IJGC

INDIAN JOURNAL OF GERIATRIC CARE

SEP-DEC 2023, VOL. 12 NO 3

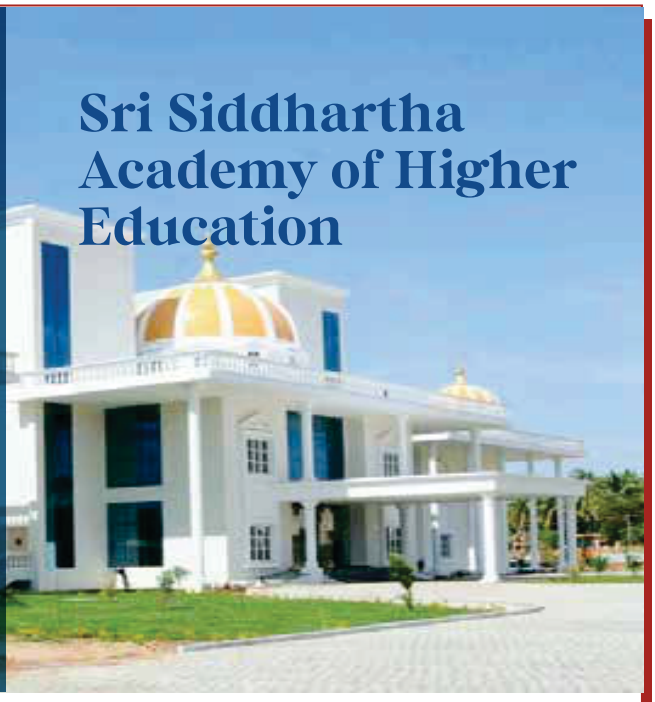
HIGHLIGHTS

GERIATRIC SOCIETY INDIA
CARING THE ELDERLY

IMCG-2024

International MID-TERM Conference of Geriatrics – 2024

19th & 20th April, 2024



Sri Siddhartha Academy of Higher Education

Theme:

Healthy Ageing, Age Gracefully.

PRECONFERENCE WORKSHOP ⌄
18TH APRIL 2024

KMC Credit Hours ⌄
5 Credit Hours

KMC CREDIT HOURS 5

"To care for those who once cared for us is one of the highest honors."
-Tia Walker -

REGISTRATION FEE

Category	Early bird Registration (tillFeb 29th)	Last date for Registration March 21st 2024	Workshop Fee
Post graduate Students	1500/-	2000/-	1000/- per workshop
Under Graduate Students	1000/-	1500/-	1000/- per workshop
Faculties	2000/-	2500/-	2000/- per workshop

Bank Details:
A/C Name : The Principal salary SSMC
A/C No : 20092200049762
IFSC Code: CNRB0012009

Contact Details:
For Registration Queries:
For Abstract & General Queries: Dr Charan, +91 76248 71585
For Travel & Accommodation Queries: Dr Ninad, +91 95910 03291
For General & Any Other Queries Mail to: ssmccon2022@gmail.com

Scan for UPI payments

Venue:
Sri Siddhartha Academy of Higher Education,
Tumkur, Karnataka.

ORGANISING COMMITTEE
SSMC, Tumkur

IMCG-2024

Editorial Board

IJGC
Indian Journal of Geriatric Care

Subscription Information:
Indian Journal of Geriatric Care is published three times a year.

DELENG/2012/42798 Dt. 12 June 2012, Price Rs. 20 Per Copy

Annual subscription for Journal, all flyers and circulars Rs: 1000.00 (One Thousand Only) for India; for other countries US $ 40.The journal is dispatched within India by surface mail and to other countries by sea mail.

Business Correspondence:
Enquires concerning subscription, advertisement, etc, should by addressed to Dr.O.P.Sharma, Editor-in- Chief , IJGC, K-49 Green Park Main New Delhi 110016.
Tel: 9810627346. Email : opsharma.gsi@gmail.com

Edited, printed and published by:
Dr. O.P. Sharma, for The Geriatric Society of India, K-49 Green Park Main, New Delhi-110016.
The Editor disclaims any responsibility or liability for statements made and opinion expressed by authors or claims made by advertisers.

Advertorial Enquiry:
Dr. O.P. Sharma, Editor-in- Chief, IJGC, K-49 Green Park Main, New Delhi-110016. Tel: 9810627346. Email : opsharma.gsi@gmail.com

Printed at Modest Graphics (P) Ltd, C-53, DDA Sheds, Okhla Phase-I, New Delhi, India.

CONTENTS

IJGC
INDIAN JOURNAL OF GERIATRIC CARE

Guest Editorial

Original Articles

Review Article

GSI News

Editorial

Anand P. Ambali
Professor and Head, Department of Geriatrics
BLDE DU Shri B M Patil Medical College Hospital and Research Centre, Vijayapura, Karnataka

Relevance of Geriatric Medical Education in India

In India there is no dearth of courses offered for learning geriatric medicine right now. The geriatric care which is a holistic care involves medical, social, psychological and spiritual care.

The multimorbidity in older people is a challenge for the physicians and many have expressed their inability to handle the challenges. This also is causing ageist attitude among clinicians. The geriatric syndromes, polypharmacy, iatrogenic diseases, long term care, complications of the diseases, disabilities, care modalities and acute care has made the geriatric care more challenging, hence the need for special specialty i.e. *Geriatircs!*

The training for caregiver, and nurses in geriatric care, palliative care, dementia care are provided by various institutions like National institute of social defense, Government, Private Medical and Nursing colleges and NGO's across India. My discussion here is purely concerned to geriatric medical education in India.

In my own example, after completing my Masters in Medicine in year 2002, I was looking for additional course in geriatric care. In year 2006 I came across PGDGM Course conducted by IGNOU through advertisement in newspaper. I immediately enrolled and I am now proud alumnus of IGNOU. I started a geriatric clinic in my medical college in year 2007 and started sensitizing undergraduate & postgraduate students on common health issues in geriatric care. Now here in our college we are offering MD in Geriatrics.

The Madras Medical College in Chennai was first to start MD Geriatric medicine course in India in the year 1996 by Dr. V S Natarajan. Since then, over 27 years, MD in Geriatrics has been started in 18 medical colleges across India with intake of 69 Postgraduate students every year as on 2024. Maharashtra tops with five medical Colleges while Karnataka has 4 medical colleges providing MD in Geriatrics. DNB in geriatrics is provided only in Baptist Hospital, Bangalore.

Then, The Indira Gandhi National Open University (IGNOU) came up with Post Graduate Diploma in Geriatric Medicine (PGDGM) course in the year 2004, which provides self-learning and practical experience for the learners. It provides 300 seats over 10 centers across India every year and are planning to increase the centers shortly. This course is recognized by University Grant Commission.

Many academic associations like Geriatric Society of India, Indian Academy of Geriatrics, & Indian Society of Gerontology have started Fellowship courses for medical practitioners and medical students on Geriatric Care. Then came the era of Certificate courses in geriatric medicine which is provided by few medical colleges across India. The Geriatric Society of India along with Khaja Bandanawaz University, Kalaburagi jointly has been organizing Certificate Course in Geriatric and Gerontology for medical practitioners for last three years, the course is on line with one day practical class followed by MCQ test. Practitioners in large numbers are participating in this program.

