td></td>
</tr>
</tbody>
</table>

**INDEX :**

AM- Amoxicillin (30 µg),
AU - Augumentin (10 µg),
CH - Chloramphenicol (30 µg),
OFX - Ofloxacin (10 µg),
SP - Sparfloxacin (10 µg),
PEF - Pefloxacin (30 µg),
CN Gentamicin (10 µg),
S - Streptomycin (30 µg),
SXT - Trimethoprim /sulhamethoxazole (30 µg),
CPX - Ciprofloxacin (10 µg),
APX - Ampliclox (30 µg),
E - Erythromycin (10 µg),
S - Sensitive
R - Resistant.
trimethoprim sulphamethoxazole, 90% susceptible to gentamicin, 80% to streptomycin and 100% of the \(S\) aureus isolates were resistant to ampiclox. Figure 1 is a chart showing the prevalence of bacterial isolates from the two study locations.

**Discussion**

It is well documented that contamination of food with pathogens is a major public health concern worldwide.\(^1\) As a result of the relatively high frequency of contamination of poultry with pathogenic bacteria, raw poultry products are reported to be responsible for a significant number of cases of human food poisoning.\(^18\)

Poultry meats passed for human consumption in Osogbo are from two sources: fresh markets and supermarkets. Fresh markets are traditional open air markets where chickens are sold by individual vendors or farmers, and often sold and stored at ambient temperatures. These markets naturally have multiple sources of potential contamination (rodents, insects, sewage). Processing plant consist of automated machines for carcass defeathering and cutting meats in pieces where they are packaged and distributed to various supermarkets in town which typically offer controlled temperature environments and more hygienic conditions for marketing.

In this study, 75 of 100 samples were obtained from frozen chicken of which 25(33.3 %), 24 (32%), 39(52%) were positive for Arcobacter spp, \(E.\) coli and \(S.\) aureus respectively. Twenty five of 100 samples were also obtained from fresh chicken carcass processed in the traditional way in which 13(52 %) of Arcobacter spp, 14 (56%), \(E.\) coli and 21 (84 %) of \(S.\) aureus was isolated. This study also documented a more significant T-t test (\(P< 0.05\)) bacteria isolation rate from fresh chicken compare with the frozen samples. Moreover, it has been shown that fresh meat samples often yield more bacteria than frozen samples,\(^19\) it is also believed that bacteria are killed during freezing and thawing of meat,\(^20\) therefore, culturing frozen meat may dramatically reduce or change the microorganisms isolated in the laboratory.

In this study 38 % of the chicken carcasses were positive for Arcobacter species when compared to studies from other countries, it was found that the prevalence rate of Arcobacter spp in retail meat varies widely in different countries: 23 % in Japan,\(^21\) 40 % in Mexico\(^22\) and 100 % in Thailand.\(^23\) The variation in isolation rates were attributed to different isolation protocols, sample size, hygienic practices and geographical location where the study was carried out. It is also possible that the low prevalence rate (38 %) obtained from this study could be as a result of fewer antimicrobial supplement and impoverished incubating condition (candle jar) used, compared to other studies where more antimicrobial supplements and adequate microaerobic culture atmosphere for primary isolation were used.\(^24\) The rate of microbial contamination of chicken carcass with \(E.\) coli in this study was 38 %. Raw poultry meats are commonly contaminated with \(E.\) coli; this is particularly true of chicken products. Detection of \(E.\) coli in food sample is often as a result of faecal contamination.\(^11\)

The reported prevalence of \(S.\) aureus in retail meats varies widely in different countries. In the present study, 60 % of the chicken carcass samples were positive for \(S.\) aureus being the most occurring isolates. This could be a reflection of the fact that \(S.\) aureus can be introduced into chicken from several sources such as the skin of handlers,\(^25\) through the use of unsanitary procedure and equipment.

Other accompanying flora in the course of this experiment...
includes *Pseudomonas* spp., *Proteus* spp. which can be opportunistic pathogens of humans. Out of the 38 isolates of *Arcobacter* isolated from chicken samples 20 isolates were subjected to susceptibility testing. Among the 20 isolate for *Arcobacter*, 18 (90%) were found to be susceptible to ciprofloxacin which was in line with the work carried out in Belgium where both *A. butzleri* and *A. cryaerophilus* were found to be susceptible to ciprofloxacin, high resistance was found to chloramphenicol, trimethoprim/sulphamethoxazole, amoxicillin, augmentin and streptomycin. The isolate was also found to be susceptible to gentamicin, sparflaxon and ofloxacin. These antimicrobial susceptibility result obtained from this study is comparable to those of Aatabayet et al., who find out that all 39 *Arcobacter* broiler isolates were susceptible to aminoglycoside (gentamicin).

The low resistance rate to fluoroquinolones observed in this study had been reported in a previous study in which the use was suggested to be used for the treatment of severe *Arcobacter* enteritis.

A study carried out in Imo state, Nigeria, to screen for antimicrobial resistance profile of *E. coli* isolates from rural and urban chicken carcass showed that the anti-microbial resistance of the isolates against ampicillin and chloramphenicol (72–92% respectively) were very high.

The organisms were highly sensitive to other antibiotics, especially gentamicin and ciprofloxacin. This sensitivity profile is comparable with what was obtained in this study (Table 2). However, most *E. coli* isolates in this study were resistant to augmentin and amoxicillin which are the first line drugs often prescribed in patient presenting with gastrointestinal disturbance in Nigeria. The present study also revealed that *S. aureus* isolates were susceptible to ofloxacin, erythromycin, the presence of resistant strain should not be ruled out as two isolates were resistant to erythromycin and all isolates were resistant to ampicloux.

In conclusion, the bacteriological status of chicken carcass revealed contamination with *Arcobacter*, *E. coli* and *S. aureus* with varying degree of antibiotic resistance.

In order to reduce the risk represented by zoonotic agents to the consumer health, it is essential to reduce contamination of carcasses during the slaughtering processes. Therefore the maintenance of slaughter hygiene and marketing conditions to retain keeping quality is consequently of central importance in meat production.

References

17. Mead GC. Shelf-Life and Spoilage of Poultry Meat, In: Mead, G.C.


Introduction

Today Organ Transplantation is a major treatment protocol for a number of cases of end stage organ failure.[1] However organs procured by organ donation have to be available for such transplantation surgeries to take place. Organ donation and subsequent transplant not only gives the patient a new lease to life but also saves them a lot of expenses which otherwise would have been spent on procedures such as dialysis. While India ranks second in the world in organ transplant surgeries by live organ donors, its deceased organ donation rate is a dismal .08 per million populations per year. [2]

Anatomy is an important subject studied by medical students when they begin their medical career wherein teaching is based on cadaver dissection. Knowledge of anatomy is an indispensable part of the education of health care professionals for which medical students need human bodies for dissection.[3] Donation of human body to medical science is also needed for purpose of research. People have to be aware of these needs and donate their bodies after death so that future health care professionals can study them and learn.

Thus it appears that bodies for purpose of dissection as well as research and organs for organ transplantation surgeries must be available if education of medical science students

Awareness regarding body and organ donation amongst the population of an urban city in India

Vaishaly K. Bharambe¹, Rathod H.², Paranjape V. M.³, Kanaskar N.⁴, Shevade S.⁵, Survase K.⁶, Arole V.⁷, Singh Sakshi⁸, Brahmbhatt Gaurav⁹ & Alam Feroz¹⁰

¹,³ Associate Professors, ⁶,⁸ Assistant Professors, ⁷ Professor & HOD, Department of Anatomy, ⁵ Associate Professor, Department of Preventive Medicine, ⁹ Organ transplant co-ordinator, Department of Nephrology, ⁸,⁹,¹⁰ Interns, Dr. D.Y. Patil Medical College & Research Centre, Pune, India.

Correspondence
Vaishaly K. Bharambe
D-9 State Banknagar, Panchwati, Pashan Road, Pune - 411 008, Maharashtra, India.
Mobile : +91 98229 10845 E-mail : vaishalybharambe@yahoo.co.in

Abstract

Purpose : Bodies for purpose of dissection and organs for transplantation surgeries are needed for education of medical students and treatment of cases of end-stage organ failure. However deceased organ donation rate in India is very dismal. In the present study the authors assess the knowledge and attitude of the people living in an urban city in India towards organ and body donation.

Materials/Methods : A questionnaire was distributed amongst all willing patients and their relatives attending the out-patient Department at our Hospital. This was followed by an awareness session wherein the researchers discussed body and organ donation and its need in India. Information sheet was handed to all and the willing respondents were given eye and body donation forms, and donor cards.

Results : 41/65 people consented to participate. 41.5%, 31.7%, 12.2% and 12.2% had obtained knowledge regarding organ donation from newspaper, television, family members and internet respectively. 26.8% claimed that they were imparted knowledge by health care professionals. 78%, 53.7% and 19.5% were aware about eye, kidney and liver donations respectively. 17.1% were aware of body and lung donation each. Awareness of donation of other organs was found to be in the range between 4.9% to 14.6%. 43.9% were willing to be organ donors and 3 persons filled the body donation forms.

Conclusions : Newspapers, healthcare professionals could be utilized to further the awareness regarding body and organ donation. Carrying out awareness programmes will help to reach information to each individual, clarifying any myths and increasing understanding and motivation levels among

Keywords : Organ donation, body donation, awareness, donor card, donation forms
and treatment of cases of end-stage organ failure has to continue.

Alghanim in a community based study compared the knowledge and attitude towards organ donation between urban and rural populations and found that the urban populations were more likely to have information about organ donation, to report willingness to be donors and have knowledge regarding “brain-death”. He also states that providing the general public with relevant information and correcting some of the misconceptions are likely to increase the number of individuals willing to donate organs.[4]

In the present study the authors assess the knowledge and attitude of the people living in an urban city in India (Pune, Maharashtra) towards organ and body donation. The authors also discuss the issue of body and organ donation and its necessity in India with the respondents, also providing them with information sheet to take home for discussion with family members.

Methods
This study was conducted in the Out-patient Department of our Hospital after Ethical clearance. The activity was carried out in two parts. The first part consisted of studying the knowledge and awareness levels of the people attending the out-patient Department in our Hospital, while the second part consisted of discussing body and organ donation with the people and clarifying their doubts.

Part I
A specially designed self-administered questionnaire covering demographic data, knowledge and attitude of the participants was prepared by the research team. It was pilot tested on 10 random persons fulfilling the inclusion criteria, who were given a time period of 15 minutes for completion of the questionnaire wherein the respondents would indicate their responses to the questions using the categories provided in the questionnaire in privacy without any discussion with anyone. The questionnaire was thus tested for clarity of the questions as well as time period required for response. Suitable modifications were made in the questionnaire and time span provided.

All patients and their relatives accompanying them were approached to participate in the study. The methodology was explained in detail to them. The inclusion criterion for the study population was age above 18 years and exclusion criterion was those who refused to give consent. Only those consenting to participate were involved in the study. The respondents were assured that their confidentiality would be maintained and ethical principles would be followed.

The pretested questionnaire was administered to all willing patients and their relatives after obtaining their consent. The questionnaire prepared in three languages, i.e. English, Hindi and Marathi was provided to the respondent who was given a choice of language according to his / her comfort level. One of the researchers always stood by the respondents to explain any terms in the questionnaire that they had difficulty in understanding. All explanations were made without influencing the respondents. (Fig 1, 2)

Part II
After the filled questionnaire was collected back, a discussion was carried out with the respondents about need for organ donation in India in a separate area in the out-patient department. This area had posters of Body and Organ donation on the walls prepared by newly passed out interns* who had completed their final MBBS studies.(fig 2) Any queries regarding the topic of Organ and body donation (whether general or related to some questions in the questionnaire) were clarified. Body and eye donation forms were kept available for those interested in filling them. Information sheet (in Hindi, Marathi and English) containing relevant data on Organ donation was given to respondents as well as to those not willing to participate in the study. This information sheet also contained important phone numbers and addresses of local Hospitals to be contacted for eye or body donation as well as separate numbers to be contacted in case any further clarification was needed by family members at home.

Organ donor cards were handed to those who were willing
to sign the donor card. In each case, while handing over the donor card, importance of sharing this decision with family members was emphasized.

(*Interns were medical students who had just passed their final year of MBBS and were undergoing their rotational training programme)

Results

The questionnaire was completed by 41 respondents. The demographic details of the willing respondents are given in Table 1.

Table I: Demographic details of the respondents

<table>
<thead>
<tr>
<th>Persons approached</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people who consented to participate in study</td>
<td>41</td>
</tr>
<tr>
<td>Males</td>
<td>27 (65.9%)</td>
</tr>
<tr>
<td>Females</td>
<td>14 (34.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Religion</th>
<th>Hindu</th>
<th>32</th>
<th>78.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Christian</td>
<td>3</td>
<td>7.3%</td>
</tr>
<tr>
<td></td>
<td>Muslim</td>
<td>2</td>
<td>4.9%</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>4</td>
<td>9.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education</th>
<th>Below or upto std 10th</th>
<th>16</th>
<th>39%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Till std 12th</td>
<td>15</td>
<td>36.6%</td>
</tr>
<tr>
<td></td>
<td>Graduate</td>
<td>8</td>
<td>19.5%</td>
</tr>
<tr>
<td></td>
<td>Postgraduate</td>
<td>2</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

78% of the respondents were aware of the concept of Organ donation while 22% had not even heard about it. Table 2 depicts the sources from where the respondents claimed to have obtained the necessary knowledge.

Table II: Depicts the sources from where the respondents claimed to have obtained the necessary knowledge regarding organ donation

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td>32%</td>
</tr>
<tr>
<td>Television</td>
<td>20%</td>
</tr>
<tr>
<td>Family</td>
<td>6%</td>
</tr>
<tr>
<td>Internet</td>
<td>9%</td>
</tr>
<tr>
<td>Radio</td>
<td>9%</td>
</tr>
<tr>
<td>Others</td>
<td>24%</td>
</tr>
</tbody>
</table>

Note: Many respondents claimed more than one source of information

26.8% who stated the source of information as “others” have specified it to be medical professionals such as doctors, nurses and other health care workers.

39% of the respondents clearly stated that they had no idea regarding who can be an organ donor, 31.7% believed that organ donation is carried out after cardiac death, 24.4% were aware of live organ donation and only 14.6% were aware of organ donation following brain-death. Regarding knowledge of brain-death, 29.3% stated that brain-death involves loss of brain function and 31.7% felt that heart will continue to beat due to ventilator support in brain-dead individual. 7.3% only knew that brain-dead person is legally dead while 39% stated that they had no idea about brain-death.

Table 3 depicts the knowledge of the respondents regarding organs that can be donated.

Table III: Depicts the percentage of respondents with knowledge of various organs that can be donated

3 participants filled the body donation forms. 43.9% of the respondents were willing to be organ donors, 24.4% wanted to discuss the issue with family before taking the decision, 24.4% felt that they didn’t know enough to take the decision and 4.9% did not wish to be organ donors at all.

Out of those who were willing to be donors, 72.2% of the respondents were willing to donate to unknown persons, 22% wished to donate only to their own family members and 11% to a Medical College. The commonest reason for refusal to be an organ donor was “fear that the donated organs may be misused” (50%). 7% did not attempt the question.
83% of those consenting to be organ donors were followers of Hinduism while 17% were followers of Islam, Christianity and other religions. 53.7% agreed to sign the donor card but only 29.3% actually signed it.

Some of the comments of the respondents were “I will make my family aware of my will, I don’t care about what my religion says, I am not bothered. I am all for organ donation. Awareness needs to be created by constant supply of knowledge, presentations, dramas, lectures and some temple meetings will help”, “After our death at least our organs continue to live”, “Organ donation is a very good thing. Our act can make someone very happy” and “You should encourage those people who have achieved what they wanted to in life, I still have a lot to achieve, so sorry I cannot be a donor”.

Discussion

Today, in India the demand for organs for transplantation far exceeds the supply. Transplant technology and surgical methods continue to improve enhancing chances of survival and improved quality of life for the recipient. However this rapid enhancement in research pertaining to transplantation of organs has not been accompanied by a parallel increase in the availability of donor organs. There is a huge shortage of donor organs today all over the world. The success of deceased donor program in any region is dependent on the knowledge and attitude of the people residing in that region towards organ donation. [1] In the present study, authors have assessed the knowledge as well as attitude of patients and their relatives towards organ as well as body donation.

The participants in the present study were from urban region of Pune, a city in Western Maharashtra. The response to the questionnaire provided us with valuable insights into the understanding of the participants about organ and body donation.

Most of the respondents were educated till standard 10th and above. 41.5% and 31.7% of the respondents stated that newspaper and television were their sources of information regarding organ donation. The consistent role of media in spreading awareness is again emphasized by these findings which are similar to the finding reported by Bapat et al where newspaper and television were responsible for 60% of the knowledge propagation. Movius et al stress on the role of media as an effective channel for communicating health related messages to increase knowledge.[6] Internet (12.2%) is also fast immerging as an important source of knowledge dissemination. Many participants (12.2%) claimed discussion within family as a source of information. Discussion within family has an additional benefit of dissemination of knowledge to all family members participating in the discussion and also prepares the family members for decisions taken by the person signing the donor card. Decision of one such member could encourage /inspire others also to follow suit. Many respondents specifically mentioned obtaining required knowledge from health care professionals. Health care professionals are the critical links in the organ procurement process because they are the first individuals to establish relationship with the potential donors’ family. Education of health-care professionals in various aspects of organ donation is therefore a must as they in turn can propagate this knowledge at the community level.[7]

31.7% of the respondents believed that organ donation is done after cardiac death. Actually only eyes, skin and other tissues can be donated after cardiac death today in India, though more and more organs are being transplanted after cardiac death all over the world. [8,9] 24.4% of the respondents were aware of live organ donation. India is ranked 2nd in live organ donations in the world.[2] Wig et al in a study regarding awareness of brain death among people in a metro city found that awareness of the concept of brain death and its importance for organ donation was extremely low very few being aware that brain death is legal in India.[10] These findings are similar to finding in present study where only 7.3% knew that in India a brain-dead person is legally accepted as dead and 14.6% were aware of organ donation following brain-death. 29.3% stated that brain-death involves loss of brain function and 31.7% felt that heart will continue to beat due to ventilator support in a brain-dead individual but a very large
percentage i.e. 39% stated that they had no idea about brain-death. Wig et al state that discussion with the grieving relatives regarding organ donation following brain-death, is very difficult.[10] If the relative is unfamiliar with the concept of organ donation following brain death, the discussion process becomes even more challenging. Awareness among relatives about the process of brain death and related organ donation and transplantation will ease the way for the discussion process. Dolatabadi et al carried out a before-after study about brain-death and organ donation on attitude and knowledge of the participants and found that the group which underwent educational session had a significant improvement in attitude and knowledge after the training session compared to the control group.[11] Thus educational sessions could be useful in increasing awareness levels regarding brain-death and it relevance from point of view of organ donation.

In the present study maximum awareness was found regarding donation of eyes (78%), kidney (53.7%) and liver (19.5%). A 17.1% awareness was also noted regarding both lung and body donations. 7.3% respondents signed the body donation form. Awareness regarding all other organ donations ranged between 4 to 15%.

In a study carried out by Priyadarshini B et al the incidence of awareness regarding eye donation was reported to be 50%.[12] The present study reports a much higher 78%. In a similar study carried out in Hubli city of Karnataka the incidence of awareness regarding eye donation was reported to be 96%.[13] However the difference was the age of the respondents. While the average age of the respondents in the study carried out by Priyadarshini B was 55 years, the study carried out by Nekar in Hubli was an awareness study among college students aged between 16-25 years.[12,13] Thus is awareness level greater in a younger age group in India? In the present study 59% of those who were aware of eye donation were below the age of 30 years. Thylefors et al state that a large proportion of the huge burden of blindness in India is avoidable.[14] Through corneal grafting it is possible to restore vision for a sizable proportion of the corneal blind in India. The Deputy Director General of National Programme for control of Blindness (India) stated in 2014 that there are about 0.12 million corneal blind persons in India today with about 20,000 being added to this number every year. Majority of these persons are young and their sight could be restored by a corneal transplantation. There are about 45,000 to 50,000 eyes being collected by sincere efforts of Eye Banks working in Government and Non-Government sector every year. But the actual need is for 0.12 million corneas. This gap of supply versus need can be met by creating mass public awareness and to encourage people to come forward and pledge their eyes for donation after their death.[15]

22% of those respondents aware of kidney donation, were
of the opinion that a living healthy person can be a donor. Another 22% believed that the donor could be brain dead person, but 32% believed that the donor had to be cardiac dead person. The rest of the respondents, while being aware of kidney donations and transplants, professed lack of knowledge regarding the health condition of the donor. Thus it appears that though there is awareness regarding kidney donations today, there is lack of clarity as to who can donate the organ. A person who is willing to donate, but unclear about the health status of the donor, might inform his family of his will to be a kidney donor. On the event of his death, the family in good faith may call the hospital authorities informing them of the demise. However with the donor being cardiac-dead, he/she would not qualify to be a kidney donor resulting in the wishes of the said donor remaining unfulfilled and the family feeling disappointed. Such experiences can be avoided by carrying out awareness programs which explain not only the need for kidney and other organ donations, but also the details of the health status of the donor including when organ donation is contraindicated.

In the present study only 4.9% of the respondents were unwilling to be organ donors. All the others were either willing (43.9%), wanting to discuss the issue with family before taking the decision (24.4%) or felt need to know more before taking the decision (24.4%). The comments by the respondents were witness to their willingness to be donors and reasons for the same. Ability to live even after one's death and give someone immense happiness was observed to be a driving factor for organ donation. The comment regarding approaching someone who has achieved all they wish to in life for organ donation, however depicts the lack of understanding regarding organ donation which happens mostly after brain-death. In a study by Annadurai et al 12.5% were willing to be donors, 19.8% would only donate under special circumstances, 43% wanted to think about it and 16.8% would never even consider doing organ donation. [16] Thus in the present study the percentage of respondents completely unwilling to be donors was found to be lesser than the findings in the study by Annadurai et al. However in both the studies, above 50% of the respondents were in undecided state of mind.

Fear that the donated organ may be misused was the reason cited by 50% of those respondents who were unwilling to be donors. Khan et al also observed that people who could be donors, are reluctant to donate due to lack of knowledge and fear of the organ being misused.[17] They further state that adequate awareness sessions with a multi-sectoral approach i.e. through electronic media, print media, doctors, teachers and religious scholars could help in dissemination of correct knowledge and remove this fear from minds of potential donors. Morgan et al stated that Medical mistrust is the most frequently cited reason for not wanting to be a donor.[18] Medical mistrust included fear that doctors might declare death prematurely to procure organs and doubts regarding equity in organ allocation system.

At this point, the authors would like to state that out of the 65 patients approached, only 41 agreed to participate in the present study. 100% of those who refused to participate in the study, believed that consenting to participate in the study and thus signing the consent form, meant signing to be an organ donor in future. Despite explaining the consent form for the study in detail, 24 individuals refused to be part of the study for the same reason. This was a different type of medical mistrust observed in the present study compared to that observed by Morgan et al.[18]

53.7% agreed to sign the donor card but only 29.3% actually signed it. This discrepancy is difficult to explain and needs a psychological explanation.

Scope of the study is that we would like to carry out the same study in the rural population, so as to compare attitudes and knowledge levels between the rural and urban populations.

Conclusion
Donated organs transplanted into patients suffering from end stage organ failure has changed the course of many illnesses today. However the crucial factor is availability of a
donor for which there has to be awareness. The present study not only assessed the level of awareness among the people but also discussed various aspects of organ and body donation with the respondents.

The study reported that newspaper, television and healthcare workers are most effective in providing knowledge of organ and body donation to the people. It can be concluded that these could be used effectively to further the message of organ and body donation among the people.

While 78% of respondents were aware of organ and body donation, very few were aware of the necessary health status of the donor. 39% had no awareness regarding concept of brain-death.

43.9% respondents were willing to donate and about 48% were undecided. These 48% are a very large percentage of people who on effective dissemination of knowledge could be convinced to be donors. Reason for unwillingness to be a donor was “fear of misuse of donated organ by the medical personnel”. Stringent laws and open organ allotment system could remove this fear from the minds of the people to further increase the number of organ donors.

References
Role of item analysis in post validation of multiple choice questions in formative assessment of medical students

Sajitha K.¹, Harish S. Permi², Chandrika Rao³ & Kishan Prasad H.L.⁴

¹²Assistent Professors, ³⁴Associate Professors, Department of Pathology, K.S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India.

Correspondence
Sajitha K.
Assistant Professor, Department of Pathology, K.S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India.
Mobile : +91 97419 93622 E-mail : drsk29@hotmail.com

Abstract
Background: Multiple choice questions (MCQ) are used in the assessment of students in various fields. By this method of assessment it is possible to cover a wide range of topics in less amount of time. However the reliability of the test depends on the quality of the MCQ. The MCQ can be evaluated based on the Difficulty Index (DIF I), Discriminatory Index (DI) and Distracter Efficiency (DE).

Objectives: To evaluate the MCQs based on the Difficulty Index (DIF I), Discriminatory Index (DI) & Distracter Efficiency (DE) and develop a valid pool of questions.

Also to assess learner performance and discriminate between students of higher and lower abilities.

Materials and Methods: A total of 120 students were assessed based on multiple choice questions in pathology. The number of items were 20 and the number of distracters were 60. Data was entered and analyzed in MS Excel 2007 and simple proportions, mean and standard deviations were calculated.

Results: Mean and standard deviations for DIF I, DI and DE were 57.8 ± 17.4%, 0.27 ± 0.17 and 84.98 ± 20.2 % respectively. Out of the 20 items, 11 items had good level of DIF I (31 – 60%), eight (8) items were considered easy (DIF I > 61%) and one (1) item was considered difficult (DIF I ≤ 30). Mean DI in present study was 0.27 ± 0.17. Analysis of the DI showed good discrimination power in eighteen (18) of the items. Out of the 60 distractors, nine (9) were non-functional distractors (NFD) and were seen in eight items. Out of these, seven items had one NFD each and one item had two NFD.

Conclusions: The study emphasizes on the importance of use of item analysis in construction of good quality MCQs and also in the evaluation of learner performance.

Keywords: Item, Discrimination Index, Difficulty Index, Distracter learning.

Multiple choice questions (MCQ) have been used in the assessment of students in the medical field since 1999 in both departmental as well as university examinations.³ By this method of assessment it is possible to cover a wide range of topics in less amount of time. A well constructed MCQ tests the high cognitive level processes rather than recollection of memorized facts. Designing appropriate MCQ to correctly evaluate the level of knowledge of the students is a laborious task. And the reliability of the test depends on the quality of the MCQ.

One of the tools used in evaluation of a test process is an item analysis. The item analysis provides information about the reliability and validity of test items and learner
performance. It serves two purposes. It helps to identify defective test items and secondly, to precisely find the learning materials that the students have and have not mastered, particularly what skills they lack and what material still causes them difficulty. The MCQ can be evaluated based on the Difficulty Index (DIF I), Discriminatory Index (DI) and Distracter Efficiency (DE). 

Hence, this study was conducted in our department of pathology to assess and validate the MCQ for second year students. And for assessment of students without being influenced by the performance of other students.

Objectives
1. To evaluate the MCQs based on the Difficulty Index (DIF I), Discriminatory Index (DI) & Distracter Efficiency (DE) and develop a valid pool of questions.
2. Also to assess learner performance and discriminate between students of higher and lower abilities.

Methodology
A total of 120 students of 2nd MBBS were evaluated by MCQs in pathology. It formed a part of a formative assessment which consisted of a 3 hour written paper with MCQs to be completed in the first 20 minutes. The MCQs were pre-validated by peer review. The number of items was twenty (20) and the number of distracters were sixty (60). Each correct response was awarded one mark and the incorrect response was awarded zero points. The selection of the upper and lower groups was based on Kelley’s derivation. The forty (40) learners with the highest test scores were included in the upper criterion group and the forty (40) learners with the lowest test scores in the lower criterion group. The middle group (40) were set aside.

The Difficulty Index (DIF I), Discriminatory Index (DI) & Distracter Efficiency (DE) of each item were calculated.

DIF I describes the percentage of students who answered the item correctly and ranges between 0 and 100%

DI is the ability of an item to differentiate between students of higher and lower abilities and ranges between 0 and 1.

The higher the value of DI, the greater the ability of the item to discriminate between students of higher and lower learning abilities.

These were calculated by the following formulae: 

1. \[ \text{DIF I or p value} = \frac{(H + L)}{N} \times 100 \]
2. \[ \text{DI} = 2 \times \frac{(H - L)}{N} \]

N = total number of students in both high and low groups and H and L are the number of correct responses in high and low groups, respectively.

Interpretation of the data was done as follows:

<table>
<thead>
<tr>
<th>Percentage Range (DIF I)</th>
<th>Interpretation</th>
<th>Discrimination Index (DI) Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;61</td>
<td>Easy</td>
<td>&gt;0.25</td>
</tr>
<tr>
<td>31 – 60</td>
<td>Good</td>
<td>0.15 – 0.24</td>
</tr>
<tr>
<td>≤30</td>
<td>Difficult</td>
<td>&lt;0.15</td>
</tr>
</tbody>
</table>

An item contains a stem and four options including one correct (key) and three incorrect (distracter) alternatives. A non-functional distracter (NFD) in an item is option (s) (other than key) selected by <5% of students. The items were analyzed for distracter effectiveness (DE) based on the number of non-functional distractors (NFD).

Data was entered and analyzed in MS Excel 2007 and simple proportions, mean and standard deviations were calculated.

Results
A total of 20 items and 60 distracters were analyzed.

Mean and standard deviations for DIF I, DI and DE were 57.8 ± 17.4%, 0.27 ± 0.17 and 84.98 ± 20.2 % respectively (Table 1).

Out of the 20 items, 11 items had good level of DIF I (31 – 60%) and could be added to the question bank (Table 2). Eight (8) items were considered easy (DIF I ≥ 61%) and one (1) item was considered difficult (DIF I ≤ 30).

Value of DI normally ranges between 0 and 1. Mean DI in present study was 0.27 ± 0.17 (Table 3). Analysis of the DI showed good discrimination power in eighteen (18) of the items. Based on this, the 18 items can be considered ideal for the question bank.
A higher DE indicates that the set of items were difficult. Mean DE in present study was 84.98 ± 20.2%.

Out of the 60 distracters, nine (9) were non – functional distracters (NFD) and were seen in eight items (Table 4). Out of these, seven items had one NFD each and one item had two NFDs. The remaining 12 items had no non – functional distracters.

Among the nine (9) non – functional distracters, one was seen with an item with a good DIF I while the remaining 8 were seen with the easy items (Table 5). The presence of one or more NFD in an item increases DIF I and makes the item easy. The presence of NFD probably made the items easy in the study. The one item with good DIF I which was considered acceptable for the question bank has to be revised due to the presence of the NFD.

Among the 18 items with a good discrimination index, 8 items showed non – functional distracters and hence had to be revised or discarded. The NFD were equally distributed among the good & excellent items (4 each). (Table 6)

Table 4: Distracter Analysis

<table>
<thead>
<tr>
<th>No of Items</th>
<th>Total Distracters</th>
<th>Functional Distracters</th>
<th>Non Functional Distracters</th>
<th>Mean Distracter Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>60</td>
<td>51</td>
<td>09</td>
<td>84.98 ± 20.2%</td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>DIF I</th>
<th>Items with non functional distracters</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 30</td>
<td>0</td>
</tr>
<tr>
<td>31 – 40</td>
<td>0</td>
</tr>
<tr>
<td>41 – 60</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 61</td>
<td>08</td>
</tr>
</tbody>
</table>

Table 6

<table>
<thead>
<tr>
<th>Discrimination Index</th>
<th>Items with NFD</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.15</td>
<td>01</td>
</tr>
<tr>
<td>0.16 – 0.24</td>
<td>04</td>
</tr>
<tr>
<td>&gt; 0.25</td>
<td>04</td>
</tr>
</tbody>
</table>

Fig 1: Correlation between Difficulty Index and Discrimination Index

Discussion

MCQs are used mostly for comprehensive assessment at the end of a semester or academic sessions and provide feedback to the teachers on their educational actions. MCQ based exams form a good method of assessment of knowledge of a subject because of their ability to cover a wide range of topics and due to their objectivity. And MCQs form an important method of evaluation in medical field.

Reliability of a test item is very important in its construction. An item analysis can provide useful information for improving the quality and accuracy of multiple-choice or true / false items. Item difficulty (DIF I) indicates the percentage of students that correctly answered the item and is also referred to as the P-value.
high difficulty index indicates an easy set of questions. However, if these questions measure a valid performance standard, they could still be used as good test items. A low difficulty index indicates a difficult item and should be reviewed for the use of confusing language. It should be either removed in subsequent tests or should be identified as an area for re-instruction. It may also indicate that the topic tested is inappropriate at that level for the students. An Discrimination Index or Point Biserial is a statistic which indicates the extent to which an item has discriminated between the high scorers and low scorers on the test. An ideal item should have a positive discrimination index of at least 0.2. A high discrimination index will help us differentiate between good learners and poor learners and gives an effective feedback to the teachers.

Distracter evaluation also forms another useful item review technique. Distracters are the incorrect alternatives in a multiple-choice item. Non-functional distracters (NFDs) are item options chosen by < 5% of the students.

Items with a moderate level of DIF I and high discrimination index may still be flawed if there are NFD.

The present study assessed the item analysis outcomes of the MCQ in the first sessional examination for Pathology course for MBBS students. The majority of the items in our study was framed from the topics which are essential to be mastered and was of acceptable difficulty level and also showed good discrimination. In our study, 90% of the items had a DI of ≥ 0.2. Both the easy and moderately difficult items showed good discriminative ability. One difficult item (DIF I < 30%) and one easy item (DIF I = 81.25%) showed poor discrimination (Fig 1).