NIMHANS in Bangalore is providing course in geriatric psychiatry while Banaras Hindu University is providing Fellowship in geriatric rheumatology. The Government of India has started three Regional Training Centers exclusively on Geriatric care and few more are in pipeline. Eight medical colleges provide MD courses in palliative care with intake of 35 seats per year, while 10 hospitals are providing 18 seats in DNB palliative care. The

Editorial

National Institute of Social Defense has started online course in Geriatric care and Dementia Care called TAPAS, which is open for public as well and is free of cost.

Various colleges and Academic associations are providing online short courses in geriatric care for Undergraduate students and Interns. The good move is that the NMC has made it mandatory for interns to undergo sensitization program in geriatrics from 2017 batch across all medical colleges in India. But the tragedy is that only 20 medical colleges are able to sensitize geriatric medicine for interns. Another way the NMC is promoting geriatrics is by allowing to start department of Geriatrics with existing senior physician and a faculty with degree in family medicine. This has promoted to start many departments so far and will continue in future as well. The corporate hospitals are now encashing on geriatric clinic as well.

There are various ways by which the knowledge of geriatrics is imparted in medical education across India, more so in last five years. I feel, lot needs to be done. The youngsters should develop passion towards geriatrics specialty and they will definitely have a higher acceptance both in society and academics. The NMC should remove the barrier of not permitting to DM for students perusing MD Geriatrics.

The very fact that there is steep rise in centers providing geriatric education, suggest that there is a demand and more physicians are willing to learn geriatric care which suggest that geriatrics is much more relevant now.

Efficacy of Printed Exercise Material on Improving Retention of Exercises in Elderly Patients in Goa – A Randomized Control Trial

Adishree Kenkre*, Shreya Saokar*, Edwin Gomes**

ABSTRACT

Studies show that there is a rapid cognitive decline as age progresses, thus making it difficult for elderly to remember exercises. Exercise instructions(verbally/diagrams) help with better functional outcomes. The objective of the study is to determine whether exercises in printed form help in better retention and adherence to exercises. A randomized controlled trial with 2 groups (verbal instructions versus printed exercises) was conducted with a 3 monthly follow up. Pre and post intervention tests were 30 second chair stand test, 4 stage balance test and activities-specific balance confidence scale. Printed exercises along with verbal instructions showed better retention of exercises by the patients and improved adherence as well. Otago fall prevention program (OEP) has shown a significant improvement in their balance outcomes and reduced the fall risk among patients.

Keywords: elderly; exercise; falls; balance outcomes; retention

INTRODUCTION

Geriatric population is a rapidly growing age bracket in india and globally. Given that there are significantly more elderly people than the overall population, Goa may be the state in india that is most impacted. The share has climbed to 10.1% in 2021 and is expected to rise further to 13.1% in 2031 due to the growth in the senior person population in Goa.[1] Age- related changes that affect memory, incontinence, muscle mass and function loss, balance issues, slower reaction times, and worsened vision could be responsible for a higher risk of falls.[2]

A fall can be defined as an event resulting in a person coming to rest inadvertently on the floor, often caused by multifactorial risk factors including intrinsic and extrinsic factors.[3] Fall rate is predicted to be 33% among adult age of 65 years old leading to serious health issue; along with fear of falling affecting their quality of life. There exists a well-built association between fall and loss of balance.

*Dr. Adishree Kenkre & Dr. Shreya Saokar, Clinical Physiotherapist, Dept. of Geriatric Medicine, Goa Medical College,
**Dr Edwin Gomes, Prof & HOD Dept of Geriatric Medicine, Goa Medical College, Bambolim-Goa.

Balancing exercises are manifested to be one of the paradigm in adult fall minimization thus, it is necessary to inculcate balancing aids to strengthen the muscles. Otago exercise program (OEP), developed at Otago middle school is a composite of walking, balance training and muscle strengthening to improve balance, thereby, minimizing the fear of falling.[4] home exercise programs are both a positive adjunct to therapy and cost-effective and are often as effective as expert-provided therapy. Patients who are older, in poor health, or experiencing anxiety, depression, or mental health problems, typically have low adherence to home exercise programs.

Exercise instructions provided verbally or using words or diagrams on paper are common forms of delivery of this information that might help with better adherence and ultimately better functional outcomes.[5] Various balance tests like 30 seconds chair stand test and 4-stage balance test are validated measure recommended to screen individuals for fall risk and the activities-specific balance confidence (ABC) scale is a structured questionnaire that measures an individual's confidence during ambulatory activities without falling or experiencing a sense of unsteadiness.[6]

NEED OF THE STUDY

Ageing is associated with morbidity and impairment. Each year, almost one-third of elderly individuals fall and unintentional injury due to falls appears to be the sixth most common cause of death in adults over 65. Deficits in balance and gait with ageing; along with other age-related changes lead to subsequent falls in elderly, which affect their daily functioning finally leading to disability and degrading their quality of life. Thus, fall prevention becomes an important part in geriatric rehabilitation. Physiotherapists play an important role in strength, balance and gait training; thereby contributing to fall prevention. As clinic- based therapy is difficult for the elderly on a daily basis due to various barriers, home exercise programs are a good adjunct.

Also, there is a rapid cognitive decline as age progresses. Thus, it becomes difficult for the elderly to remember the exercises, leading to poor adherence. It is known that providing exercise instructions in written format can be beneficial to the patients for home-based therapy compared to exercises in verbal form. Studies have also showed that those patients who adhere to their prescribed exercises are significantly better at achieving their goals.

In our geriatric medicine OPD, we have experienced a lot of patients forgot their exercises and thus showed no improvement in their condition. Also, giving printed exercise material to them, have led to better health outcomes. Thus, the current study focusses on monitoring retention of exercises by the patients by giving printed exercise material, along with calculating their adherence rate. In addition, improvement in their balance outcomes will also be noted.

REVIEW OF LITERATURE

1) Darshan Kumar, Muhammad Saad Khan, Hajra Ameer Shaikh conducted a study on physiotherapists' perceptions regarding the patient adherence to prescribed self-management strategies. The study was cross sectional which was conducted on 120 physiotherapist using non-probability purposive sampling technique. The questionnaires were self-administered by researcher. Study concluded that physiotherapists perceive that patient's adherence to self-care techniques can significantly affect treatment outcomes.
2) Kellie B Emmerson, Katherine E Harding and Nicholas F Taylor conducted study on providing exercise instructions using multimedia may improve adherence but not patient outcomes. The study was randomized control trial which is exercise -based interventions for health conditions, and comparing instructions provided using multimedia approaches with conventional verbal or written instructions. The total number of participants included were 2156. the study showed that a meta-analysis of three trials (140 participants)provided very-quality evidence that multimedia exercise instructions may be more effective than written instructions in improving exercise adherence
3) Pothiraj Pitchal, Hiral Bipin Dedhia, Nidhi Bhandari *et al* conducted study on prevalence, risk factors, circumstances for falls and level of functional independence among geriatric population. The study was cross sectional including 2049 elderly population of 60 years and above. The study showed that fall as a significant health problem and provides insight into the influencing risk factors for fall among older adults.
4) M Kranthi Kumar, Sanjeev Attry[2], Kusuma Kumari *et al* conducted a study on implementation of Otago exercise program combined balance exercise: a sustainable way to renovate balance and avert fall risk in older community-dwelling adults. The study was randomized control trial study where the patient was randomly selected between the age group of 60-65 years and were grouped into two, group a (OEP + balance exercise) and group b (common balance exercise), 15 individuals per group. The schedule for the experiment is set to one month, about 3 days per week for 20 minutes. The study proved that balance exercise combined with OEP is highly valuable in comparison with the standard balancing exercises.