Ho et al., in a similar study reported that too easy or too difficult items showed poor discrimination.

In a study by Ghadam et al., who assessed the item analysis outcomes of MCQs in 4 different semesters over 3 years found that good MCQs and improved teaching method based on the item analysis variables were associated with an increased number of students who passed the exam with a greater mean score.

Conclusion

Due to its high discrimination index, the study helps to identify the poor learners. The very easy and difficult items have to be revised and reconstructed. Some of the items with good DIF I and with good DI were not acceptable due to the presence of non-functional distracters. Hence these have also got to be reviewed, reconstructed and revalidated. A regular analysis of the items should be carried out in this manner after every examination to improve the standard of assessment and develop a valid questions bank. Student feedback and peer review will have a sustained positive impact on the quality of MCQ items. In addition to revision of questions, item analysis should also be followed up with improved teaching methods by identifying the poor learners and areas of learner difficulties. Similar analysis of the MCQs can be conducted for the summative evaluation of university examination.

Reference

A study of functional outcome of laminectomy and discectomy in lumbar intervertebral disc prolapse (a comparison of retrospective and prospective analysis)

Sanath Kumar Shetty¹, Arjun Ballal¹, Lawrence John Mathias² & H. Ravindranath Rai³

¹Assistant Professor, ²Professor, ³Professor & HOD, Department of Orthopaedic Surgery, K. S. Hegde Medical Academy, Mangalore, ³Registrar, Department of Orthopaedic Surgery, ARS Hospital, Tirupur.

Correspondence
Sanath Kumar Shetty
Assistant Professor, Department of Orthopaedic Surgery, K.S. Hegde Medical Academy, Mangalore - 575 018, Karnataka, India.
Mobile: +91 98450 69383  E-mail: sanathkumarshetty@hotmail.com

Abstract
Background: Back pain is considered as one of the most unrewarding problems in clinical medicine. There have existed several etiologies for the same and most of them do not have an ideal clinical presentation. Only those syndromes associated with neurologic compression of the cauda equina or nerve roots, have reasonably well understood clinical presentation.

Aims: The aim of the study was to analyse and compare the functional outcome of laminectomy and discectomy in lumbar intervertebral disc prolapse in short and long term follow up.

Materials and methods: Our study included a total of 50 diagnosed cases of lumbar intervertebral disc prolapse between age group of 40-70 years. The patients were subdivided into two groups. The first group was a retrospective group and included patients who had undergone laminectomy and discectomy between January 1993 and December 2003 with an average follow up of 3.68 years. Group two (prospective group) consisted of patients between January 2004 and December 2004 who underwent laminectomy and discectomy, with a follow up of 6 months.

The subjective assessment was done using the Oswestry disability index (O.D.I). the results obtained with assessment of group I and group II were tabulated compared. Statistical analysis was done using the chi square test.

Results: The results were noted to be 76% excellent, 8% good and 16% with poor scores in group I. 96% with excellent, no patients with good scores and 4% with poor scores in group II as per the O.D.I.

Conclusion: We conclude saying that laminectomy and discectomy had excellent outcome in terms of pain relief in terms of long term and short term follow up.

Keywords: Laminectomy, lumbar disc prolapse, Oswestry disability index, radiculopathy, cauda equina

Introduction
Lumbar intervertebral disc prolapse requiring medical attention in on the rise day by day. It is said to have an incidence in almost 80% of the adults in some point of their life. Among chronic conditions, back problems are most frequently the cause for limitation of activity.

Laminectomy and discectomy is a common procedure performed for the management of intervertebral disc prolapse. In most of the reports the functional outcome and the neurological recovery do show striking variations. This can be due to several factors like patient selection, surgical technique etc.

Measurement of spine function can be accomplished via many standardises techniques such as Oswestry Disability Index (ODI), Visual Analog Scales (VASB and VASL), Roland-Morris Disability Questionnaire etc.

Aims: To assess and compare the functional outcome after laminectomy and discectomy of lumbar intervertebral disc prolapse in short term and long term follow ups.
Materials and methods.
A total of 50 diagnosed cases of lumbar intervertebral disc prolapse were enrolled in the study. The patients were divided into two groups. The first group or the retrospective group included 25 patients who had undergone laminectomy and discectomy in the time range extending from January 1993 and December 2003. The follow up period was a mean of 3.63 years. The second group or the prospective group included a total of 25 diagnosed cases of lumbar intervertebral disc prolapse who underwent laminectomy and discectomy. The inclusion criteria for selection of cases included, patients with degenerative lumbar intervertebral disc prolapse (IVDP) between the age of 40 to 70 years. Traumatic and other causes of IVDP were excluded from the study. Complete neurological and radiological examination was done in the second group.

The surgical procedure\(^1\) included a midline posterior approach to the spine (Figure 1). Once the lamina was exposed laminectomy was performed. The level of the

![Figure 1: Showing the midline posterior exposure to the lumbar spine.](image)

Graph I: Bar graph indicating the distribution of patients as per the presence or absence of sensory deficits. 16 patients group I had sensory deficits rest did not have sensory deficits. No motor deficits were noted in our patients. 11 patients (44%) had sensory deficits and 14 (56%) did not have sensory deficits in group II (Graph I).

Graph II: Bar graph indicating the mean calculated in both the groups as per the ODI scores.

Graph III: Bar graph indicating the distribution of patients as per the inference of the ODI scores. 19 patients (76%) had excellent outcome following surgery, 2(8%) had good outcome and 4 (16%) had poor outcome in group I. 24 patients (96%) had excellent outcome following surgery and 1 (4%) had poor outcome, none of them had good outcome (Graph III).

Figure 2: Laminectomy being performed.
Intervertebral disc was confirmed under fluoroscopic guidance and retrieval of disc through disc forceps was done (Figure 2). Complete closure of the surgical site was done and patient was advised complete bed rest for 2 days and was advised mobilization with a brace after two days.

The patients were discharged on day ten after surgery after suture removal. They were reviewed at three, six, twelve weeks and then at six months. At six months the functional outcome was assessed as per the Oswestry disability index (O.D.I). In the retrospective group the ODI scoring was done during the review. The results were tabulated and compared.

Statistical analysis was done using 'chi-square test'.

**Results**

19 of the 25 patients in group I were males and rest were females. In group II, 17 were males and rest were females. 16 patients group I had sensory deficits rest did not have sensory deficits. No motor deficits were noted in our patients. 11 patients (44%) had sensory deficits and 14 (56%) did not have sensory deficits in group II (Graph I). The mean ODI scores was noted to be 33.12 in group I and 17.16 in group II (Graph II). 19 patients (76%) had excellent outcome following surgery, 2 (8%) had good outcome and 4 (16%) had poor outcome in group I. 24 patients (96%) had excellent outcome following surgery and 1 (4%) had poor outcome, none of them had good outcome (Graph III). No complications were noted in any of the cases in either of the groups.

**Discussion**

Weber in 1983 expressed that, disc herniation is a collective term, to describe a process with rupture of annulus fibrosus and subsequent displacement of the central mass of the disc into the intervertebral space, common to the dorsal or laterodorsal aspect of the disc. Magnetic resonance imaging offers increased soft tissue resolution and allow for evaluation of lateral recess pathology, in addition to visualizing the thoraco-lumbar region for possible spinal tumors. Modic M.T and coworkers in 1986 investigated the accuracy of MRI, metrizamide myelography (MM), and CT in lumbar disc disease. Their studies showed that MRI was more accurate than MM (82.3% versus 71.4%) and was equal to CT (82.3% vs. 83%) in diagnosis of disc herniations. They concluded that the combination of MRI and CT was equal in diagnostic accuracy to the combination of CT and MM (92.5% vs. 89.4%).

In our study we used the ODI questionnaire for evaluation of functional outcome in our patients. Loupas G.A. in 1999 conducted a retrospective study evaluating seven to twenty year outcome of lumbar discectomy by a mailed self report questionnaire. Subjective disability was assessed by the Oswestry questionnaire. They found that the long term results of standard lumbar discectomy were not very satisfying. However, in our study we noted good to excellent results in most of our cases in either of the groups for laminectomy and discectomy.

Herron L, Turner J in 1996 performed a prospective study regarding patient selection for lumbar discectomy with a revised objective rating system based on the severity of findings in each of 4 categories (neurologic signs, root tension signs, imaging findings, psychosocial environment). They found that the objective rating score was highly predictive of patient outcome at follow up with more than 80% of the patients having good results.

Padua R et al; reported good results for 10-15 year follow ups of laminectomy and discectomy done for 150 cases.

**Conclusion**

Laminectomy and discectomy is an excellent procedure for management of degenerative intervertebral disc prolapse.
Factors affecting psychosocial well-being and quality of life among women living with HIV/AIDS

Shrinivasa Bhat U.1, Anish V. Cherian2, Aneesh Bhat3, Helena J. Chapman4, Ammu Lukose5, Ninad Patwardhan6, Veena Satyanarayana7 & Jayashree Ramakrishna8

1 Research Scholar, University of Florida, Gainesville, FL, USA,
2 Research Scholar, Indian Institute of Technology, Bombay, India
3 Assistant Professor, Department of Psychology, National Institute of Mental Health & Neuroscience, Bangalore, India.
4 Professor, Department of Mental Health Education, National Institute of Mental Health & Neuroscience, Bangalore, India.
5 Associate Professor, 6 Assistant professors, 7 Lecturer, Department of Psychiatry, K.S. Hegde Medical Academy, Mangalore, India.

Correspondence
Anish V. Cherian
Assistant Professor, Department of Psychiatry, K. S. Hegde Medical Academy, Nitte University, Mangalore - 575018, India.
Phone : +91 824 2203044, Fax : +91824 2202733

Abstract
Women who are infected with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) represent a major public health priority due to the disease impact on health, family, and society. Despite the growing number of empirical studies in this area, particularly from developing countries, there are few review articles that explore the psychosocial challenges faced by women living with HIV/AIDS. This clinical review describes prominent factors that influence treatment and quality of life among this target group. Implications and recommendations highlight therapeutic interventions that provide immediate psychosocial and psychophysical support. The review also proposes a conceptual model that may serve as a psychosocial management tool for mental health practitioners in developing countries who counsel women living with HIV/AIDS.

Keywords : HIV/AIDS; Stress; Stigma; Coping; Social support

Introduction
Globally, the human immunodeficiency virus (HIV) pandemic has infected approximately 35.3 million persons, where women constitute nearly half of this population (1). When compared to their male counterparts, women living with HIV experience greater stigma (2), significant decline in quality of life (QOL) (3-5), and greater incidence of psychopathology and psychiatric co-morbidity (6-8). In the developed world, where HIV has changed from a sub-acute and fatal infection to a chronic illness, largely due to the initiation of highly active antiretroviral therapy (HAART), health priorities now emphasize early identification and management of psychosocial issues that ensure better treatment and QOL (9).

In India, the National AIDS Control Organization (NACO) reported that 2.9 million people are living with HIV/AIDS (PLWHAs), where 39% are women (10). Although the rapid spread of infection among women has largely been attributed to heterosexual contact (10), overall awareness about unsafe sexual practices and HIV transmission is as low as 2.7% [3]. Without appropriate health promotional campaigns to increase knowledge about sexually transmitted infections (STIs), women may continue to be a high-risk group for STIs and related psychiatric co-morbidities (11).

This review aims to synthesize the literature related to psychosocial issues faced by women living with HIV and identify the factors influencing their treatment access and quality of life. Although social stigma and support among women living with HIV have been widely published, there is limited evidence about the role of coping mechanisms, quality of life and well-being. The review also proposes a conceptual model that may serve as a psychosocial management tool for mental health practitioners who counsel women living with HIV/AIDS.
Results
I. Stress
Unlike individuals afflicted with other chronic illnesses, PLWHAs experience multiple stressors. Psychologically, they experience distress that roots from concerns about disclosing their personal HIV/AIDS diagnosis, living with a chronic illness, complex medical treatments, and fear of infecting a friend or family member (12-14). Physiologically, they may endure diminished appetite, insomnia, weight loss (12), and weakened immunological resilience that hastens AIDS onset and progression (15-17). Both physical and psychological stress levels induce different complications in PLWHAs, such as substance abuse, risky sexual practices, suicide attempts, and reduced adherence to pharmacological treatment (15, 18, 19). However, the nature and causes of stress related to HIV/AIDS infection among women differ from those reported among men (13, 18).

Routine challenges in HIV-positive women include enduring systemic forms of oppression and marginalization, when compared to HIV-negative women (20). In a comparative study among urban and rural, HIV-positive (N=216) and HIV-negative women (N=243), Gupta et al (21) found that HIV-positive women were significantly more likely to report marital dissatisfaction, history of forced sexual intercourse, domestic violence, depressive symptoms and husband’s extramarital sexual affairs, when compared to HIV-negative women. Various social, cultural and economic factors may play a significant role in contributing to HIV transmission among Indian women, such as power hierarchy in society, child marriage, lack of awareness about transmission (22), inability to freely communicate about sex and sexuality, pressures of bearing the family heir, implicit marriage threats for the infertile woman (23), and sexual victimization and coercion (24).

An extensive review by Jayarajan and Chandra (25) highlighted the higher HIV/AIDS prevalence among women who reported sexual coercion in comparison to those women who did not indicate sexual coercion. Abused women reported high risk sexual behavior and consequently had higher risk of HIV transmission. Sociocultural norms and marriage subservience reinforced by violence and abuse can compromise the woman’s ability to protect herself from illness or seek medical care.

1.1. Stigma and discrimination
Herek et al (26) defined HIV stigma as “the prejudice, discounting, discrediting and discrimination directed at people perceived to have AIDS or HIV and at the individuals, groups, and communities with which they are associated” (p. 36). HIV stigma includes the perception of societal attitudes toward HIV as well as the personal experience of attached stigma (27), or felt stigma and enacted stigma (28). Felt stigma (perceived or internal stigma), is understood as the individual’s real or imagined fear of persecution and sense of community disapproval, upon being labeled (29).

Women reported higher rates of both felt and enacted stigma, especially from intimate partners (30). In India, Newmann et al (31) reported that as high as nearly 90% of women under HIV care were monogamous, where sexual intercourse with their husbands was their primary risk factor for HIV/AIDS transmission. Once infected with HIV/AIDS, women have been reported to face severe abuse, discrimination and stigmatization within the home and in society, limiting their ability to access HIV/AIDS treatment and resume a life with dignity in the Indian society. Unlike developed countries, India practices abandonment of such women in cases of the husband’s death due to HIV/AIDS infection (32).

Research highlights that women living with HIV/AIDS perceive maximum stigma and discrimination by the immediate family members and friends upon disclosure of their HIV status (2, 33-35). Lack of regard from staff in municipal places like hospitals, welfare offices and prisons has been identified as another factor for perceiving discrimination (36, 37). When health care providers display stigmatizing attitudes towards these patients, withdrawal often minimizes the scope of how this population seeks treatment (38).
An HIV-positive diagnosis has implications on a woman's moral life (39). A married woman who was infected by her husband could be regarded as being an innocent victim. However, a woman with multiple premarital sexual relations may be stigmatized with immorality (40).

One study examined stigma dynamics linked to HIV/AIDS infection, highlighting that those PLWHAs who were infected through sharing needles or through sexual intercourse with multiple partners were viewed more negatively than those who were infected through sexual intercourse with one partner (26). Other significant factors contributing to stigma towards women living with HIV are low education levels (41) and low income (42).

Compounding factors of illness and social discrimination may yield high risks of developing symptoms of depression and anxiety among women (19, 34, 43-46). Socially, this could prevent women from disclosing their HIV status (2, 47), which would further likely inhibit their ability to seek and adhere to treatment programs (48-50). More specifically, at an individual level, this may influence metastasis (51).

1.2. Intimate partner violence
Research highlights that violence and sexual coercion by intimate partners are major factors for HIV diagnoses among women (52-55). Independent of the reason underlying HIV/AIDS diagnosis, women have reported experiencing several forms of discrimination and violence from intimate partners. Several global studies have reported higher instances of domestic violence in women diagnosed with HIV/AIDS (56-59).

1.3. Sexuality and reproductive health
Sexuality is a fundamental aspect of every individual's life. The World Health Organization (WHO) estimates that 17.6 million women living with HIV/AIDS were reported to be in their childbearing age (1). Along with familial and societal discrimination, medical disclosure of HIV-positive status causes elevated stress because of its impact on their sexual and reproductive health, including pregnancy, sexual intercourse, contraception and breastfeeding (60). Both marriage and childbearing, which are considered to be the vital aspects to women's life, may be curtailed because of their HIV-positive status (61).

In one general survey conducted among PLWHAs in Argentina, women reported a heightened need to experience motherhood. Furthermore, it was revealed that 55% of women had children after their HIV/AIDS diagnosis (62). Despite knowledge about the risk of vertical transmission and the possibility of orphan hood, they desired sexual intercourse and motherhood (63, 64). Another study that targeted HIV-positive Brazilian women showed that they considered breastfeeding as an essential component in their role during the childbearing process (65).