RESEARCH QUESTION

Is providing printed exercise material efficient in improving retention of exercises in elderly?

OBJECTIVES OF STUDY

1. To determine whether exercises in printed form help in better retention and adherence of exercises.
2. To perceive whether printed exercise material has an effect on balance outcomes in elderly when compared to verbal exercises
3. To detect patient's confidence during ambulatory activities using abc scale

Methodology

1. Source of data: patients visiting geriatric medicine OPD no. 5

2. Study design: randomized control trial
3. Sampling method: convenient sampling
4. Sample size: 60
5. Sampling: as we want to prove that providing printed exercise material helps in better retention of exercises, we have taken a smaller sample size. The first 60 participants fitting our inclusion criteria will be recruited; 30 in experimental and 30 in control group.
6. Study duration: 6 months
7. Inclusion criteria:
   - Community-dwelling individuals
   - Participants of all gender in age group of above 59 years visiting geriatric medicine OPD, Bambolim-Goa.
   - Participants willing to sign informed consent
   - Able to follow commands
8. Exclusion criteria:
   - Uncorrected visual/ hearing impairment
   - Neurologic pathology (e.g., Parkinson's disease, stroke)
   - Orthopaedic surgery to lower limbs (e.g., amputations, total hip and knee surgeries, fractures) in past 6 months
   - Terminal disease (e.g., Cancer)

PROCEDURE

After obtaining ethical clearance, participants visiting the geriatric medicine OPD no. 5, will be recruited based upon the inclusion criteria.

The participants will be divided into 2 groups i.e. Experimental and control group (30 participants each) based upon random allocation, as per their OPD registration numbers. Baseline and 3-month follow-up assessment will be done by a physiotherapist who will be blinded to the group allocation and the intervention given. The intervention will be given by a separate physiotherapist who will randomly allocate the patients to particular groups based upon the inclusion criteria.

At the baseline, demographic details of all the participants in both the groups will be noted, including a detailed falls history. Along with this, the 30 seconds chair stand test (for strength and endurance of lower limb) and 4 stage balance test (for static balance assessment) scores will be noted. Demonstration of the above tasks will be done before the commencement of the tests. Confidence during ambulatory activities will be assessed using activities-specific balance confidence scale.

Balance training based upon the Otago fall prevention program will be taught to both the groups. The intervention will be for 3 months. The experimental group will be given printed exercise material of all the exercises taught. Instructions will be written in english and konkani, detailed explanation will be given to the patient and their caregivers. Adherence calendar will be attached to this. The control group will be taught the same exercises as that of the intervention group except that, the printed exercise material won't be given to them.

At a follow-up after 3months, 30 seconds chair stand test, 4 stage balance test and ABS scale will be re-assessed. Then, patients will be asked to demonstrate all the exercises. Google form containing questions on retention of exercises by the patient and adherence of exercises (based upon the adherence calendar) will be filled by the therapist.

Statistical analyses: Independent samples test was used to find the association between printed exercise material and number of exercises remembered. Chi-square test was done to detect the pre and post exercise fall rate. Patient's confidence during ambulatory activities will be shown in the form of descriptive analysis. All calculations were performed at 95% confidence interval with $p<0.05$ being considered as statistically significant.

RESULTS

Statistical analysis was done using SPSS 20.00 version. All calculations were performed at 95% confidence interval with $p<0.05$ being considered as statistically significant.

Independent samples test was used to find the association between printed exercise material and number of exercises remembered. Total number of participants present in each group were 30. The exercises were given in the form of printed exercise material to the experimental group, whereas, for the control group the exercises were in the verbal form. Out of the total 7 exercises taught, the mean number of exercises remembered by the experimental group were 5 and that by the control group were 0.53 which is almost equivalent to zero.

Further, using Levene's test for equality of variances, p value was found to be 0.013 (statistically significant).

All the exercises included were from the Otago fall prevention program which was designed in order to prevent falls, chi-square test was done to detect the pre and post exercise fall rate. Out of the total 30 participants in the experimental group, 16 had no history of falls (pre and post), 11 participants had pre-exercise falls with no history of falls post-exercise sessions. 3 of them with pre falls history experienced falls even after exercise sessions

and none of the participants had any new fall history post exercise sessions. Thus, of the total 14 participants with pre-fall history, 11 benefitted with the exercise sessions. Further, using the McNemar test, p value was found to be 0.001 (statistically significant).

From the total 30 participants in the control group, 15 had no history of falls (pre and post), 2 participants had pre-exercise falls with no history of falls post-exercise sessions.11 of them with pre falls history experienced falls even after exercise sessions and 2 of the participants had new fall history post exercise sessions. Thus, out of the total 13 participants with pre-fall history, only 2 benefitted with exercises. Using the mcnemar test, p value was found to be 1.000 (not statistically significant).

In order to perceive whether printed exercise material had an effect on balance outcomes in elderly, between group analysis (experimental versus control), was done using t-test. Further, Levene's test for equality of variances was used to find out the significant difference.

For the 30-seconds chair stand test (30 sec CST), lower score indicates increased risk of falls. The mean scores of pre 30 secs CST were 8.03+-3.93± sec (experimental) and 7.70 ± 2.89 sec (control), post 30 sec CST were 11.23 ± 3.25 sec (experimental) and 8.77 ± 2.64 sec (control). On comparing the mean scores of 30 sec CST (post), the p-value was found out to be 0.879 which means that the difference is not statistically significant. But a decrease in the fall rate in the experimental group, shows that exercises in the printed form have been useful to the participants.

For the 4 SBT, reduced time (in seconds), indicated increased risk of falls. 4 SBT-1 was standing with the feet side-by-side. The mean scores of 4 SBT pre-1 were 9.30 ±1.46 sec (experimental) and 8.77±1.71 sec (control), 4SBT post-1 were 9.87±0.50 sec (experimental) and 8.83 ±1.41 sec(control). On comparing the mean scores of 4SBT-1 (post), the p-value was found out to be 0.000 which means that the difference is statistically significant.

Table 1: Levene's test results

	Group	N	Mean	Std. Deviation	Std. Error Mean
No. of exs.	Experimental	30	5.00	1.682	0.307
	Control	30	0.53	1.008	0.184

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
No. of exs.	Equal variances assumed	6.643	0.013	12.479	58	0.000	4.467	0.358	3.750	5.183
	Equal variances not assumed			12.479	47.459	0.000	4.467	0.358	3.747	5.187

4 SBT-2 was standing with the instep of one foot touching the big toe of other foot. The mean scores of 4 SBT pre-2 were 6.20±4.33sec (experimental) and 4.00±4.00 sec (control), 4SBT post-2 were 8.47±2.93 sec (experimental) and 4.23±4.44 sec(control). On comparing the mean scores of 4SBT-2 (post), the p-value was found out to be 0.000 which means that the difference is statistically significant.

4 SBT-3 was tandem (one foot infront of other). The mean scores of 4 SBT pre-3 were 3.40±4.39sec (experimental) and 0.53±1.63sec (control), 4SBT post-3 were 5.10±4.33 sec (experimental) and 0.77±2.04 sec (control). On comparing the mean scores of 4SBT-3 (post), the p-value was found out to be 0.000 which means that the difference is statistically significant.