II. Social support
Social support is broadly defined as ‘assistance and protection provided to others’ (66). Studies have indicated the necessity for social support among women living with HIV/AIDS (2). Research findings have depicted that women with social support from family members show higher levels of resilience towards the illness (36), which correlated with enhanced mental health (67-69) and treatment adherence (70, 71).

Greater emotional support has been associated with reduced negative and increased positive affect (72, 73), reduced psychological distress, and higher quality of life and self-esteem (74, 75). Those perceiving low levels of social support were reported to experience increased distress (76).

III. Coping
Lazarus and Folkman (77) defined coping as the “constantly changing cognitive and behavioral efforts to manage specific internal and/or external demands that are appraised as taxing or exceeding the resources of the person” (p.141). For many women, an adaptive coping strategy allows them to incorporate the HIV diagnosis into their identity (78) and results in better treatment adherence (70). A positive relationship between passive (or avoidance) coping strategies and negative mental
health outcomes has been reported (16, 79).

Studies have further identified factors that facilitate adaptive coping among PLWHAs (e.g. physical ailments, feeling responsible for children, support group participation, forming supportive relationships) and reduce levels of perceived stigma and discrimination (80). Also, feeling forgiven and forgiving others have been highlighted as being an effective mode of coping with the HIV-positive status. Expressing forgiveness in the context of one’s own HIV infection was associated with decreased likelihood of placing others at risk through unprotected sexual intercourse (81).

Individual resilience or psychological strength is another important factor for coping with negative situations. Taylor’s (82) Cognitive Adaptation Model proposes that mastery and control over one’s illness and self-esteem are instrumental in adapting to illness. Research among PLWHAs also substantiates this model, demonstrating that greater psychological strength and resourcefulness are associated with increased social support and decreased depression (71, 83, 84).

IV. Psychiatric co-morbidity

Studies have reported a greater incidence of psychiatric co-morbidity, including clinical depression, among women living with HIV/AIDS, when compared to their male counterparts living with HIV/AIDS (6, 85). Cross-cultural studies have highlighted that the frequency of major depressive episode among women living with HIV ranges from 4.5% to 61% (71, 86-89). Van Servellen et al (90) reported that fatigue was the most frequently reported depressive symptom for 98% of African-American women living with HIV. Depression indexes using Beck Depression Inventory (BDI) stressed that social interactions and physical symptoms affected women living with HIV (91).

In addition, researchers noted that African-American women living with HIV/AIDS reported more psychiatric symptoms (92, 93) than their HIV-positive male counterparts. In an American cohort, HIV-infected women reported greater levels of generalized anxiety (4) and post-traumatic stress disorder (94). Studies from India showed that women living with HIV had a high risk of developing post-traumatic stress disorder, depression and anxiety spectrum disorders, when compared to men living with HIV (2, 95, 96).

High risk behaviors were also found prevalent among African-American women attending AIDS counseling centers (97). Luseno et al (98) reported high rates of substance abuse among South African women living with HIV. General psychological distress that failed to meet the criteria of a psychiatric diagnosis was commonly found among women living with HIV (68, 69, 99-102).

Empirical studies show that the high prevalence of psychiatric disorders among women is associated with various factors, namely, high levels of perceived stress (103), events of discrimination (44), low social support, and low income (94, 104). Psychiatric morbidity in women living with HIV resulted in reduced utilization of health services, poor adherence to anti-retroviral treatment (98, 105), high risk sexual behavior (106), poor quality of life (104), increased decline in CD4+ count, and faster metastasis (107, 108).

From this review, it is evident that these factors are inter-related. These outcomes can be either positive (e.g. better quality of life, well-being, and treatment adherence) or negative (e.g. poor quality of life, well-being, and poor treatment adherence).

V. Barriers in seeking medical help

Despite universal and free access to antiretroviral treatment (ART), women infected with HIV have reported reduced treatment access (109, 110) and ART adherence (75), when compared to men. Studies reported that women have experienced enhanced ART side effects (111). Challenges encountered in accessing treatment may be due to lack of awareness regarding the illness and insight about HIV/AIDS status, transmission mode, and treatment access (98, 112-114).

Studies also show that HIV-positive women who had three or more stressful life events during the previous six months
were at least 2.5 times more likely to have missed a medication dose within the past two weeks, when compared with women without such events (115). Researchers also indicated that women with young children were more likely to delay seeking medical care due to caregiving responsibilities, when compared to men (116). In addition, one study conducted in South Africa reported that HIV-positive women who reported drug abuse had reduced likelihood of seeking health services (98).

QOL and well-being
The WHO (1995) (117) defines QOL as “individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (p. 1403). Researchers have suggested the need for empowering afflicted women as a strategy for improving health-related outcomes (118). Women were found to be more vulnerable towards increased HIV/AIDS symptoms, demonstrated poorer functioning and had greater disruptions in physical and psychosocial well-being (119). However, women living with HIV were further reported to be more accepting and forgiving when afflicted with the illness, when compared to men (120, 121).

Recent studies in different regions of India have examined QOL among HIV-infected men and women, and have documented gender-based differences (50, 122, 123). Women reported significantly lower QOL scores than men (122). Men reported better QOL in the environment domain, while women had higher scores on the spirituality, religion, and personal belief domains (81).

Among various socio-demographic variables, full-time employment had a positive relationship with QOL (4). European studies have highlighted challenges faced by a single parent or a new immigrant to the country as being significant predictors of lower mental health-related QOL among women living with HIV/AIDS (124). Age and marital discord were also found to be inversely related to health-related QOL (124, 125).

Women with HIV are known to experience frequent episodes of low self-worth, self-esteem and poor resilience, which subsequently results in QOL decline (126). Among women with HIV, better mental health-related QOL was predicted by practical coping style and increased social support (127).

Discussion
Women diagnosed with HIV/AIDS face multiple risk factors, such as the HIV/AIDS diagnosis, physical effects on QOL, stigma and discrimination, fear of rejection and violence from intimate partner, and concerns about sexuality and reproductive health. Various socio-economic factors, such as gender-specific roles related to motherhood, homemaking, socio-economic inequalities, and minority grouping, determine the degree to which stigma is faced by women living with HIV/AIDS. They perceive heightened discrimination in health care settings and intimate relationships. These factors may have personal and social implications, such as poor psychological well-being, lack of treatment adherence, and high risk sexual behaviors. Sexual and reproductive health care also greatly affected due to higher stress levels in women living with HIV/AIDS.

Empirical studies have shown that various mediating factors, such as social support, individual coping and resilience, are instrumental in reducing the impact of this stress. Women have been reported to experience a higher need for social support when compared to male counterparts. A positive relationship has been linked between social support and QOL among women living with HIV/AIDS. Effective coping strategies among women must accompany acceptance of the HIV diagnosis, so that they can develop higher resilience and enhance self-esteem toward increased QOL and general well-being.

Higher prevalence of psychiatric co-morbidities among women living with HIV/AIDS has also been reported. Although depression has been reported as the most prevalent condition among the afflicted group, anxiety spectrum disorders, psychological distress and substance dependence have been highlighted as other major diagnostic conditions. Social discrimination, poor social
support and inadequate coping mechanisms may be underlying factors that have influenced the high prevalence of these psychiatric diagnoses.

These factors are known to have lasting consequences on treatment adherence and QOL among women living with HIV/AIDS. Though ART is instrumental in improving life expectancy, overall functioning of women living with HIV may be disrupted because of poor physical and psychosocial QOL, which can lead to faster metastasis.

Research within the Indian culture elucidates the gender disparity with respect to psychosocial issues faced by PLWHAs. Within this socio-cultural scenario, women are left in a state of compulsion to conceal their illness due to fear of spousal and familial rejection. This has been reported as a major barrier in treatment access and intervention.

Psychosocial issues faced by women living with HIV/AIDS have emerged of significant and immediate concern among their health care providers. Based on the Transactional Model of Stress and Coping by Lazarus and Folkman (77), we propose a conceptual model for the psychosocial issues faced by women living with HIV/AIDS (Figure 1). This model will provide a comprehensive understanding about the various factors affecting psychosocial well-being and QOL among women living with HIV/AIDS.

**Future directions**

Until recently, health care providers working with people at risk or afflicted with HIV/AIDS have mainly focused on various primary- and secondary-level psychosocial interventions. Women at risk for developing HIV were prompted to use condoms in primary prevention strategies (128), whereas counseling services were provided on

---

**Figure 1**: Diagrammatic representation of the conceptual model
family planning and contraceptive methods to prevent HIV transmission from the target women to others in secondary prevention strategies (60, 129, 130). Although few studies have targeted tertiary-level psychosocial interventions, these strategies were more commonly found among men living with HIV than among women (131, 132). The lessened focus on tertiary-level interventions could be attributed to the lacunae in public health policies and intervention strategies addressing the mental health needs of PLWHAs (133).

A recent WHO report (134) suggests the need for a comprehensive psychosocial intervention among people living with HIV that can include individual and group counselling, peer support groups, family counselling and support, and home visits to reduce the risk of HIV transmission, promote adherence to prophylactic and therapeutic regimens, and minimize the socioeconomic impact of HIV on households. Literature clearly suggests that the high risk sexual behavior, psychological well-being, QOL and treatment adherence among women living with HIV are dependent on various psychosocial factors. The socio-cultural and economic scenario in which these women live determines the amount of gender disparity faced by them. In addition to aiding in educating about STI transmission, health care providers should be able to recognize and manage psychosocial conditions among women living with HIV, which will enhance overall QOL, well-being and treatment adherence. Future research should highlight culturally appropriate, effective psychotherapeutic interventions among women living with HIV. To achieve this target, mental health professionals in HIV clinics must sensitize and train other health professionals on psychosocial factors as well as provide appropriate psychotherapeutic interventions to women living with HIV.

References

1. WHO. Global Health Observatory (GHO) - Number of people (all ages) living with HIV, Geneva: 2012.


A case of Fahr’s syndrome with rare atypical presentation as hemiplegia.

Venkata Ravikumar Chepuri¹ & Himabindu Panta²

¹Assistant Professor, ²Post Graduate, Department of Medicine, Rajiv Gandhi Institute of Medical Sciences [RIMS], Kadapa, Andhra Pradesh, India.

Abstract
Calcification of basal ganglia or Fahr’s disease is a rare disease characterized by bilateral and symmetrical intracranial deposition of calcium mainly in cerebral basal ganglia. Basal ganglia calcification secondary to endocrinological cause is known as Fahr’s syndrome. Motor and neuropsychiatric symptoms are prominent features. We report a case presented with hemiplegia without any psychiatric symptoms. Radiological findings were suggestive of bilateral calcification of cerebellar hemispheres and basal ganglia. Parathyroid hormone levels were low with no significant findings in other investigations along with negative family history. Based on the radiological and biochemical findings the case was diagnosed as fahr’s syndrome.

Keywords: Basal ganglia Calcification, Parathyroid hormone, Fahrs syndrome.

Introduction
Fahr’s syndrome is characterized by basal ganglia calcification with clinical manifestations in the form of neuropsychiatric disorders, neurological symptoms, and cognitive symptoms.¹ ² Basal ganglia calcification [BGC] can be idiopathic or secondary to genetic, metabolic, and endocrinological disorders. Idiopathic BGC is known as Fahr’s disease(FD) and BGC secondary to endocrinological causes is known as Fahr’s syndrome.² ³ Calcified deposits are made up of calcium carbonate and calcium phosphate, and are commonly located in the Basal Ganglia, Thalamus, Hippocampus, Cerebral cortex, Cerebellar subcortical white matter and Dentate Nucleus.³ ⁴ Although calcifications can involve other structures, globus pallidus is most commonly involved. The movement disorders are the most common neurological symptoms and usually manifest as spasticity, gait disorder, speech impairment, parkinsonism, chorea, tremor, dystonia, and myoclonus.⁵ About 40% of patients with basal ganglia calcification may present initially with psychiatric features.⁶ There is no reliable correlation between age, extent of calcium deposits in the brain, and neurological deficit. Progressive neurological deterioration generally results in disability and death.⁶ In adult onset Fahr’s disease, calcium deposition generally begins in the 3rd decade of life, with neurological deterioration two decades later.⁷ We are reporting this case to document the rare and atypical presentation of fahr’s syndrome as there were only a very few case reports in the literature.

Case History
A 50 years old male, who is a farmer, presented with sudden onset of weakness of right upper and lower limb which was not progressing, followed by loss of consciousness for a period of 5 min, while he was working in his field. There was no history of seizures, headache and vomiting. There was no history of fever or head injury and no history of cerebrovascular accident [cva] or any other illness in the past. He was diabetic and was on regular treatment with oral hypoglycaemic agents. He was not a known smoker, non-alcoholic and there was no exposure to toxic substances. There was no significant family history. On physical examination he was drowsy but arousable. His
Vitals were stable. Neurological examination revealed right sided hemiplegia, no sensory deficit, deep tendon reflexes were brisk, plantar reflex was bilateral mute. There were no signs of meningeal irritation and cerebellar dysfunction. So the case was diagnosed as acute cva and it was managed accordingly.

Base line laboratory investigations were normal. Serum electrolytes and liver and renal function tests were normal. Electrocardiogram [ECG], 2DEchocardiography and neck vessel Doppler were normal. His viral screening was negative. Computerised Tomography scan [CT] of brain revealed bilateral symmetrical dense calcifications in cerebellar hemispheres [Figure: 1] and subtle calcifications in bilateral basal ganglia [Figure: 2]. After the CT scan further investigation were done Serum calcium, phosphorus, urine calcium was normal. But Parathyroid hormone levels were low. Based on the investigations, patient was diagnosed as Fahr’s syndrome probably due to hypoparathyroidism.

Discussion
Fahr’s syndrome is a rare disease. Fahr’s syndrome is mostly associated with a disorder of calcium and phosphate metabolism, especially due to hypoparathyroidism, but can also be due to other different etiologies, including infectious, metabolic, and genetic diseases.[7] The disease usually manifests itself in the 3rd to 5th decade of life, but may appear in childhood or later in life.[8] The exact prevalence of Fahr’s syndrome is not known but intracranial calcifications can be detected incidentally in up to 0.3–1.2% of plain CT examinations of brain.[9] Although bilateral and symmetric basal ganglia calcification is known to be associated with multiple medical conditions, the exact etiology is still unknown.[9,10] Many of these conditions involve the basal ganglia only or predominantly. The most common neurological manifestations include headache, seizures and movement disorders. Other specific manifestations include gait disturbances, dystonia, paresis, speech alterations, dementia, parkinsonism, tremors, chorea, etc.[10,11] When latent Tetany and myopathic changes occur with changes in somatosensory, visual and brain stem auditory responses, then parathyroid dysfunction, mitochondrial disease or other disease associated with brain calcification may be considered. It is differentiated from calcified angiomas, infections and Addison’s disease by its severity and characteristic distribution.[12] Reduced blood flow to calcified regions correlates with clinical signs.[7] Psychiatric manifestations most commonly include cognitive and psychotic disorders.[10,12] which were not observed in our case. Our case is unique, as our patient presented with hemiplegia but no psychiatric manifestations before or after the presentation and no abnormality in calcium and phosphate levels, but parathyroid level was low. We believe that low parathyroid level may be the cause for BGC. These findings were similar to the case reported by Faye.AD et al, a case of psychosis due to Fahr’s syndrome with low parathyroid hormone but normal calcium and phosphorus.[7]

Molecular genetics
Fahr’s disease is most commonly transmitted as an
Autosomal Dominant trait. But it may also be passed on as an autosomal recessive trait or it may occur sporadically. A Locus at 14q (IBGC1) has been suggested to be involved commonly. A second locus has been identified on chromosome 8 and a third on chromosome 2. A loss of function mutation in the gene encoding type III sodium dependent phosphate transporter 2 (SLC20A2) located on chromosome 8 has also been reported to form the genetic basis of this disease.\[12]\n
Laboratory examinations should include tests for blood calcium and parathormone which in addition to the other routine blood tests will help in differentiating idiopathic Fahr’s syndrome (unremarkable laboratory test results) from secondary cases especially due to hypoparathyroidism. Plain CT brain will demonstrate the presence and extent of parenchymal calcification. In our case there were bilateral symmetrical dense cerebellar calcification and subtle basal ganglia calcification was seen. The treatment of Fahr’s syndrome is directed to the identifiable cause especially hypoparathyroidism. In other cases, symptomatic or conservative therapy with clinical follow-up is the rule. Prognosis is variable, cannot be predicted and is unrelated to the extent of calcification.\[14]\n
Conclusion

Though farh’s syndrome is a rare incidental finding, routine biochemical investigations should always be performed to rule out metabolic causes. All patients with incidentally detected calcifications in basal ganglia and in other areas of brain should be subjected to thorough neuropsychiatric examination and biochemical tests. Whenever possible the associated conditions should be identified and managed accordingly. Currently, there is no cure for Fahr’s syndrome, or a standard course of treatment. The available treatment is directed toward symptomatic control and treatment for cause of calcification. Brain CT scan serves as a pre-symptomatic test in at risk individual but it’s not useful for predicting age of onset, severity, type of symptoms or rate of progression in an asymptomatic individual. Individuals with a positive test result need arrangements for long-term follow-up and evaluations.\[12]\n
References

Introduction
Optic neuritis is uncommon in children and is often bilateral unlike that in adults. It can occur following systemic diseases like mumps, measles, chicken pox, pertussis, viral encephalitis and also following immunization. We report a series of 3 consecutive paediatric cases of bilateral optic neuritis which presented to us over a period of 6 months and were followed up for 1 year. Two patients responded to steroids with a normal ophthalmic and MRI examination at the end of one year. One patient expired following development of Acute Disseminated Encephalomyelitis.

Material and Methods
Series of three consecutive paediatric cases of bilateral optic neuritis which presented to us over a period of six months from January 2013 to June 2013 were studied and followed up for one year. All cases had sudden onset severe visual loss. General and neurological examination was normal at presentation. Of the three children, two were females and one male. The first two patients were a six and seven year old girls respectively who had an episode of chicken pox two weeks prior to the onset of visual loss. The third patient was a three year old boy who had an episode of mumps ten days before the onset of visual loss. The visual acuities ranged between counting fingers to perception of light. Colour vision was impaired in first 2 patients and could not be assessed in the 3rd patient. Pupils were ill sustained to light. Ophthalmoscopy revealed bilateral hyperaemic and swollen discs in all 3 cases suggestive of post para-infectious bilateral optic neuritis (Figure 1). Paediatric opinion was taken in all three cases. All the three cases were started on Intravenous methylprednisolone 30mg/kg stat x 3 days followed by a tapering course of oral prednisolone.

Clinical response to the treatment was monitored on the basis of visual acuity, disc changes and general and neurological status. At the end of first week disc oedema persisted in all the 3 cases. However the visual acuity improved in the first two children (Table 2). In case of the third child the general condition deteriorated. MRI scan of the boy (Figure 2) revealed large, patchy areas of subcortical and deep white matter hyperintensity in the bilateral corona radiata consistent with ADEM (Acute Disseminated Encephalomyelitis). CSF Analysis revealed lymphocytic pleocytosis. General and neurological status worsened and the boy succumbed to the neurological disease on the fifth day. The two other cases were followed up to a period of one year with visual acuity and funduscopy being performed at the end of two, six and twelve months. MRI scan was done at the end of the year in

Abstract
Optic neuritis is uncommon in children and is often bilateral unlike that in adults. It is often associated with systemic diseases like mumps, measles, chicken pox, pertussis, viral encephalitis and also following immunization. We report a series of 3 consecutive paediatric cases of bilateral optic neuritis which presented to us over a period of 6 months and were followed up for 1 year. Two patients responded to steroids with a normal ophthalmic and MRI examination at the end of one year. One patient expired following development of Acute Disseminated Encephalomyelitis.

Keywords: optic neuritis, para-infectious diseases, acute disseminated encephalomyelitis
both the children. Visual acuity had improved to 6/6 at the end of two months itself in the first child and remained so at the end of one year of follow up. Visual acuity in the second child was 6/6 (OD) and 6/9 (OS) at the end of two months and remained the same at the end of one year of follow up. Funduscopy revealed a normal optic disc in both the cases and a normal MRI at the end of one year of follow up (table 3).

Conclusion
Optic neuritis in children is usually bilateral and associated with optic disc swelling. Often occurs 1 to 2 weeks after viral or bacterial infection or vaccination. The initial vision is usually very poor but the visual recovery is usually good. Associated ADEM (acute disseminated encephalomyelitis), a neurologic disorder characterized by inflammation and damage to the myelin sheath of the brain and spinal cord, likely from a transient autoimmune response is common in children. 70% of patients report a precipitating event, e.g. viral or bacterial infections or vaccination. It has an abrupt onset and a monophasic course presenting with headache, seizures, and altered mental status, bilateral optic neuritis and visual field defects. Mortality rate of up to 20% has been reported. Optic neuritis must be considered in the differential diagnosis of bilateral sub-acute visual loss, especially occurring 1 to 2 weeks after a previous viral infection in children. General condition should be monitored closely to prevent Para infection related morbidity and mortality.

Figure 1: Fundus photograph of the first patient at presentation showing bilateral disc edema

Figure 2: MRI brain of the boy. Red arrow showing large, patchy areas of subcortical and deep white matter and hyperintensity in the bilateral corona radiata consistent with ADEM (Acute Disseminated Encephalomyelitis) in a T2 weighted image.

Table 1: Clinical characteristics of the patients

<table>
<thead>
<tr>
<th>Patient No</th>
<th>Age</th>
<th>Sex</th>
<th>Initial visual acuity</th>
<th>Initial appearance of the disc</th>
<th>Preceding viral illness</th>
<th>Duration between viral illness and optic neuritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>F</td>
<td>(OD) : CF ½ m (OS) : 6/60</td>
<td>B/L disc edema</td>
<td>Chicken pox</td>
<td>2 weeks</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>F</td>
<td>(OD) : HM (OS) : CF 2 m</td>
<td>B/L disc edema</td>
<td>Chicken pox</td>
<td>2 weeks</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>M</td>
<td>(OD) : PL+ (OS) : HM</td>
<td>B/L disc edema</td>
<td>Mumps</td>
<td>10 days</td>
</tr>
</tbody>
</table>
Table 2: Clinical response at the end of 1st week

<table>
<thead>
<tr>
<th>Pt. No</th>
<th>BCVA at the end of 1st week</th>
<th>Disc changes at the end of 1st week</th>
<th>General and neurological status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(OD) : 6/36 (OS) : 6/24</td>
<td>B/L disc edema</td>
<td>normal</td>
</tr>
<tr>
<td>2.</td>
<td>(OD) : 6/60 (OS) : 6/24</td>
<td>B/L disc edema</td>
<td>normal</td>
</tr>
<tr>
<td>3.</td>
<td>Could not be assessed</td>
<td>B/L disc edema</td>
<td>Altered mental status and deterioration of general condition on the 2nd day</td>
</tr>
</tbody>
</table>

Table 3: Follow up at the end of one year

<table>
<thead>
<tr>
<th>Pt. No</th>
<th>BCVA at the end of 2 months</th>
<th>BCVA at the end of 6 months</th>
<th>BCVA at the end of 1 year</th>
<th>Optic disc at the end of 1 year</th>
<th>MRI at the end of 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(OD) : 6/6 (OS) 6/6</td>
<td>(OD) : 6/6 (OS) 6/6</td>
<td>(OD) : 6/6 (OS) 6/6</td>
<td>NORMAL</td>
<td>NORMAL</td>
</tr>
<tr>
<td>2.</td>
<td>(OD) : 6/6 (OS) 6/9</td>
<td>(OD) : 6/6 (OS) 6/9</td>
<td>(OD) : 6/6 (OS) 6/9</td>
<td>NORMAL</td>
<td>NORMAL</td>
</tr>
</tbody>
</table>

References
Fibromas are considered the most common benign soft tissue growth in the oral cavity. They may arise from the gingival connective tissue or from the periodontal ligament. They are slow-growing, spherical tumors that tend to be firm and nodular but may be soft and vascular. Epulis is a generic term used clinically to designate all discrete tumors and tumorlike masses of the gingiva. It serves to locate the tumor but not to describe it. This lesion has a predilection for females, occurs in patients older than 30 years, is a few centimeters in diameter, pedunculated or sessile, and occurs frequently on the gingiva or buccal mucosa. The term, focal fibrous hyperplasia, as suggested by Daley et al. 1990, which implies a reactive tissue response, is preferable to the term, fibroma, which implies incorrectly, a benign neoplastic proliferative fibrous connective tissue.

The surface may be ulcerated and diameter varies from 1 millimeter to several centimeters. Treatment of the fibroma involves surgical excision, and recurrences are very infrequent. Irritation fibroma, or traumatic fibroma, is a common submucosal response to trauma from teeth or dental prostheses and was first reported in 1846 as fibrous polyp and polypus.

**CASE 1**

A 20 year old female patient reported to Department of Periodontics, A B Shetty Memorial Institute of Dental Sciences with the chief complaint of "swelling in upper right gum region" (Figure 1). History revealed a systemically healthy female with no family history of gingival epulis. The lesion was first noticed 2 months ago and size remained constant since then. No history of dental and/or facial trauma was reported. The lesion was painless except on digital pressure. There was no history of bleeding except on digital pressure and use of interdental aids. Oral hygiene was found to be good with an OHI-S score of 1. She had visited a private clinic 1.5 months ago and underwent a supragingival scaling.

**Examination of gingiva**
The lesion on the buccal gingiva was about sessile 8 *
7mm in size, pink in color, stippled on interdental papilla between maxillary lateral and canine. The lesion was mildly erythematous and firm in consistency. A radiograph of the area revealed no bony involvement (Figure 2).

Phase I therapy with supragingival scaling was done. Patient was put on chlorhexidine mouthwash twice daily for 1 week. Then excision biopsy was performed using scalpel blade no 15 and Kirkland knife. The excised site were then finished with by abrasion method using a bur. Amoxicillin 500mg three times a day for 5 days and analgesics was prescribed to the patients post-operatively.

On three months followup the area is healing well. No pain or discomfort and no difficulty in eating were reported. (Figure 5).

**Differential Diagnosis**
Irritation fibroma, Peripheral giant cell granuloma, Peripheral ossifying fibroma, pyogenic granuloma, Papilloma, Gingival cyst were considered in differential diagnosis.

**Histopathology**
H & E stained section shows epithelium and connective tissue. Epithelium is parakeratinized stratified squamous epithelium with hyperplasia. Connective tissue shows collagen fibres, plump fibroblasts, chronic inflammatory cells, blood vessels and extravasated RBCs. (Fig 6a & Fig 6b)

**CASE 2**
A 40 year old female patient reported to Department of Periodontics, A B Shetty Memorial Institute of Dental Sciences with the chief complaint of “swelling in lower left gum and lip region” (Figure 7). She had a history of hypertension and was on Anti-hypertensives with no family history of gingival epulis. The lesion was first noticed 1 year ago with constant fluctuations in size and episodes of rupture. No history of dental and/or facial trauma was reported. The lesion was painless except on digital pressure. Her oral hygiene was acceptable with an OHI-S score of 2.6. She had not undergone any dental procedures in the past 1 year.
Examination of soft tissues
The lesion was about 1 * 1 cm in size, pink in color, in region of alveolar mucosa and labial mucosa of 33,34. The lesion was soft in consistency and mobile. A radiograph of the area revealed no bony involvement (Figure 8a). An occlusal radiograph was taken to check for calcified bodies. (Fig 8b)

Phase I therapy with supragingival scaling was done and chlorhexidine mouthwash was prescribed twice daily for 1 week after which excision biopsy was performed using scalpel blade no 15 and 12. It was then cauterized with a ball electrode.

Three month follow up the area is healing well. No pain or discomfort and no difficulty in eating were reported. (Figure 11).

Differential Diagnosis
Irritation fibroma, Mucocele, Peripheral giant cell granuloma, Peripheral ossifying fibroma, pyogenic granuloma, Papilloma, were considered in differential diagnosis.

Histopathology
H & E stained sections show parakeratinized stratified squamous type of epithelium and connective tissue. Epithelium is hyperplastic. Connective tissue contains numerous blood vessels with some surrounded by plump and proliferating endothelial cells. Dense chronic inflammatory infiltrate comprising of lymphocytes, plasma cells and macrophages is present. Few areas show loosely arranged connective tissue. (Fig 12 a & 12b)

Discussion
Tissue enlargement of the oral cavity often presents a diagnostic challenge because a diverse group of pathologic processes can produce such lesions. Within these lesions a group of reactive hyperplasia which develop in response to a chronic, recurring tissue injury stimulates an exuberant or excessive tissue repair response.

Hyperplastic reactive gingival/alveolar lesions including inflammatory gingival hyperplasia were the most common lesions according to a recent study.
Reactive gingival lesions have been classified into pyogenic granuloma, peripheral giant cell granuloma, fibrous hyperplasia and peripheral fibroma with calcification by Kfir et al.\(^\text{10}\) As the most common nonneoplastic growth in the oral cavity, much has been written about the fibroma. It has been known as Irritation fibroma, Irritational fibroma, Traumatic fibroma, Fibrous hyperplasia, Focal fibrous hyperplasia, Localized hyperplasia, Fibrous polyp, Fibroepithelial polyp.\(^\text{11}\) The clinical presentation and epidemiology of most nonneoplastic growths in the oral cavity are quite similar; thus identification is dependent on histopathological differentiation. Histologically these lesions vary from granulation tissue to mature scar-like tissue, depending on age and vascularity. Lesions are collagenous, composed of mature fibrous tissue with prominent vascular pattern. Epithelial changes also correlate with the lesion’s age and degree of inflammation. Fibro epithelial hyperplasias when inflamed are covered by uniformly hyperplastic epithelium, with arcading rete pattern when ulcerated.

Identification of any reactive hyperplastic gingival lesion requires the formulation of a differential diagnosis to enable accurate patient evaluation and management. These lesions must be separated clinically and histologically from precancerous, developmental and neoplastic lesions. Differential diagnoses include metastatic tumors in the oral cavity, angiosarcomas, gingival non-Hodgkin’s lymphoma, Kaposi’s sarcoma and haemangioma.

Most of these lesions arise on gingiva, reflecting universal presence of inflammation in the interdental papillae which may be exaggerated by intensity of irritation, duration of lesion and metabolic effects of serum concentrations of hormones especially female hormones. Fibro epithelial hyperplasia are reactive/inflammatory conditions. These mucosal responses to chronic low grade irritation caused by plaque, and calculus or any other irritant.\(^\text{13}\) The term fibro-epithelial hyperplasia should not be confused with focal epithelial hyperplasia caused by HPV virus where all alterations occur in the epithelial layer of the mucosa with virtually no alteration in the underlying connective tissue.\(^\text{14}\)

**Conclusion**

Connective tissue response to varied intensities of gingival irritation may be responsible for the myriad histological patterns observed in reactive hyperplasia. This response may be influenced by the serum levels of certain endocrine hormones. However, a substantial overlap may exist between the different histological entities. Distinction between hyperplasia and neoplasia needs to be clearly defined as neoplasias are not self-limiting conditions and long standing hyperplastic lesions in presence of chronic irritation can get converted to neoplasia. In addition to the physical characteristics of the lesion, the patient’s demographics, presence of associated symptoms, related systemic disorders, and location and growth patterns of the lesion all give clues to adequately diagnose and treat their typical histopathologic architecture. Chances of transforming into neoplasia maybe high when lesion is of both epithelial and connective origin, as one of our cases is. Further studies are needed to confirm this hypothesis with longer follow up of the patients.

**Acknowledgment**

The authors would like to thank Prof. (Dr.) Pushparaj Shetty (Head of Dept., Dept. of Oral Pathology) and Dr. Garima Jain, (Postgraduate student, Dept. of Oral Pathology) for histopathological analysis of the slides and providing us with the histopathological pictures of the slides.
Variation in the area of distribution of the lateral pectoral nerve and a communicating branch between musculocutaneous and median nerve: A case report

Divia Paul A. & Manisha Rajanand Gaikwad

Abstract
Variations in the distribution of the lateral cord and its branches in the infraclavicular part of the brachial plexus are common and significant to the neurologists, surgeons, anaesthetists and the anatomists [1]. The present case describes a rare variation of the lateral pectoral nerve giving an additional branch to supply biceps brachii muscle and ends by joining inferior collateral branch of brachial artery. Also it was observed that the musculo-cutaneous nerve received communicating branches from the median nerve before and after piercing the coracobrachialis muscle. The above observations were observed during routine dissection of a 55 year old Indian male cadaver. The musculocutaneous nerve, lateral pectoral nerve and its branches were identified and protected. The clinical importance of the variation is discussed.

Keywords: Musculocutaneous nerve (MCN), Lateral pectoral nerve (LPN), Median nerve (MN), Communicating branches, Pectoralis Minor (PM).

Introduction
Brachial plexus variations are reported by various authors since it is common. A discussion of the anatomy of the brachial plexus is necessary in order to have a clear-cut idea to understand the deviation of plexus from normal explained in this case study. Complex nerve plexus which takes its origin from the neck and axilla which in turn formed by the union of the ventral rami of fifth to eighth cervical and the first thoracic spinal nerves is termed as brachial plexus. These fibres follow a complex pattern of uniting and dividing to form trunks, cords, the nerves of the upper extremities. Out of which the lateral and medial cord formation, branches is highlighted as in the present study the branches of these cords are seen as communicating segments. Lateral cord contains the fibers from C5, C6 and C7, while the medial cord fibers are from C8 and T1. Normally, the lateral cord gives out lateral pectoral nerve for pectoralis major and minor muscle. Then it again divides into musculocutaneous and the lateral root of the median nerve. The musculocutaneous nerve (C5, 6, 7) after piercing the coracobrachialis muscle and supplies it. Passing downwards, following the lateral side of the arm between the biceps brachii and brachialis muscle the nerve supplies them also. The deep fascia is pierced, lateral to biceps brachii tendon by the nerve near elbow to continue downwards as lateral cutaneous nerve of the forearm. Segment that supply brachialis gives out a filament to the elbow joint. Twig to the bone, which enters the nutrient foramen is given by the nerve, that courses with the accompanying artery.