4 SBT-4 was standing on one foot. The mean scores of 4 SBT pre-4 were 1.27±2.28 sec (experimental) and 0.00±0.00 sec (control), 4SBT post-4 were 2.10±3.13 sec

Table 1: McNemar test results

Case Processing Summary(a)

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Pre-Falls Y/N * Post-Falls Y/N	30	100.0%	0	0.0%	30	100.0%

a. Group = Experimental

Pre-Falls Y/N * Post-Falls Y/N Crosstabulation(a)

			Post-Falls Y/N		
			0	1	Total
Pre-Falls Y/N	0	Count	16	0	16
		% within Pre-Falls Y/N	100.0%	0.0%	100.0%
	1	Count	11	3	14
		% within Pre-Falls Y/N	78.6%	21.4%	100.0%
Total		Count	27	3	30
		% within Pre-Falls Y/N	90.0%	10.0%	100.0%

a. Group = Experimental

Chi-Square Tests(b)

	Value	Exact Sig. (2-sided)
McNemar Test		.001(a)
N of Valid Cases	30	

a. Binomial distribution used.
b. Group = Experimental

Case Processing Summary(a)

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Pre-Falls Y/N * Post-Falls Y/N	30	100.0%	0	0.0%	30	100.0%

a. Group = Control

Pre-Falls Y/N * Post-Falls Y/N Crosstabulation(a)

			Post-Falls Y/N		
			0	1	Total
Pre-Falls Y/N	0	Count	15	2	17
		% within Pre-Falls Y/N	88.2%	11.8%	100.0%
	1	Count	2	11	13
		% within Pre-Falls Y/N	15.4%	84.6%	100.0%
Total		Count	17	13	30
		% within Pre-Falls Y/N	56.7%	43.3%	100.0%

a. Group = Control

Chi-Square Tests(b)

	Value	Exact Sig. (2-sided)
McNemar Test		.001(a)
N of Valid Cases	30	

a. Binomial distribution used.
b. Group = Experimental

Case Processing Summary(a)

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Pre-Falls Y/N * Post-Falls Y/N	30	100.0%	0	0.0%	30	100.0%

Table 3: Group statistics

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
30sec CST- Pre	Experimental	30	8.03	3.935	0.718
	Control	30	7.70	2.879	0.526
30sec CST-Post	Experimental	30	11.23	3.256	0.594
	Control	30	8.77	2.648	0.483
4 SBT-Pre 1	Experimental	30	9.30	1.466	0.268
	Control	30	8.77	1.716	0.313
4 SBT-Post 1	Experimental	30	9.87	0.507	0.093
	Control	30	8.83	1.416	0.259
4 SBT-Pre 2	Experimental	30	6.20	4.334	0.791
	Control	30	4.00	4.000	0.730
4 SBT-Post 2	Experimental	30	8.47	2.933	0.535
	Control	30	4.23	4.446	0.812
4 SBT-Pre 3	Experimental	30	3.40	4.391	0.802
	Control	30	0.53	1.634	0.298
4 SBT-Post 3	Experimental	30	5.10	4.334	0.791
	Control	30	0.77	2.046	0.373
4 SBT-Pre 4	Experimental	30	1.27	2.288	0.418
	Control	30	0.00	0.000	0.000
4 SBT-Post 4	Experimental	30	2.10	3.133	0.572
	Control	30	0.00	0.000	0.000
ABC-Pre	Experimental	30	43.03	12.615	2.303
	Control	30	46.70	11.213	2.047
ABC-Post	Experimental	30	62.00	12.717	2.322
	Control	30	66.33	12.994	2.372

(experimental) and 0.00±0.00 sec(control). On comparing the mean scores of 4SBT-4 (post), the p-value was found out to be 0.000 which means that the difference is statistically significant.

The activities-specific balance confidence (ABC) scale, indicates the level of confidence in doing the activity, without losing balance or becoming unsteady. Higher scores indicate higher level of confidence. The mean pre scores were 43±12.61 (experimental) and 46±11.21 (control) and post scores were 62±12.71 (experimental) and 66±12.99 (control). On comparing the mean post abc scores, the difference was 0.441 which means that it is not statistically significant.

Table 1: McNemar test results

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
30sec CST- Pre	Equal variances assumed	1.457	0.232	0.374	58	0.709	0.333	0.890	-1.448	2.115
	Equal variances not assumed			0.374	53.131	0.710	0.333	0.890	-1.452	2.119
30sec CST-Post	Equal variances assumed	0.023	0.879	3.219	58	0.002	2.467	0.766	0.933	4.000
	Equal variances not assumed			3.219	55.691	0.002	2.467	0.766	0.932	4.002
4 SBT-Pre 1	Equal variances assumed	1.436	0.236	1.295	58	0.201	0.533	0.412	-0.291	1.358
	Equal variances not assumed			1.295	56.618	0.201	0.533	0.412	-0.292	1.358
4 SBT-Post 1	Equal variances assumed	40.741	0.000	3.762	58	0.000	1.033	0.275	0.484	1.583
	Equal variances not assumed			3.762	36.325	0.001	1.033	0.275	0.476	1.590
4 SBT-Pre 2	Equal variances assumed	0.050	0.824	2.043	58	0.046	2.200	1.077	0.045	4.355
	Equal variances not assumed			2.043	57.630	0.046	2.200	1.077	0.044	4.356
4 SBT-Post 2	Equal variances assumed	26.067	0.000	4.353	58	0.000	4.233	0.973	2.287	6.180
	Equal variances not assumed			4.353	50.219	0.000	4.233	0.973	2.280	6.186
4 SBT-Pre 3	Equal variances assumed	77.252	0.000	3.351	58	0.001	2.867	0.855	1.154	4.579
	Equal variances not assumed			3.351	36.884	0.002	2.867	0.855	1.133	4.600
4 SBT-Post 3	Equal variances assumed	36.682	0.000	4.952	58	0.000	4.333	0.875	2.582	6.085
	Equal variances not assumed			4.952	41.312	0.000	4.333	0.875	2.567	6.100
4 SBT-Pre 4	Equal variances assumed	37.431	0.000	3.032	58	0.004	1.267	0.418	0.430	2.103
	Equal variances not assumed			3.032	29.000	0.005	1.267	0.418	0.412	2.121
4 SBT-Post 4	Equal variances assumed	84.987	0.000	3.671	58	0.001	2.100	0.572	0.955	3.245
	Equal variances not assumed			3.671	29.000	0.001	2.100	0.572	0.930	3.270
ABC-Pre	Equal variances assumed	0.002	0.964	-1.190	58	0.239	-3.667	3.082	-9.835	2.502
	Equal variances not assumed			-1.190	57.213	0.239	-3.667	3.082	-9.837	2.503
ABC-Post	Equal variances assumed	0.602	0.441	-1.305	58	0.197	-4.333	3.320	-10.978	2.311
	Equal variances not assumed			-1.305	57.973	0.197	-4.333	3.320	-10.978	2.311

DISCUSSION

In the present study, monitoring the retention of exercises by the patients by giving printed exercise material and their adherence rate along with the balance outcomes in elderly were assessed as it will give an opportunity to see factors which could be emphasized to improve health outcomes. It was a randomized controlled study and participants were divided into 2 groups based upon random allocation, as per their OPD registration numbers.

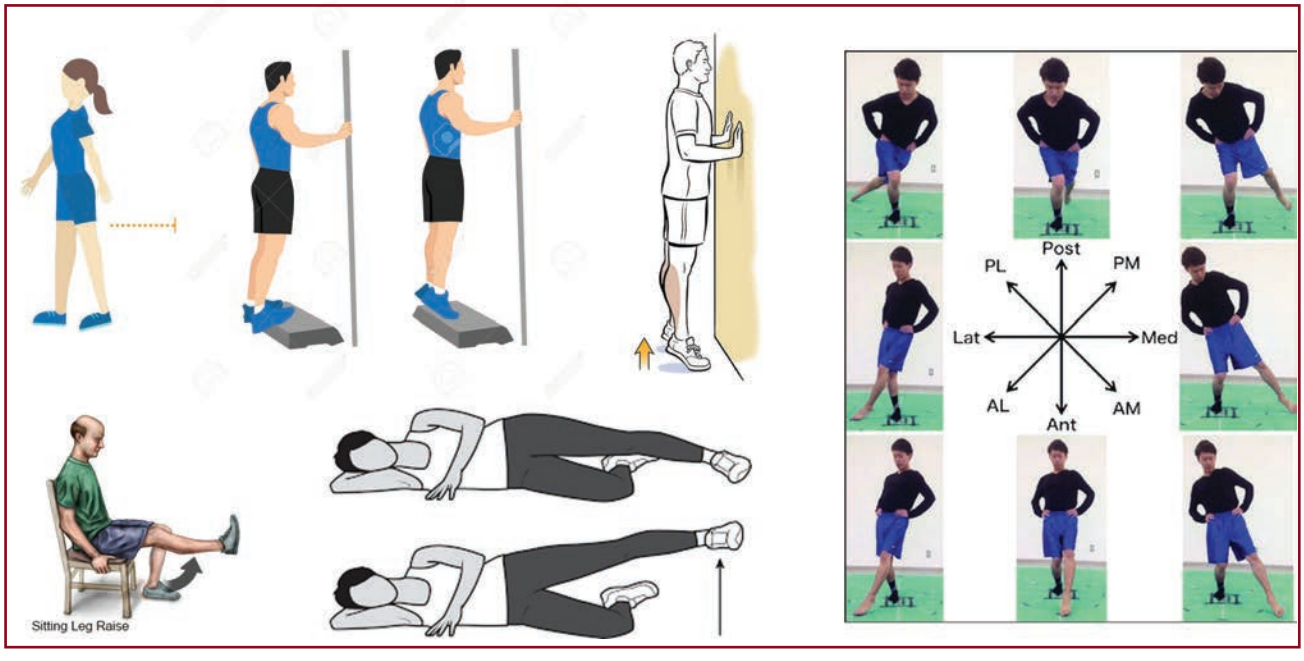
In India many studies have been done with respect to fall as a significant health problem and the risk factors for fall among older adults but not much data is available on balance outcomes in elderly with printed exercise material when compared to verbal exercises and the retention and adherence of these exercises.

In our study balance training were taught to both the groups. It showed that participants in the experimental group (with printed exercise material) had better retention of exercises than participants in the control group (verbal exercises), thus proving the importance of giving exercises in written/printed format in the older age group. In a systematic review and meta-analysis by Kellie B Emmerson and Katherine E Harding it was shown that multimedia approaches with conventional verbal or written instructions improve adherence to the exercises but there is insufficient evidence to determine whether this results in improved patient outcomes.

Balance exercise interventions reduce the rate of falls (number of falls per person) and risk of falling (proportion of people having one or more falls) in community-dwelling older people thus, it is necessary to inculcate balancing aids to strengthen the muscles.

The reduction in the ability to balance along with other age-related changes lead to an increased risk of falls and becomes a very important issue among the elderly population. Subsequent falls in elderly, affect their daily functioning leading to disability and degrading their quality of life. Thus, fall prevention becomes an important part in geriatric rehabilitation. Otago exercise program (OEP) is a composite of walking, balance training and muscle strengthening to improve balance, thereby, minimizing the fear of falling. All the exercises included in the study were from the Otago fall prevention program which was designed in order to prevent falls. On comparing both the groups, participants in the experimental group had a reduced fall rate than those from the control. In a study done by Rylee Holek, Jyotsna Pandey it was discussed that after six months of the OEP program, average improvement of about 29.40% in the four-stage balance test, 2.40% in the timed up-and-go test, and 20.30% in the chair stand test has been shown and concluded that compliance with the Otago exercise program results in increased balance in participants and overall decreased fall risk.

The 30 seconds chair stand test for strength and endurance, 4 stage balance test for screen for fall risk and the ABS scale were re- assessed. For the 30 second chair



stand test and 4 stage balance test a decrease in the fall rate in the experimental group shows that exercises in the printed form have been useful to the geriatric population and it makes a huge difference in the balance outcomes. Balancing exercises are manifested to be one of the paradigms in adult fall minimization thus, making it very important to inculcate balancing aids to strengthen the muscles. Balance exercise training improves performance in variables of balance, strength, body composition, cognitive function, psychosocial well-being, and falls self-efficacy of older adults.

The activities-specific balance confidence (ABC) scale, indicates the level of confidence in doing the activity, without losing balance or becoming unsteady. Previous research makes abc scale more suitable to detect loss of balancing confidence in more highly functioning seniors and also assists clinicians in targeting appropriate interventions.

The average BBS score for group a and b are estimated as 46 and 41.2 during post phase and 37.13 and 37.33 during pre-phase, with 95% significance. The mean FES-i scores are rated as 22.27 and 30 for group a and b during post phase and 38.53 and 37.2 during pre-phase, with 99.96% confidence level. The obtained results point out that decrease in fall rate and increase in balance score for experimental group is an assured value, confirming the effect of OEP integrated with balance exercise

In our geriatric medicine OPD, we get a lot of patients who are at high risk of falls and we can train them using the Otago fall prevention program. We have also noted that a lot of patients forget their exercises which lowers their adherence to the exercises and hence there is no improvement in their condition. Hence giving exercises in a printed format will improve both adherence and health outcomes of our OPD patients.

CONCLUSION

Printed exercises along with verbal instructions showed better retention of exercises by the patients and improved adherence as well. Otago fall prevention program (OEP) has shown a significant improvement in their balance outcomes and reduced the fall risk among patients.

REFERENCES

1. Herald T. Goa needs a senior citizens' care system [internet]. Oheraldo. Herald; 2022 [cited 2023feb1]. Available from: https://www.heraldgoa.in/edit/opinions/goa-needs-a-senior-citizens%e2%80%99-care-system/195492
2. Giovannini S, Brau F, Galluzzo V, Santagada DA, loreti c, biscotti l, *et al*. Falls among older adults: screening, identification, rehabilitation, and management. Applied sciences. 2022;12(15):7934.
3. Pitchai P, Dedhia HB, Bhandari N, Krishnan D, D'souza NRJ, Bellara JM. Prevalence, risk factors, circumstances for falls and level of functional independence among geriatric population - a descriptive study. Indian journal of public health. 2019;63(1):21.
4. Kumar MK, Attry S. Implementation of otago exercise programme combined balance exercise: a sustainable way to renovate balance and avert fall risk in older community-dwelling adults. Pramana research journal. 2019;9(6).
5. Emmerson KB, Harding KE, Taylor NF. Providing exercise instructions using multimedia may improve adherence but not patient outcomes: a systematic review and meta-analysis. Clinical rehabilitation. 2018;33(4):607–18.
6. Balance: static and dynamic. [cited 2023feb1]. Available from: https://geriatrictoolkit.missouri.edu/balance/index.html

Reaching the Unreached:
Sri Sunku Subrahmanyam Memorial Oration 2023

Anand P. Ambali *

ABSTRACT

The elderly people in a village called Arjunagi were not able to reach the hospital due to lack of transport facilities following lockdown. The elderly with disabilities, staying alone, frail and, below poverty line, could not afford to reach the health care facilities for their health issues. There was shortage of regular medicines for diseases like diabetes, hypertension, heart ailments, and osteoarthritis in the primary health center during the pandemic.