In relation to the antero-lateral part of third part of the axillary artery, median nerve (C5-T1) is formed by the union of medial and lateral root of median nerve from the medial cord and lateral cord of the brachial plexus. The course of median nerve is explained as first lateral to brachial artery and crosses in front the artery near coracobrachialis...
muscle insertion. It then descends medial to artery in the cubital fossa [2].

Case report
During routine dissection for the first year medical students of a 55 year old Indian male cadaver, in the Department of Anatomy, All India Institute of Medical Sciences, Bhubaneswar, Odisha the following variations were observed and noted.

Lateral pectoral nerve which usually supplies pectoralis minor and major was having an additional slender and long branch to supply biceps brachii muscle and ends by joining inferior collateral branch of brachial artery. Lateral pectoral branch to supply to pectoralis minor as well as major remained intact. (Fig no: 1) It was also observed that the musculocutaneous nerve received communicating branches from median nerve before and after piercing the coracobrachialis muscle. (Fig no: 2) Median nerve and musculocutaneous followed the routine course, lateral to the third part of axillary artery. Musculocutaneous nerve branches were given to coracobrachialis, biceps brachii and brachialis muscle as per the normal pattern of distribution. Median nerve was not having any other communicating branches to supply in the arm region and entered the cubital fossa medial to brachial artery and biceps tendon. The blood supply was confirmed from the branches of brachial artery.

Proximal and distal in relation to the entrance of the musculocutaneous nerve into coracobrachialis as type I and type II. It is termed as Type III, if the nerve as well as the communicating branch did not pierce the muscle [ 3].

The present variation can be related to both type I and type II variation of the above mentioned study.

Four different patterns of communication between median nerve and musculocutaneous nerve were observed by Loukas and Aqueelah (2005) among hundred and twenty nine, formalin-fixed cadavers. A communication is regarded as Type I (45%, 54 communication,) if it is proximal to the point of entry of the MCN into the coracobrachialis; type II (35%, 42 communications) were distal to the point of entry of the MCN into the coracobrachialis.Type III (9%, 11 communications) were it is catagorised, if the MCN did not pierce the coracobrachialis. If type I alone with additional communication at distal end also it is classified as Type IV (8%, 9 communications).

The present variation can be again related to both type IV classification of the above mentioned study.

Eglseder and Goldman (1997) noticed about 36% of interconnections between the MCN and MN among 54 cadavers during discussion [5].Variants of branching pattern of MCN and MN have been a study criteria for many authors in 2002, namely Prasada Rao and Chaudhary who reported eight instances of communication from MCN to the MN and bilateral communication in two cadavers [6].Chauhan and Roy also reported unusual

Discussion
Venieratos and anagnostopoulou (1998) catagorised variations of communication between the MCN and MN, in relation to coracobrachialis muscle among 79 cadavers.
communication between the median and MCN in their case reports [7].

In contrast to this, Le Minor (1990) classified variations in communications between median nerve and musculocutaneous nerve to five types. If no communication between the MN and MCN as Type 1 and Type 2: If the fibers of medial root of MN pass through the MCN and join the MN in the middle of the arm. Type 3 and Type 4 are in relation with fibers of the lateral root of the MN. If fibres pass through the MCN and after a distance leave it to form lateral root of MN called type 3 and type 4 if the MCN fibers join the lateral root of the MN and after some distance the MCN arise from the MN. Type 5; If the MCN is completely absent and the fibers of MCN pass through lateral root of MN entirely and direct branches are given out from MN to the fibers to the muscles supplied by MCN. MCN does not pierce the coracobrachialis muscle is not pierced by MCN in this classification [8].

Present finding does not indicated presence of Le Minor type variant.

No literature for a comparative study were obtained, on lateral pectoral nerve having an additional branch to supply biceps brachii muscle which ends by joining inferior collateral branch of brachial artery, unilaterally in the present study.

The existence of this variation described in our case report may be attributed, to the mechanism of formation of limb muscles and the peripheral nerves during embryonic life and the random factors influencing it. In the context that ontogeny recapitulates phylogeny; it is possible that the variation seen in the current study is the result of developmental anomaly. Five Hox D (Hox D 1 to Hox D 5) genes, regional expression is mainly responsible for upper limb development [9]. The motor axons arrive at the base of limb bud; which mix to form brachial plexus in upper limb. The growth cones of axons continue in the limb bud [10]. The guidance of the developing axons in a highly coordinated sight specific fission, is regulated by the expression of chemo-attractants and chemo-repulsunt [11]. The tropic substances including brain-derived neurotropic growth factor, c-kit ligand, neutrin-1, neutrin-2, etc attract the correct growth cones or support the viability of the ingrowth cones that happen to take the right path. [12]. Altered signaling between mesenchymal cells and neuronal growth cones or circulatory factors at the time of fission of brachial plexus cords must have resulted in significant variations in nerve pattern.

Morphological Importance
The functional division of proximal lower limb in to adductor, flexor and extensor compartment is a clear cut demarcation. The nerve supply to these three compartments via obturator nerve (ventral division), femoral nerve (dorsal division) and tibial component of sciatic nerve (ventral division) maintain their source of origin. The fusion of adductor and ventral compartment of upper limb leads to the formation of two compartments of upper limb leading to wide variety of communication between these compartments. Both of which carrying the nerve supply from the ventral division of brachial plexus. Meanwhile, nerve supply to dorsal component maintain its identity without mixing with the anterior component because of two intermuscular septum (medial and lateral).

Clinical Significance
Meticulous knowledge of possible variations of MCN and the MN may endow valuable help in the management of traumatology of shoulder joint and arm as well as in circumventing iatrogenic damage during repair operations of these regions. Knowledge of brachial plexus variations has important anatomical and surgical clinical applications especially in relation to trauma and surgical procedures of upper limb [13,14]. The present case report provides additional knowledge on brachial plexus variations to clinicians, which may help to avoid damage during surgical procedures related to plastic and reconstructive surgeries.
References


Introduction

Chronic myeloid leukaemia (CML) is a clonal myeloproliferative disorder resulting from neoplastic transformation of haemopoietic stem cells that can lead to increase of myeloid series in peripheral blood and myeloid hyperplasia in bone marrow. The most common adult leukemia in India is CML with annual incidence ranging from 0.8–2.2/100,000 population in males and 0.6–1.6/100,000 population in females [1]. The discovery of the first chromosomal abnormality in CML was done by Nowell and Hungerford in 1960 in Philadelphia and the deletion of one of the shortened chromosome of chromosomes 22 pair was named as ‘Philadelphia chromosome’ to honor the city [2]. The presence of Philadelphia chromosome (Ph) differentiates the chronic myeloid leukaemia from other chronic myeloproliferative disorders [3].

Philadelphia chromosome arising from the reciprocal translocation between long arm of chromosomes 9 and 22 that fuses the ABL (Abelson Murine leukemia Virus) oncogene on chromosome 9 to the BCR (breakpoint cluster region) gene on chromosome 22. This results in the formation of chimeric fusion gene BCR-ABL and this translocation - t(9;22)(q34;q11.2) was identified with advancement of banding techniques which became the diagnostic hallmark of CML. Conventional cytogenetics or karyotyping is the standard method to detect

Fluorescence in situ hybridization on Peripheral blood for Chronic Myeloid Leukaemia - Rapid and reliable method

Meenakshi A.¹, Prashanth Shetty D.², Suchetha Kumari N.³, Michelle Mathias⁴, Karuna Ramesh Kumar⁵ & Jayaparakash Shetty⁶

¹Lecturer & Research Associate, ²Professors, Diagnostic Centre for Cytogenetics & Molecular Genetics, ³Professors, ⁴Professor & HOD, Department of Pathology, K. S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India.

Abstract

Philadelphia chromosome (Ph) is found in more than 95% of Chronic Myeloid Leukaemia (CML) patients arising from the reciprocal translocation of chromosomes 9 and 22 which results in the formation of chimeric fusion gene BCR-ABL. This paved the path for targeted gene therapy in CML and thus plays a pivotal role in diagnosis and prognosis. Fluorescence in situ hybridization (FISH) is a rapid and reliable technique in molecular cytogenetics to detect BCR-ABL fusion signal in both interphase and metaphase spreads of bone marrow sample. Peripheral blood white cells as a surrogate for bone marrow have been suggested by a few studies.

The objective of the study was to evaluate FISH on peripheral blood specimen as a rapid and reliable method to quantify Ph positive cells in a patient with Chronic Myeloid Leukaemia. FISH was performed on interphase nuclei from cultured peripheral blood sample of the patient using BCR/ABL Translocation, Dual fusion probe. Chromosomal analysis was performed by GTG banding technique. FISH and karyotyping confirmed the presence of reciprocal translocation t(9; 12) (q34.1; q11.2).

Our results confirmed that FISH technique is a rapid, sensitive, quantitative technique which can be used for the evaluation of CML using peripheral blood. FISH helps in the detection of minimal residual disease and disease recurrence with small percentage of abnormal cells. In our experience, this situation is usually associated with very high WBC count which can result in increase in the percentage of Ph-positive cells.

Keywords: Fluorescence in situ hybridization (FISH), chromosomal analysis, chronic myeloid leukemia, peripheral blood.
chromosomal aberration. In addition to Ph chromosome, chromosomal abnormalities like trisomy 8 and isochromosome 17 also can be identified in CML cases by using chromosomal analysis [3].

Fluorescence in situ hybridization (FISH) is a molecular cytogenetics technique, becoming a vital part of clinical practice in the workup of patients with hematological malignancies. FISH can be used to investigate both proliferating (metaphase cells) and non-proliferating (interphase nuclei) cells by detecting the location of specific nucleic acid sequences, using fluorescently labeled specific DNA probes to the target sample. FISH has been used as the most reliable method to identify the BCR/ABL gene at the time of diagnosis [3].

Materials and Methods

Subject
A 52 year old female presented with fatigue and fever of one month duration was admitted in K.S. Hegde Charitable hospital, Deralakatte, Mangalore. On examination, she had pallor and splenomegaly 4cms below the costal margin. The blood investigations revealed total WBC count of 92.5x10^6/L and hemoglobin level of 9gms/dl. Peripheral blood smear confirmed the diagnosis of CML. (Differential count -14 nRBCs/100 WBC, Myeloblast - 11%, Promyelocytes - 7%, Myelocytes - 21%, Metamyelocytes – 13%, Band forms – 12%, Neutrophils – 23%, Eosinophils – 8%, Basophils – 5%) Peripheral blood smear picture of the patient is shown in Figure 1 & 2.

Owing to her high WBC count, 3ml of peripheral blood was collected in sodium heparin vacutainer tube and sent for karyotyping and Fluorescence in situ hybridization (FISH) to Diagnostic Centre for Cytogenetics and Molecular genetics.

Conventional cytogenetic analysis
Direct and 24 hour cultures were set up with peripheral blood using RPMI 1640 medium supplemented with 20% of fetal bovine serum. GTG banding was done using standard cytogenetic protocol. Metaphases were analyzed from each culture, captured using the Olympus BX53 microscope and karyotyped with the ‘GENASIS’ software. Ph chromosome positivity was expressed in all 20 metaphases analyzed and the karyotype was reported according to An International System for Human Cytogenetic Nomenclature (ISCN) 2013.

Fluorescence in situ hybridization (FISH) Analysis
FISH analysis was carried out on interphase cells and metaphases of the fixed cell pellet using BCR/ABL Translocation, Dual fusion probe (Cytocell, UK). The BCR/ABL probe set comprises a BCR probe mix directly labeled in green (Spectrum Green) spanning at 22q11.22-q11-23 and the ABL1 probe directly labeled in red (Spectrum Orange) spanning at 9q34.11-q34.12. Cell pellet was dropped on the slide and 10µl of probe was applied to the target area. The sample and probe were co-denatured and hybridized using the ThermoBrite Denaturation /Hybridization System.

The ThermoBrite unit was programmed to allow 5 minutes of denaturation at 73°C to transform the double strands DNA into a single strand, followed by overnight hybridization at 37°C for the probe to hybridize with the target cells and bind to it. Next day, the slide was washed with 0.4X SSC/0.1% NP-40 at 72°C for 2 minutes, followed by a wash in 2X SSC/0.1% NP-40 at room temperature for 1 minute to remove any of the probes that did not bind to the cells. The slide was air dried in the dark, then added 10µl of DAPI (4, 6-diamidino-2-phenylindole) as a counter stain.

The FISH signals were visualized using an Olympus BX53 fluorescence microscope equipped with appropriate filters. Interphase nuclei and available metaphases were scored and the signals were captured using a CCD camera attached to a FISH View image acquisition and analysis system for FISH (GENASIS, Applied Spectral Imaging, Germany).

Results
Cytogenetic analysis of a metaphase showing 46,XX,t(9;22)(q34;q11.2) karyotype, which results in the Philadelphia chromosome is shown in Figure 3. FISH analysis of normal interphase nuclei will have a simple 2R, 2G signal pattern.
As a result of the Philadelphia chromosome, ABL1 (Abelson) proto-oncogene and the BCR (Break point Cluster Region) gene fuse, giving rise to the BCR/ABL1 fusion gene showed 1 green, 1 red and 2 yellow fusion signals (1G, 1R, 2Y) in all the cells analysed (Figure 4 & 5).

**Discussion**

Ph chromosome is present in 95% of CML cases and also present in 5% of children and 20% of adults with acute lymphoblastic leukemia (ALL) [3]. Conventional cytogenetics is considered as the diagnostic hallmark for identification of Ph positive metaphases in CML cases when it is present in more than 30% cells. This method has its own limitations like increased turn around time, labour intensive procedure and analysis dependent on high numbers of viable dividing cells and well spread metaphases. Reena et al studied the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of conventional karyotyping, reported as 85%, 100%, 100% and 71% respectively. The accuracy for conventional karyotyping method was 88% [3]. In the present study, conventional cytogenetics was done with 20 metaphase spreads and the Philadelphia chromosome (Ph+) was seen in all well spread metaphases. Good metaphase spreads are difficult to get and may consume extra time for analysis. However, conventional cytogenetics has its strength of detecting additional nonrandom chromosomal aberrations within the 20 spreads [4].

The quantification of BCR-ABL positive cells by FISH facilitates the monitoring of disease response to therapy [2]. The accuracy of FISH in the analysis of BCR-ABL rearrangements of CML patients has been demonstrated by several recent studies [5,6,7]. Even 1-2% of positive cells can be picked up due to the sensitivity of FISH test [5]. FISH was carried out in this patient with 200 interphase nuclei and available metaphases. The presence of Ph chromosome was confirmed and proved the accuracy of FISH on peripheral blood which was 100%. This technique has many advantages, which include analysis of large number of cells, speed of reporting within 24 hours of the sample received in the laboratory, which may be useful in urgent diagnostic situations. It can be performed with fixed cell pellets left over from cytogenetic study of bone marrow or peripheral blood and paraffin embedded tissues [3].

Le Gouill et al studied the correlation between FISH and cytogenetics on bone marrow and got highly correlated results, then they moved on to the analysis of peripheral blood samples where comparable results were obtained, with an excellent correlation ($r = .97$) [6]. Earlier reports
have demonstrated that FISH technique was able to detect all types of BCR-ABL fusions in CML with masked or variant Ph, which is not apparent with the conventional karyotyping [6,8]. Lim et al observed additional karyotypic changes like supernumerary Ph or deletions of 9q and/or 22q in 28.1% of Ph positive patients by interphase FISH [8]. The detection of BCR-ABL cells by Interphase FISH correlates better with molecular response, the exact interpretation of FISH in conjunction with chromosomal analysis is the best practice, to avoid the possibility of misdiagnosis [8,9].

Patel et al observed significantly reduced disease free survival in patients with deletion in ABL, BCR or ABL, BCR on derivative 9 as compared to non-deleted derivative 9 and their findings suggest that the gene segments around the breakpoint are deleted in heterogeneous patterns when the translocation occurs and the genes located near the breakpoint may also play a role in the delayed tumor progression [10]. Thus, FISH technique gives information about the phases of CML and useful at diagnosis after BMT (Bone Marrow transplantation) for detection of residual diseases.

Conclusion
Chromosomal analysis and FISH both have their advantages and should ideally be carried out together in order to make a correct diagnosis and predict/monitor response to newer molecular targeted treatment modalities like imatinib mesylate. FISH can be done in peripheral blood when the WBC count is high which can result in increase in percentage of Ph positive cells and also failed cases of conventional cytogenetic analysis to quantify disease in CML. FISH on peripheral blood exhibited a high degree of correlation with bone marrow, as a rapid, accurate and relatively non-invasive method.

Acknowledgement
The authors wish to thank the patient for providing the sample and written informed consent form (ICF). The authors are also grateful to Nitte University Ethics Committee for publication approval and to Mrs. Vani Shetty for her technical help.

References
Superior vena cava syndrome (SVCS) is a well-known manifestation of benign and malignant tumors of the upper mediastinum that causes obstruction of blood flow through the superior vena cava (SVC). Superior vena cava (SVC) obstruction and thrombosis caused by indwelling venous catheters is a growing problem in patients on regular haemodialysis and is associated with an appreciable morbidity and mortality. With the advances in interventional cardiology, percutaneous treatment by stenting has become a reasonable strategy in superior vena cava syndrome (SVCS), whether the underlying disease is malignant or benign. We present a 62-year-old woman with typical signs and symptoms of SVCS, secondary to thrombus surrounding the indwelling central catheter who was treated with endovascular stenting by the percutaneous approach. We obtained both procedural success with complete restoration of blood flow and immediate relief of symptoms.

Case report
A 62 year old lady with dialysis dependent renal failure was admitted in our hospital on 13/2/2015 with history of progressive swelling of face, neck and upper chest since 1 month duration (Figure1). She was dialysed through a perm catheter on the right jugular which was inserted about 2 years back (Figure3). On evaluation she was diagnosed to have obstruction of SVC due to the thrombus surrounding the indwelling central catheter. A venogram done in our hospital revealed poor flow through the SVC. Echocardiogram done was also suggestive of decreased SVC flow. The perm catheter had very poor flow and hence a Right femoral trialyser was inserted for dialysis. Patient was posted for superior vena caval stenting on 19/2/2015.

Superior vena cavography was performed via a right retrograde venous approach from the common femoral vein to evaluate the degree of SVC obstruction and it showed significant narrowing of the lumen with almost complete restriction of blood flow to the right atrium (Figure5). 0.035” x 260cms Cordis Emerald guidewire was placed through the Perm catheter across SVC, RA and placed in IVC. Perm catheter was removed. Predilatation done with Admiral Xtreme 5 x 80mm Percutaneous transluminal angioplasty (PTA) balloon at 8 atmospheres. 16 x 60mm Self expanding (Boston Scientific) Wall stent was deployed. Post dilated with 8 x 37mm EV3...
balloon at 8 atmospheres. Immediate end result was good (Figure 6). On the next day patient was completely relieved of her symptoms and her swelling of face and neck had completely resolved (Figure 2). A screening echo was done which showed adequate flow through the SVC. Patient was started on anticoagulation with the target to keep the INR between 2 – 3.

**Discussion**

Superior vena cava syndrome generally occurs as a result of either compression by an adjacent tumour in 85% of cases or compression by mediastinal lymph nodes. The clinical presentation of SVCS depends primarily on the acuteness of SVC obstruction. [1] The most common symptoms of presentation include facial and neck swelling, bilateral upper extremity swelling, dyspnea, headache, and cough. Superior vena cava syndrome is often clinically diagnosed, with the patient presenting with signs and symptoms related to venous congestion. [2]

Superior vena cava (SVC) obstruction and thrombosis caused by indwelling venous catheters is a growing problem, and is associated with an appreciable morbidity and mortality. [3]

Factors like under-provision of vascular access surgery, late referral and co-morbidities, large number of patients are subjected to use tunnelled venous catheters in the medium to long term haemodialysis. [4] One consequence of this will be the increasing incidence of central venous stenosis, thrombosis and exhaustion.

In this patient SVC obstruction was caused by thrombosis of SVC produced by venous catheter inserted for haemodialysis.

The pathophysiology is thought to be secondary to early intimal injury associated with focal endothelial denudation occurring with short-term central venous catheters and related to the position of the tip of the catheter, the site of insertion, the material, and predisposition to thrombosis. [5] With long-term catheter use, there is vein wall thickening, increased smooth muscle cells and focal catheter attachments to the vein wall with thrombus and collagen. [6] Management needs to be individualized. In the first few days of SVC thrombosis, removal of catheter, chemical or mechanical thrombolysis of the clot and/or venoplasty and stenting has been reported to resolve the symptoms. [7]

The use of angioplasty and stenting in the treatment of SVCS has developed over the past 15 years. With high
success rates of stenting and nearly complete and immediate relief of symptoms, endovascular treatment has become a safe, consistent, and cost effective treatment for patients with SVCS. [8]

The most common complication of this therapy is stent thrombosis, stent migration perforation and rupture of veins which can be successfully treated with thrombolysis or stent replacement and anti-coagulation with warfarin. The chance of stent migration and rupture of veins is very rare. [9]

**Conclusion**

Indwelling Central venous catheter is known to cause SVCS secondary to stent thrombosis.

Endovascular stenting for superior vena cava syndrome has shown rapid relief of symptoms after the procedure. This procedure is relatively safe and complication like stent migration and rupture of veins are very rare. Patients should be started on anti-coagulation with warfarin to prevent stent thrombosis.

**References**

Hyper IgE syndrome (hies; job syndrome): A case report

Priyanka Ameta¹, Anuj Dhyani², Vignesh Hebri Nayak³ & Suresh Goyal⁴

¹Senior Resident, ²Third Year Resident, ³Professor and HOD, Department of Pediatrics, R.N.T. Medical College, Udaipur, ⁴Senior Resident, Department of Pediatrics, K.S. Hegde Medical Academy, Nitte University, Mangalore.

Correspondence
Priyanka Ameta
30, Samta Nagar, Hiranmagri, Sector-3, Udaipur, Rajasthan - 313 002.
Mobile : +91 87640 72927     E-mail : priyankaameta1985@gmail.com

Abstract
The hyper-immunoglobulin E syndrome (HIES) is a rare primary immunodeficiency disorder characterized by high serum levels of immunoglobulin E (IgE), recurrent cutaneous and pulmonary infections, chronic dermatitis and a variety of connective tissue and skeletal abnormalities. These patients share characteristic facial appearance and many oral manifestations. We report a case of hyper IgE syndrome (HIES) also known as "Job syndrome".

Keywords: Hyper-immunoglobulin E syndrome, Job syndrome, Primary immunodeficiency, Eosinophilia, Recurrent infections.

Introduction
The hyper-immunoglobulin E syndrome (HIES) is a rare primary immunodeficiency disorder characterized by recurrent cutaneous and pulmonary infections, eczematous dermatitis and elevated serum IgE concentrations. In 1966, Davis et al described this disease first as “Job’s syndrome” in two girls suffering from recurrent “cold” staphylococcal abscesses, pneumonia and neonatal-onset eczematous rash. In 1972, Buckley et al. found extremely high serum IgE levels in these patients. Subsequently, other manifestations of the disease have been established, like skeletal, connective tissue, cardiac, and brain abnormalities.

Two forms of HIES are recognized: autosomal dominant and autosomal recessive. However, most cases of HIES are sporadic. Diagnosis in young children can be challenging as symptoms accumulate over a period of time along with confounding clinical dilemmas.

Case Report
A 4 month old female child with failure to thrive and global developmental delay, got admitted to the hospital with complaints of dry and scaly skin for last two months, chest wall abscess and refusal to feed for last three days. No history of fever, cough or shortness of breath. The child was hospitalised one month back for similar history of abscess over the neck and scalp, which grew staphylococcus aureus on culture and was treated with antibiotics and abscess was drained. Her birth history was uneventful. She was delivered to a 24 year old mother (P2L2) via vaginal delivery at 38 weeks with birth weight of 2.37 kg, with an uneventful neonatal period. The child was on breast feeding supplemented with formula feeds and had received only first dose of hepatitis B vaccine at birth.

On the day of admission, her vitals were stable, she was cachexic, had eczematous dermatitis, craniosynostosis, facial dysmorphism, cervical and axillary lymphadenopathy of 1 cm each and a chest wall abscess measuring 4×4 cm over left anterior chest with no signs of inflammation. Her labs on day of admission, CBC was normal with moderate eosinophilia (AEC-2600, 14%), chest wall abscess grew coagulase positive staphylococcus aureus. CSF was normal and blood culture was negative.

Her abscess was drained and treated with injectable amoxicillin clavulanic acid, according to bacterial sensitivity pattern. However, the child’s condition worsened on D4, she developed respiratory distress and chest x-ray showed right upper lobe pneumonia.
Antibiotics were upgraded and in view of septicaemia, IvIg was given. After initial improvement, her respiratory distress continued to worsen on D7, when, repeat chest x-ray showed features of bilateral pneumatoceles with pneumothorax. Intercostal chest tubes were put, and antifungal drugs were added as she was worsening further. Despite our best efforts, the child expired on day 10.

**Discussion**

**Clinical manifestations of HIES:** Hyper IgE Syndrome usually presents very early in life. Almost all patients suffer from recurrent staphylococcal infections, beginning in infancy and predominantly involving the skin and lungs. Newborn pustular and eczematous rashes are usually the first manifestations of the disease, typically affecting the face and scalp, with an eosinophilia and caused by *Staphylococcus aureus*. Boils are a classic finding. Recurrent pyogenic pneumonias are very common, starting in the childhood.

In these patients, the degree of inflammatory symptoms is variable. The “cold” abscesses, without external signs of inflammation, initially described by Davis and colleagues, are common. *Staphylococcus aureus* is the bacterium most frequently isolated, but *Streptococcus pneumoniae*, *Haemophilus influenzae*, enteric Gram-negative bacteria; *Candida* and *Aspergillus* are also common. Pneumonia is frequently followed by pneumatocele or bronchiectasis, which are commonly superinfected by *Aspergillus fumigatus* and *Pseudomonas aeruginosa*. Several cases of pneumocystosis, cryptococcosis, histoplasmosis and candidiasis have also been reported.

The facial appearance is very characteristic: facial asymmetry, prominent forehead, deep-set eyes, broad nasal bridge, mild prognathism, and rough appearance of the facial skin with prominent pores. Some individuals retain their primary teeth, because of the failure of those teeth to exfoliate. Other features are craniosynostosis, multiple fractures, scoliosis, Chairi I malformation, central depressions in the tongue and high arch of the palate.

**Laboratory investigations:** Serum IgE concentrations are extremely high in patients with HIES (> 2000 IU/ml). The molecular mechanism of hyper-IgE is unclear. HIES patients have normal or decreased serum IgM, IgG and IgA levels. Eosinophilia is the other consistent laboratory finding. Total white blood cell counts are normal but they often fail to elevate appropriately during acute infection. An impaired chemotaxis of neutrophils or monocytes has been described, a defect that explains the “cold abscesses” seen in these patients.

**Therapy of hyper-IgE syndrome:** There is no cure for HIES yet. The consensus favors long-term prophylactic therapy.
with an anti-staphylococcal antibiotic such as trimethoprim-sulfamethoxazole. The efficacy of antifungal prophylaxis remains unproven. Other options include IFN-gamma, which has inconsistent effects on IgE levels, and, Intravenous immunoglobulin, which may decrease the number of infections for some patients.

Bone marrow transplantation has been unsuccessful in this condition.

Our child had many features suggestive of Hyper IgE syndrome; eczema, recurrent staphylococcal abscess without fever and signs of inflammation, pneumonia complicated with pneumatocele and pneumothorax, facial dysmorphism, craniosynostosis and elevated eosinophil count and IgE.

Conclusion

Patients with Hyper IgE syndrome usually die prematurely due to pulmonary infections; early diagnosis with treatment and prophylactic therapy with co-trimoxazole can be lifesaving and can lead to a significant reduction in morbidity.

References

Chondrosarcoma of the anterior chest wall: surgical resection and reconstruction using a two layer polypropylene mesh and bone cement sandwich

Amol Amonkar¹, Mundayat Gopalakrishnan², AmithKiran Naik³, Vishwanath S⁴, Vimaladhithan⁵ & Saquib Sultan⁶

¹,²,³ Post graduate, Department of Surgery, ¹HOD and Professor, ³Associate Professor, Department of Cardiothoracic and vascular surgery, ⁴Assistant Professor, Surgical Oncology, K. S. Hegde Medical Academy, Nitte University, Mangalore.

Correspondence
Amol Amonkar
Post graduate, Department of Surgery, K.S. Hegde Medical Academy, Nitte University, Mangalore - 575 018, Karnataka, India.
Mobile : +91 98865 35829     E-mail : amonkaramol@gmail.com

Abstract
Primary malignant tumours of the chest wall are uncommon. Chondrosarcoma is the most common malignancy among them, the current therapy for chondrosarcoma requires adequate surgical excision. A 50 year old male presented with a swelling on the anterior chest wall, trucut biopsy of the swelling was reported as chondrosarcoma. Thorax computed tomography (CT) revealed a large mass lesion with the epicentre at the costal cartilage of the right 2nd rib extending beyond the chest wall and musculature and protruding internally up to the upper lobe of the right lung, features likely of chondrosarcoma. In order to obtain disease free surgical margins, an en-bloc resection of the tumour along with approximately 4 cms of 1st rib and 2nd and 3rd rib and reconstruction of the anterior chest wall was performed with a 2 layer polypropylene mesh and bone cement sandwich. The post-operative course was uneventful. The chest wall reconstruction with the two layer polypropylene mesh and bone cement provided the essential rigidity and stability to the chest wall.

Keywords: Chondrosarcoma, chest wall, reconstruction, two layer polypropylene mesh and bone cement sandwich.

Introduction
Primary malignant tumours of the chest wall are a heterogenous group of uncommon tumours developing from bone, cartilage or the soft tissues [1]. Chondrosarcoma is the most common primary malignancy of the anterior chest wall and the successful treatment of choice includes en-bloc removal of the tumour with surrounding tissue with a minimum clear margin of 2 to 6 cm. Reconstruction of an oversized defect can be difficult and sometimes needs the use of a synthetic prosthesis. Hereby our clinical experience with a bone cement mesh reconstruction of a large anterior chest wall defect is presented.

Case Report
A 50 year old male presented with a swelling on the right side of the anterior chest wall since 6 months which was insidious in onset and suddenly progressed in size since 1 month, with no other symptoms. On local examination of the chest wall a solitary swelling in the right side of the anterior chest wall measuring 18 X 18 cm, which is hard in consistency and had well defined borders. Trucut biopsy was suggestive of chondrosarcoma. Thorax computed tomography revealed a large mass lesion with the epicentre at the costal cartilage of the 2nd rib with flocculant calcification centrally and soft tissue in the periphery extending beyond the chest wall and musculature and protruding up to the right upper lung. The patient was taken up for surgery under general anaesthesia with single lung ventilation and vascular access was obtained through the femoral vein. Intraoperatively it was found that the superior vena cava was compressed by the tumour, the other major vessels and the upper lobe of the lung were free of the tumour. The patient underwent an en-block resection of the tumour arising from 2nd and 3rd rib along
with approximately 4 cm of 1st rib. Chest wall defect was reconstructed with bone cement which was sandwiched between the polypropylene meshes. The edge of the mesh was anchored to the remaining ribs and sternum to stabilize the thoracic wall. It was then covered with a pectoralis major muscle, subcutaneous tissue and skin. The patient was extubated in the operation theatre and was maintaining well, the patient was shifted to the intensive care unit (ICU) for post-operative care. The post-operative period was uneventful. The histopathological report was suggestive of chondrosarcoma.

Discussion

Chest wall tumours are rare and account for almost 0.5 – 1% of the primary bone tumours, with chondrosarcoma being the most common subtype. It mostly occurs after the 6th decade of life and has a slight male predominance [3, 4]. It usually presents as a gradually growing, solid and fixed mass [3]. Occasionally with a concomitant chest pain, which is a sign of bad prognosis [3]. Chest wall resection and reconstruction procedure requires adequate radical resection associated with maintenance of chest stability, adequate lung function and an acceptable cosmetic result. The purpose of adequate radical surgery is removal of the...
tumour with a wide disease free margin along with maintenance of chest wall stability[5]. Inadequate tumour resection is associated with a high incidence of recurrence[5]. The optimal incision should be 2 to 6 cm from the margin of the tumour in order to minimize the risk of local recurrence[6]. Reconstruction is essential to maintain original respiratory function and protect other mediastinal organs, these reconstruction techniques include pedicled skin and muscle flaps, skin grafts and autologous bone transplants. The choice of reconstruction technique depends on the extent and localization of the defect. If the defect is less than 5 cms then skeletal reconstruction is not necessary. Muscle flap reconstruction may be used in cases with sole upper half sternal resections. Resection of the lower half of sternum requires synthetic materials to stabilize rigid chest wall in order to protect the vital organs.[2-4]. The prosthetic material used during reconstruction should have sufficient rigidity to prevent paradoxical chest motion, must have adequate radiolucency to allow radiographic follow up and must be biocompatible structure which allows growth of fibrous tissue without causing any infection in it.[4]. Hereby described a case of chondrosarcoma that needed an en-bloc resection of the tumour with two layer polypropylene mesh and bone cement sandwich.

Conclusion
We conclude by stating that even large chest wall tumours can be successfully resected with a multidisciplinary team approach involving an oncosurgeon, cardiothoracic and vascular surgeon, plastic surgeon, intensivist, anaesthesiologist and good nursing care. Surgical resection is the mainstay of treatment of this tumour. Chemotherapy and radiotherapy have a limited role in the treatment of this tumour.