To address these issues, the geriatric clinic of BLDE DU Shri B M Patil Medical College Hospital and Research Centre Vijayapura had launched 'Reaching the Unreached' program on October 23, 2020 in a village called Arjunagi amidst COVID 19 wave. A 92-year-old person of the village inaugurated the camp. This was a major decision by the Geriatric Clinic as the elderly residing in the village were not able to reach the hospital in fear of COVID19 pandemic. Many of the elderly had exhausted the medicines for the chronic diseases like Diabetes, Heart disease, Stroke and Anaemia as there was shortage of medicines and manpower in primary health centre, due to COVID 19 Pandemic.

Methods: *A health check camp for elderly by Geriatric Clinic in collaboration with National Service Scheme (NSS), National Program for Health Care Elderly (NPHCE), Gram panchayat, and Anand Trust is being held every month on fourth Sunday. One hundred elderly people have registered for the camp as on 31/12/2021. It is an ongoing health service program for the seniors. On an average 25-30 elderly patients attend the camp every month. The services in the camp are provided by the Consultant Geriatrician, Postgraduate student, intern, nursing staff and a Public Relation Officer. The Gram panchayat of Arjunagi provides their office which is senior friendly for the camp.*

Results: Among 100 registered elderly persons, 63 are male and 37 are females, which includes two bed ridden patients. The oldest is 92 years old male. Regarding age distribution, 73% are in age group of 60-70 years, 20% are in the age group of 71-80 years, 06% in 80-90 years while 01% in 91-100 years age group. The common diseases noted are Hypertension (17%), osteoarthritis (14%), Diabetes (08%), Anaemia (08%), Cataract (05%) Stroke (03%), and heart diseases (03%), while 20% of elderly do not have any diseases. These 20% elderly visit our camp for general check-up and also motivates others to attend the camp. Majority of the elderly are from below poverty line. Regarding mortality, in last fifteen months two deaths were reported among the registered patients.

Implications: The Impact of the camp held regularly in a same place is that, it has helped in diagnosing new cases of Diabetes mellitus in 4, Cataract in 5 and, Hypertension in 3 elderly people. It has helped improve compliance to medicines and good control of diseases as we are providing uninterrupted supply of medicines. This has positive impact on Quality of Life. This activity being caried out for last 15 months has been providing health care services to the elderly who are not able to reach hospital for reasons like being 1) differently abled 2) have no care givers and 3) cannot afford to visit hospitals. It also provides first-hand experience of rural geriatrics to postgraduate students and interns of our medical college. A team work involving Private Medical College, NGO's, Government scheme and support from Local gram panchayat, has helped 'reaching the unreached' in a cost effective and sustainable mode as is evident in our model. This camp not only has recognized the health issues among the elderly population, but it has also solved major issues like accessibility, affordability, and consistency. This study also proves that the model used by our camp in providing health services to the elderly is cost-effective, sustainable, and reproducible.

Keywords: *Health camp, Elderly, Rural, COVID-19.*

*Anand P. Ambali, Consultant Geriatrician, Department of Geriatric Medicine, BLDE DU, Shri B M Patil Medical College Hospital and RC, Vijayapura 586103. Karnataka.

INTRODUCTION

The geriatric clinic of BLDE Deemed to be University, Shri B M Patil Medical College Hospital, and Research Centre Vijayapura has launched the 'Reaching the Unreached' program on 23 October 2020, in a village called Arjunagi amidst the COVID-19 wave. A 92-year-old person from the village inaugurated the camp. This was a major decision by the geriatric clinic, as the elderly residing in the village were not able to reach the hospital in fear of the COVID-19 pandemic. Many of the elderly had exhausted the medicines for chronic diseases like Diabetes, Heart disease, Stroke, and Anaemia as there was a shortage of medicines and manpower in the primary health center, due to the COVID-19 Pandemic.

In such a given challenging situation, we took a lead to ensure basic health services for both communicable and non-communicable diseases prevalent in the elderly population of this village free of cost amidst COVID-19 pandemic. Since the launch of the camp, we are providing health care services and awareness talks on the fourth Sunday of every month. Health services like functional and nutritional assessment, home visits for the bedridden, measurement of blood sugar and blood pressure, and Electrocardiography are carried out and we provide medicines for the common diseases, free of cost and sufficient quantity for one month. Those elderly who requires further investigations and management are referred to medical college hospital. The older people who are staying alone, below the poverty line, bedridden and those with differently abled attend our camp in large numbers.

NEED FOR THE CAMP

In India, it is estimated that three-fourth of the elderly population reside in rural areas, while 70% of the rural elderly are dependent on others (Report on status of Elderly in India, 2011). The elderly in rural areas do not seek health care services due to unaffordability (Agrawal Nipun., et al 2015). In a study by R. Indumathi (2020), it is observed that there is less compliance of medicine use among rural elderly (46%) and cost involved high (21%).

The name of the village which we adopted is Arjunagi. It is 40 kilometers from our medical college hospital.

The health checkup camp was initiated in a specified village in view of the elderly in the village:

A) Were not able to reach the hospital due to lack of transport facilities following lockdown,

B) The elderly with disabilities, staying alone, frail and, below poverty line, who could not afford to reach the health care facilities and

C) Non-availability of regular medicines for diseases like diabetes, hypertension, heart ailments, and osteoarthritis in the primary health center during the pandemic.

Similar observations are reported by Rao et al (2003) and Singh, (2005).

AIMS OF THE CAMP

1. Our main aim is to reach the healthcare services to those elderly who cannot reach us. Hence the phrase "reach the unreached".
2. To provide health services like screening for the diseases and treatment of chronic diseases in the elderly residing in the specified village both accessible and affordable.
3. To promote preventive measures through awareness talks and Immunization
4. To enhance compliance to medicines and ensure the availability of medicines regularly at free of cost.

Objectives of the study:

To analyze the demographic pattern of utilization of services, the prevalence of diseases in a study population, and the impact of health care services provided.

METHODS

A health check camp for the elderly by Geriatric Clinic of BLDE Deemed to be University, Shri B M Patil Medical College Hospital, and Research Centre, in collaboration with National Service Scheme (NSS) of KCP Science College, National Program for Health Care Elderly (NPHCE) Vijayapura District, Gram panchayat of Arjunagi, and Anand Trust is being held every month on the fourth Sunday.

Sampling: One hundred elderly people who have registered for the camp so far and receiving our services constitute the study sample. Out of 410 senior citizens residing in the village, one hundred (25%) have registered with us to receive health related services.

Study design: It is a prospective study of the ongoing health services provided in a specified village.

Statistical analysis was done using IBM SPSS v 20.0.0 and categorical variables were analyzed using proportions and percentages and presented in tables.

MODEL

The camp has support from NGO named Anand Trust which has brought this concept and provides 50%

of medicines, the Geriatric Clinic of medical college provides vehicle for transport, manpower, postgraduate students and interns and remaining 50% of medicines, Gram Panchayat of Arjuangi provides hall for camp which has senior citizen friendly facilities , the National Program Health Care of Elderly (NPHCE) Vijayapura provides educational materials, while National Service Scheme of KCP science college provides volunteers. All the services are coordinated by Geriatrician. Health services like Geriatric Assessment, blood pressure, blood sugar levels and weight are measured in all patients during every visit. Home visit for the bedridden is also carried out. Awareness talks on various health issues are organized once in six months. The patients who require additional health services are provided a referral letter and are referred to medical college hospital for further evaluation and treatment. The medicines required for the patients are provided free of cost and sufficient for one month duration.The pharmacist supervises the supply of medicines and explains the seniors regarding timing of medicines and ensures compliance among older patients.

RESULTS

Age and sex distribution: Among 100 registered elderly persons, 63 are male and 37 are females, which includes two bedridden patients. The oldest is 92 years old male. Regarding age distribution, 84% are in the age group of 60-74years, 14% are in the age group of 75-84 years, 02% in 85 + Years age group. (Table -1)

Common diseases

The common diseases noted are Hypertension (17%), Osteoarthritis (14%), Chronic bronchitis (10%), Diabetes (08%), Anaemia (08%), Cataract (05%), Heart disease (05%), Post-stroke (04%), Bronchial Asthma (03%), Valvular heart diseases (03%), Parkinson's (02%), Depression (02%), Dementia (01%) and Epilepsy (01%) either in a single or in combination, while 20% of elderly do not have any diseases. This 20% of the elderly population visit our camp for a general check-up and motivate others to attend the camp. (Table -2) Diseases in combination of two and three are seen in many patients.

Table 2 : Comorbidities

Name of the Disease	Number	%
Hypertension	17	17
Osteoarthritis	14	14
Chronic bronchitis	10	10
Diabetes	08	08
Anaemia	08	08
Cataract	05	05
Ischemic Heart Disease	05	05
Post stroke	04	04
Bronchial Asthma	03	03
Valvular Heart Diseases	03	03
Parkinson's Disease	02	02
Depression	02	02
Dementia	01	01
Epilepsy	01	01
Cancer Breast operated	01	01
No diseases	20	20

Disabilities

The most common disability seen is partial blindness (08%), hearing impairment (08%), Parkinson's (02%) and, dementia (01%), while the commonest aids used are walking stick, spectacles, and hearing aids.

Follow up rate

Every month 25-30 elderly patients visit our camp and get their health examined and get blood sugar and blood pressure measured and then collect the medicines provided for the diseases sufficient to suffice for one month. Five patients were referred for detailed evaluation and treatment to our medical college hospital and all five have visited the hospital.

Mortality

Regarding mortality, in the last fifteen months, two deaths were reported among the registered patients.

Table 1: Age and Sex Distribution (n =100)

Age group (Years)	Number	%	Number	%
60-74	51	51%	33	33%
75-84	10	10%	04	04%
More than 85	02	02%	00	00%
	63	63%	37	37%

Discussion

Male dominance (63%) is seen in receiving health care services in our study. It is similar to a study by Dr. A. Kusuma (2015) while equal proportions of male and female were reported by Agrawal Nipun (2015) and Narapureddy et al (2012) where as R.Indumathi (2020) reported female dominance.

Regarding age distribution, in our study 73% are in the age group of 60 to 70 years while 57% were in a study by R Indumathi (2020) and 72% in study by Lena et al (2009).

The most common disease noted in our study group is Hypertension in 17%, Arthritis in 14%, Diabetes in 08% and heart disease in 05%, whereas Hypertension in 39%, Arthritis in 56%, Diabetes in 25% and heart disease in 19% respectively were reported in the study by Dr.A. Kusuma (2015).

In our study, 20% of the elderly were healthy and not suffering from any diseases while it was 6% in a study by Nair (1989) and 30% in Dr. Kusuma A (2015).

All the elderly people in our study group are below the poverty line. The middle and rich class people visit hospitals in nearby bigger cities. In a study by Agrawal Nipun., (2015) the people of low socioeconomic class constituted 50% and similar in the study by Sanjel S et al (2012).

Impact of the camp

The Impact of the regular camp in the same village is that it has helped in

1) Diagnosing new cases of Diabetes mellitus in 4, Cataract in 5 and Hypertension in 3 elderly people.
2) To improved compliance to medicines and good control of diseases as we are providing an uninterrupted supply of medicines which has a positive impact on Quality of Life of the elderly people.
3) Providing first-hand experience of rural geriatrics to postgraduate students and interns of our medical college.
4) The camp continues to screen all the new patients for diseases, provide consultation and medicines.
5) Create awareness about prevention of diseases like Malaria and Dengue.

IMPLICATIONS

The strength of this study is that it has brought the real scenario of the health status of the rural elderly from the clinician point of view and not by the questionnaire method. This activity is being carried out for the last 15 months has been providing health care services to the elderly who are not able to reach the hospital for reasons like 1) being differently-abled 2) having no caregivers and 3) cannot afford to visit hospitals. Teamwork involving Private Medical College, NGOs, Government schemes and, support from gram panchayat, has helped 'reaching the unreached' in a cost-effective and sustainable model as is evident in our study.

This camp not only has recognized the health issues among the elderly population, but it has also solved major issues like accessibility, affordability, and consistency. This camp mainly caters the need for screening, and management of Non-Communicable Diseases. This study also proves that the model used by our camp in providing health services to the elderly is cost-effective, sustainable, and reproducible. This should also guide policymakers in drafting public health reforms for the rural elderly.

FURTHER READINGS

Agrawal Nipun, Shrotiya Ved Prakash, Singh Atul Kumar and Initaz Danish.,2015. Healthcare services utilization by geriatric population in rural area of District Bariely, India. International Journal of Current Microbiology and applied sciences. Vol.4,No. Pp.720-727.

Dr. A Ksusma.,2015. A study on health status of elderly in rural areas need for social work intervention. International Journal of Research and Analytical Reviews. Vol.2, No.4.

Lena A, Ashok A, Padma M,et al 2009. Health and social problems of the elderly: a cross-sectional study in udupi taluk , Karnataka. Indian J Community Med. Vol. 34, No.2. Pp 131-4.

Nair,P.S. 1989. The aged in Rural India; A study on Socio-Economic and Health Profile. S.N.Singh, M.K.Premi, P.S.Bhatia and Ashish Bose, Population Transition in India,Vol.2, B.R.Publishing, Delhi.

Narapureddy B, Naveen KH, Madihati P,Singh RK,Pirabu RA 2012. Sociodemographic profile and health care seeking behavior of rural geriatric population of Allabahad district of UP: A cross-sectional study. International Journal of Med Sci Public Health. Vol 1. Pp 87-92.

Rao,et al. 2003, Health status of the rural aged in Andhra Pradesh; A sociological perspective in Help Age India- Research and Development Journal,Vol.9, No.2.

R.Indumathi and Dr. A. Vinayagaram 2020. A Study on utilization of health care facilities among rural elderly in Kanyakumari district. The International journal of analytical and experimental modal analysis. Vol.22 No.11.

Registrar General of India.2006, Socio-cultural Tables of India,2001-Data on CD, Office of the Registrar General of India New Delhi. Singh, C.P.2005, socio-economic status and Health Conditions of landless Rural Aged in Haryana in Help Age India-Research and Development Journal, Vol.11,No.1.