References
INSTRUCTIONS TO AUTHORS

Section 1: Editorial process

Editorial screening
All manuscripts received will be screened by the Editors for a preliminary assessment on the suitability for the Journal. The Editors are entitled to reject the submissions at this stage based on the nature of the study, quantity and quality of data, general conclusions, standard of presentation, language quality and if the paper falls outside of the journal scope.

Peer-review
Manuscripts which meet requirements as judged by the Editors will be sent to two or more independent expert reviewers. Identity of the authors will not be revealed to the reviewers. The reviewers may make critical comments and, where necessary, suggest improvements or additional experiments that could be done in support of the findings. Based on the reviewers inputs, the Editors will decide on the outcome. There are three possible decision outcomes: accept, revise (major or minor) and reject. Revise decisions imply that the paper requires modifications that could be carried out within a specified time frame. Contributors will be informed about the reviewers’ comments.

Post-acceptance
Articles accepted (after revisions as the case may be) they would be copy edited for grammar, punctuation, print style, and format. Page proofs will be sent to the corresponding author’s e-mail ID for final proof reading. Corrections received within the time stipulated will be included in final print. Copyright transfer forms will be sent to the Corresponding author if a manuscript is accepted for publication. Completed and signed forms have to be returned within stipulated time.

Section 2: Types of Manuscripts

The following types of manuscripts will be accepted for consideration of publication in NUJHS.

Original research articles
Full reports on epidemiological studies, randomised controlled trials, intervention studies, case-control series, studies of screening and diagnostic tests, outcome studies, cost effectiveness analyses, surveys with high response rate and experimental studies in basic sciences. Should include an abstract. Word limit: Up to 3000 words excluding tables, references and abstract. Should include following sections: Abstract (maximum 250 words), Introduction, Methods, Results and Discussion, References (Maximum 8)

Short Communication
Brief report for rapid communication. Not more than 1000 words excluding tables, references and abstract and references. Not more than 4 tables and 4 figures / illustrations. A short communication should contain following sections: Abstract (maximum 250 words), Introduction, Methods, Results and Discussion, References (Maximum 8)

Case reports
Reports of cases which are of new / rare diseases, unusual presentation of common diseases, novel diagnostic tests / interventions, unexpected outcome or which present an important clinical lesson can be reported. Up to 2000 words excluding references and abstract. Up to 6 figures / illustrations. Should include following sections: Abstract (maximum 250 words), Background, Case Presentation, Investigations, Differential diagnosis, Treatment, Outcome and follow-up, Learning points, References (Maximum 10), Patient’s Perspective (Optional)

Letter to the Editor
A short communication that may provide new insight, make corrections, offer alternate theories, or request clarification about content printed in NUJHS. Upto to 400 words and 4 references.

Reviews/ Systematic Reviews/ Meta-analysis
Only those who have done substantial work in a particular field may submit a manuscript for a review / meta-analysis article. Please write to Editor with a brief outline of the proposed review and a short summary of the work done by the authors (s) in the field of review before you submit a manuscript. Systematic reviews and Meta-analysis, with specific hypothesis and universally accepted methodology would be preferred over narrative reviews. Up to 3500 words excluding tables, references and abstract. Should include following sections: Abstract (maximum 250 words), Introduction, Current status of knowledge (For narrative reviews) OR Methods (for systematic reviews), Conclusions, References (Maximum 60)

Section 3: Preparing the manuscript

The following are guidelines for reporting within sections of all manuscript types.

General guidelines
Manuscript documents should be typed in A4 size paper with margins of 25mm on all sides. Number pages consecutively beginning with title page. Use Times New Roman Font, with 1.5 line spacing and Left alignment.

1. Title Page
   a. Type of manuscript:
   b. Article title:
      The title must be less than 250 characters (including spaces) in length. Use “Sentence case”. Do not use “All Caps”. It should be specific, descriptive, concise, and comprehensible to readers outside the subject field. Avoid abbreviations if possible.
      Also provide a short title that is less than 50 characters in length (including spaces).
   c. Author information:
      All author names should be listed in the format [First names (or initials, if used), Middle names (or initials, if used), Last names (surname, family name)]. The name of the department(s) and institution(s) / organization(s) where they are affiliated to should be specified. Use superscripted Arabic numerals to index the affiliations.
One of the authors should be designated as the corresponding author. Provide full contact information, including land mail, e-mail addresses, telephone and fax numbers for telephone numbers for corresponding author. This information will be published with the article if accepted. This information cannot be changed after initial submission, hence please ensure that it is correct.

To qualify for authorship, one should contribute to all of the following: 1) Conceptualization and design of the work, acquisition of data and / or analysis and interpretation of data 2) Drafting the article or revising it critically for important intellectual content and 3) Final approval of the version to be published.

All persons designated as authors should qualify for authorship, and all those who qualify should be listed. Each author must have participated sufficiently in the work to take public responsibility for the content. Those who contributed to the work but do not qualify for authorship should be listed in the acknowledgments. All authors must approve the final manuscript before submission. NUJHS will contact all authors by email at submission to ensure that they are aware of the submission of the manuscript.

d) Source(s) of support
List and acknowledge grants, equipment, drugs, and/or other support that facilitated conduct of the work described in the article or the writing of the article itself.

e) Word count
Provide a word count for the paper's text, excluding its abstract, acknowledgments, tables, figure legends, and references

f) Number of figures / illustrations

g) Number of tables

h) Mention if the manuscript include any copyrighted figures / illustrations / other material (Yes/No). If Yes, attach copyright permission documents.

i) Conflict of Interest declaration.
Please declare any affiliations or relationships that could be viewed as potentially competing / conflicting interests. This information will be published with the final manuscript, if accepted, so please make sure that this is accurate and as detailed as possible. If none of the authors have any competing interests to declare, state so.

2. Abstract
Original research, systematic reviews, and meta-analyses require structured abstracts. The abstract should include the following sections: Background, Objectives, Materials and Methods, Results and Conclusion. The abstract should provide the context or background for the study and should state the purpose of the study, basic procedures (selection of study participants, settings, measurements, analytical methods), main findings (giving specific effect sizes and their statistical and clinical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations, note important limitations, and not over-interpret findings. Clinical trial abstracts should include the clinical trial registration number (if available) and other items that the CONSORT group has identified as essential (Schulz KF, Altman DG, Moher D, CONSORT Group. CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomized Trials. Ann Intern Med. 2010;152:726-732.).

3. Introduction
Provide a context or background for the study (that is, the nature of the problem and its significance). State the specific purpose or research objective of, or hypothesis tested by, the study or observation. Cite only directly pertinent references, and do not include data or conclusions from the work being reported.

4. Methods
The guiding principle of the Methods section should be clarity about how and why a study was done in a particular way. Methods section should aim to be sufficiently detailed such that others with access to the data would be able to reproduce the results. If an organization was paid or otherwise contracted to help conduct the research (examples include data collection and management), then this should be detailed in the methods.

The Methods section should include a statement indicating that the research was approved (or exempted) from the need for review by the responsible ethics review committee. A statement indicating that the research was conducted according to the principles of the Declaration of Helsinki should be included.

a) Selection and Description of Participants / study material
In case of human studies, clearly describe the selection of observational or experimental participants (healthy individuals or patients, including controls), including eligibility and exclusion criteria and a description of the source population. Specify and justify the sampling method used. Because the relevance of such variables as age, sex, or ethnicity is not always known at the time of study design, researchers should aim for inclusion of representative populations into all study types and at a minimum provide descriptive data for these and other relevant demographic variables. If the study was done involving an exclusive population, for example in only one sex, authors should justify why, except in obvious cases (e.g., prostate cancer).

b) Technical Information
Specify the study’s main and secondary objectives – usually identified as primary and secondary outcomes. Identify methods, equipment (give the manufacturer’s name and address in parentheses), and procedures in sufficient detail to allow others to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well-known; describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration. Identify appropriate scientific names and gene names.

c) Statistics
Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to
judge its appropriateness for the study and to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size and precision of estimates. References for the design of the study and statistical methods should be to standard works when possible (with pages stated). Define statistical terms, abbreviations, and most symbols. Specify the statistical software package(s) and versions used. Distinguish pre-specified from exploratory analyses, including subgroup analyses.

5. Results
Present your results in logical sequence in the text, tables, and figures, giving the main or most important findings first. Do not repeat all the data in the tables or figures in the text; emphasize or summarize only the most important observations. Provide data on all primary and secondary outcomes identified in the Methods section. Extra or supplementary materials and technical details can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.

Give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical significance attached to them, if any. Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

6. Discussion
Emphasize the new and important aspects of the study and the conclusions that follow from them in the context of the totality of the best available evidence. Do not repeat in detail data or other information given in other parts of the manuscript, such as in the Introduction or the Results section. For experimental studies, it is useful to begin the discussion by briefly summarizing the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, distinguish between clinical and statistical significance, and avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly.

7. References
a) General Considerations Related to References
Authors should provide direct references to original research sources whenever possible. References should not be used by authors, editors, or peer reviewers to promote self-interests. Do not use conference abstracts as references; they can be cited in the text, in parentheses, but not as page footnotes. References to papers accepted but not yet published should be designated as "in press." Information from manuscripts submitted but not accepted should be cited in the text as "unpublished observations" with written permission from the source.

Avoid citing a “personal communication” unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, obtain written permission and confirmation of accuracy from the source of a personal communication.

References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure. The titles of journals should be abbreviated according to the style used in MEDLINE (www.ncbi.nlm.nih.gov/nlmcatalog/journals).

b) Reference Style and Format

Articles in Journals (see also #36. Journal article on the Internet)
1. Standard journal article
List all authors.


As an option, if a journal carries continuous pagination throughout a volume (as many medical journals do) the month and issue number may be omitted.


More than six authors:


Optional addition of a database’s unique identifier for the citation:


Optional addition of a clinical trial registration number:

2. Organization as author


3. Both personal authors and organization as author (List all as they appear in the byline.)


4. No author given

21st century heart solution may have a sting in the tail. BMJ. 2002;325(7357):184.

5. Article not in English


6. Volume with supplement


7. Issue with supplement


8. Volume with part


9. Issue with part


10. Issue with no volume


11. No volume or issue


12. Pagination in roman numerals


13. Type of article indicated as needed


14. Article containing retraction


Article containing a partial retraction: [Added 12 May 2009]


15. Article retracted


Article partially retracted: [Added 12 May 2009]


16. Article republished with corrections


17. Article with published erratum

18. **Article published electronically ahead of the print version**

**Books and Other Monographs**

19. **Personal author(s)**

20. **Editor(s), compiler(s) as author**

21. **Author(s) and editor(s)**

22. **Organization(s) as author**

23. **Chapter in a book**

24. **Conference proceedings**

25. **Conference paper**

26. **Scientific or technical report**
Issued by funding/sponsoring agency:

Issued by performing agency:

27. **Dissertation**

28. **Patent**

**Other Published Material**

29. **Newspaper article**

30. **Audiovisual material**

31. **Legal Material**


32. **Map**

33. **Dictionary and similar references**

**Unpublished Material**

34. **In press or Forthcoming** [Edited 12 May 2009]
(Note: NLM prefers “Forthcoming” rather than “In press” because not all items will be printed.)


**Electronic Material**

35. **CD-ROM**
36. **Journal article on the Internet**


Article published on the Internet ahead of the print version: See # 18.

Optional formats used by NLM in MEDLINE/PubMed:

- Article with document number in place of traditional pagination:

- Article with a Digital Object Identifier (DOI):

- Article with unique publisher item identifier (pii) in place of traditional pagination or DOI:

37. **Monograph on the Internet**


38. **Homepage/Web site**


39. **Part of a homepage/Web site**


40. **Database on the Internet**


41. **Part of a database on the Internet**


42. **Blogs**


Contribution to a blog:


9. **Tables**

Tables should be prepared in MS Word. Use a simple black border design. Number tables consecutively in the order of their first citation in the text and supply a title for each. Refer to tables as (See Figure x). All tables should be uploaded as a separate file. Indicate the place in the manuscript at which you desire the Table to be inserted using the text [Insert Figure x here]. Titles in tables should be short but self-explanatory, containing information that allows readers to understand the table’s content without having to go back to the text. Be sure that each table is cited in the text.

Give each column a short or an abbreviated heading. Place explanatory matter in footnotes, not in the heading. Explain all non-standard abbreviations in footnotes, and use symbols (*, †, ‡, ...).
Contact details of the Corresponding Author

The following will be required for the online submission process:

1. Contact details of the Corresponding Author

2. A cover letter should be uploaded along with the manuscript. It should include the following information:

   a) A statement to the editor about all submissions and previous reports that might be regarded as redundant publication of the same or very similar work. Any such work should be referred to specifically and referenced in the new paper. Copies of such material should be included with the submitted paper to help the editor address the situation.

   b) A statement of financial or other relationships that might lead to a conflict of interest, if that information is not included in the manuscript itself.

3. Title page of the manuscript as a separate .doc or .docx file. Name file as [CorrespondingAuthorName]_TitlePage” (Eg. RajeevMenon_TitlePage.doc) – See Instructions above for details

4. Main manuscript file which includes the Title, Abstract, Keywords, Introduction, Methods, results, Discussion, References, List of Table (if any), List of figure legends (if any), and Tables (if any). Please do not include Author Information in this file. Do not embed figures / illustrations in this document. Upload them as separate files. Name this file as [CorrespondingAuthorName]_mainMS” (Eg. RajeevMenon_mainMS.doc) – See Instructions above for details

5. Image files of Figures / illustrations. Name these file as [CorrespondingAuthorName]_FigureX” (Eg. RajeevMenon_Figure1.jpg) – See Instructions above for details. Limit each file size to 2MB or less. Upload lower resolution images if exceeding limit. Editor will request for the high resolution images if required.

6. Supplementary information file (optional) – If any additional information which will help in evaluation of the manuscript needs to be presented, it maybe uploaded as a .doc / .docx / .pdf file. Please note that this will not appear in print but maybe shared with readers upon request. Name this file as [CorrespondingAuthorName]_SupplementaryInfo” (Eg. RajeevMenon_SupplementaryInfo.jpg)

7. Undertaking by Authors (mandatory) - form available at the journal website should be downloaded and completed. A scanned copy should be uploaded along with the manuscript submission. If accepted for publication, the original signed hardcopy will have to be mailed to the Editor. Name this file as [CorrespondingAuthorName]_Undertaking” (Eg. RajeevMenon_Undertaking.jpg)

8. Any other information (if any)

The manuscript must be accompanied by permission to reproduce previously published material, use previously published illustrations, report information about identifiable persons, or to acknowledge people for their contributions.

You will receive a manuscript submission ID during the online submission process. Please quote this ID in all future communications with the Editor. Please visit http://nitte.edu.in/journal/ for further details.
NUJHS DECLARATION AND RIGHT TRANSFER FORM
(To be signed by all authors)

I/We, the undersigned author(s) of the manuscript
entitled____________________________________________________________

hereby declare that the above manuscript which is submitted for publication in NUJHS is NOT under consideration elsewhere.

The manuscript is not published already in part or whole except in the form of abstract in any journal or magazine for private or public circulation. We have read instructions to authors No part of this manuscript referenced or otherwise has been copied verbatim any source.

I/We give consent for publication in the NUJHS in any media (print, electronic or any other) and transfer copyright to the NUJHS in the event of its publication in the NUJHS.

I/we do not have any conflict of interest (financial or other) other than those declared.

Ethical Committee & Animal ethical Committee clearances have been obtained in required cases. 'Informed Consent' has been obtained where relevant.

'I informed Consent' has been obtained where relevant.

I/We have read the final version of the manuscript and am/are responsible for the contents.

The work described in the manuscript is my/our own and my/our individual contribution to this work is significant enough to qualify for authorship.

No one who has contributed significantly to the work has been denied authorship and those who helped have been duly acknowledged.

I/ we also agree to the authorship of the article in the following sequence:

<table>
<thead>
<tr>
<th>Authors Name(s)</th>
<th>Signatures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
INDEXED / CITED

in Index Copernicus, Google Scholar, GFMER, Nursesmeet, HINARI, Mosbys, getCITED, EBSCOhost, Summon by Serial Solutions, SCOPUS, Genamics JournalSeek, EMBASE / Excerpta Medica, ProQuest, ProQuest Pharma Collection, WAME, ResearchGate, SciVerse, Biobase-CABS, DOAJ, Journal Rate, Research Bib, WorldCat, Universal Impact Factor, CIRRIE, CiteFactor, Ulrich's International Periodical Directory, Biblioteca Informa, SJIF, China National Knowledge Infrastructure (CKNI), SCIRUS & Health Science Research Network.

Nitte University
University Enclave, Medical Science Complex,
Deralakatte, Mangalore - 575 018. INDIA
Ph. : +91 - 824 - 2204300 to 02   Fax: +91 - 824 - 2204305
Website : www.nitte.edu.in