Sanjel S, Mudbhari N, Risal A, Khanal K 2012. The utilization of health care services and their determinants among the elderly population of Dhulikhel municipality. Kathmandu University Medical Journal Vol.10, No.37. Pp 34-39

Acknowledgements

We convey our sincere thanks to Mr. Vinod Galgali Nursing staff, Mrs. Savitri Jangamshetti and Mr. Vilas, Public Relation Officers, and Office bearers of Arjunagi Gram Panchayat for providing unconditional support for the camp.

Drug Induced Disorders

Jayanta Sharma, Mayank Sahu, Meghna Dutta, Priyankar Mandal*

ABSTRACT

"a drug-induced disease is the unintended effect of a drug, which results in mortality or morbidity with symptoms sufficient to prompt a patient to seek medical attention and/or require hospitalisation. "

It can result from expected/unexpected drug effects. Strict vigilance and monitoring are essential to reduce such occurrences, not only by regulatory authorities and manufacturers but also by end users like physicians and patients.

TERMINOLOGIES

1. Adverse drug reactions (ADR): "a drug-related event that is noxious and unintended and occurs at doses used in humans for prophylaxis, diagnosis or therapy of disease or for the modification of physiological function."
2. Adverse event (AE): medical occurrence temporally associated with the use of a medicinal product, but not necessarily causally related. The essential difference from ADR is that AE need not be causally related to the drug in use.
3. Unexpected adverse reaction (UAR): usually adverse drug reactions of a drug will be described in the product information. UAR is not consistent with applicable product information or characteristics of drug.
4. Side effect: unintended effect occurring at normal dose related to the pharmacological properties.
5. Serious adverse event (SAE): any untoward medical occurrence that at any dose results in death, life threatening situation, requires inpatient hospitalization or prolongation of existing hospitalization, results in deformity or incapacity. SAE is especially important when you are doing drug trials/drug development studies.
6. Serious unexpected suspected adverse reaction (SUSAR): it is an adverse drug rection which is suspected but unexpected and serious.

*Dr. Jayanta Sharma (Senior Consultant), Dr. Mayank Sahu (DNB General Medicine PGy1), Dr. Meghna Dutta (Senior Registrar), Dr. Priyankar Mandal (DNB General Medicine PGy1), Department of Internal Medicine and Geriatric Medicine, Apollo Multispeciality Hospitals, Kolkata.

ASSESSING CAUSALITY

Causality assessment can be defined as "finding the causal association/relationship between a drug and an adverse reaction." It can be said as the chances of a particular drug being the cause of an adverse reaction under consideration.

Causality assessment methods are based on 4 cardinal principles for diagnosing ADRS-

a. Temporal relation of drug and the drug reaction
b. Biological plausibility
c. De-challenge
d. Rechallenge

Causality scales: WHO, Naranjo, Rucam, M&V, Diln, Karch, Begaud, Liverpool

CASE 1

- A 93 year old lady, not on any regular medications and having no seizure history, presented to the ER with a short history of dehydration and confusion. Preliminary investigations showed neutrophilic leucocytosis and a pneumonia of left lower lobe on chest radiograph. She was empirically started on levofloxacin and rehydration.
- Within 7 hours of the second dose of levofloxacin (500mg/day) she developed generalized tonic-clonic

seizures- managed with diazepam and phenobarbital.
- NCCT brain- normal
- EEG- generalized spike and wave discharges.
- Levofloxacin was immediately stopped and switched over to co-amoxiclav. There was no further convulsion episode.
- Unfortunately, the patient expired later due to multiorgan failure.
  - ✓ Temporal relationship between the initiation of levofloxacin and the occurrence of seizures
  - ✓ Scoring on the Naranjo algorithm indicating a probable relationship of causality
  - ✓ No further seizures were seen after the discontinuation of levofloxacin
  - ✓ Dehydration, electrolyte abnormalities, and pneumonia-possible predisposing risk factors.

Drug induced seizures (DIS)

DIS are seizures precipitated by the pharmacological and/or toxicological effects of a given chemical entity following acute or chronic exposure or withdrawal.

Phenotypical presentations:
- Generalised tonic-clonic seizures (GTCS)
- Partial seizures
- Convulsive/non-convulsive seizures
- Status epilepticus

DIS may occur in patients without any prior history/ risk factor for seizures.

A. Pathophysiology

i. Patient related factors:
   a. Age
   b. Hepatic function
   c. Renal function
   d. Genetic susceptibility to seizure
   e. Seizurogenic potential of drugs

ii. Drug related factors:
   a. Blood brain barrier penetration
   b. On-target & off-target activity on brain receptors/ proteins
   c. Drug class
   d. Dose level
   e. Route of administration
   f. Lipid solubility

B. Aetiology

DIS results from altered neuronal signaling- either a decreased inhibitory/increased excitatory transmission. Alterations in neuronal excitability can result from:

i. Alterations at synaptic level include:
   a. Altered excitatory glutamatergic neurotransmitters- NMDA, AMPA, Kainate receptor
   b. Altered inhibitory neurotransmitters- GABA and glycine

ii. Changes in intrinsic excitability include: modulation in function of voltage gated ion channels of - sodium, potassium and calcium-essential determinants of neuronal action potential generation and propagation.
   - GABA signaling: reduced efficacy of GABA signaling is one of the primary causes of DIS. It can be due to-
   (a) Limited presynaptic GABA release
   (b) Reduced post synaptic GABA receptor function/ expression
     - Post synaptic GABA receptors are of various types:
   (a) Ionotropic GABAA – 2 distinct pharmacologically active sites- GABA binding site and the benzodiazepine binding site.
   (b) Metabotropic GABAB

i. Beta lactams- DIS by blocking the GABAA receptors.

ii. Fluoroquinolones- DIS by antagonism of GABAB receptors, potentiating excitatory NMDA receptors.

iii. Flumazenil- blocking benzodiazepine binding site

iv. Picrotoxin- blocking GABAA receptor pore

v. Bicuculline- negative allosteric factor at GABAA receptors

vi. Synthetic opioids (pethidine)- reduce synaptic release of GABA.

**drugs blocking benzodiazepine binding site to produce seizures are clinically challenging as benzodiazepines are often the preferred anticonvulsive agent to be used.

- Increased excitatory neurotransmission leads to DIS-direct activation by Kainic acid or NMDA of glutamatergic signaling. e.g.-
  i. Clozapine- promotes the glial release of D-serine which is a co-agonist of the excitatory nmda receptors.
  ii. Opioid metabolites- like morphine-3-glucuronide have proconvulsant activity by indirect activation of NMDA receptors.
  iii. Chronic alcohol use- increases the expression of NMDA receptors throughout the brain.

Moreover, there is altered GABAA receptor expression- reduced synaptic α1 containing gaba receptors (the principal synaptic gaba receptor) and trafficking of α4 containing receptors out of the extrasynaptic space-leading to raised seizure propensity.

- Neuronal death/injury: death of vulnerable neurons in the hippocampus/amygdala -> altered excitatory/ inhibitory balance in the limbic system -> seizures.
  i. Cisplatin- 2 CNS disorders- posterior leucoencephalopathy syndrome (PRES) and focal neurological deficits- due to cisplatin induced vascular toxicity stemming from cisplatin induced hypomagnesaemia or altered platelet aggregation.
  ii. Oxaliplatin - seizures either directly or as a result of pres.
  iii. Cyclosporine - direct effect on neuronal excitability/ endothelial damage and release of endothelin 1.
  iv. Methotrexate - (intrathecal and intravenous) seizures and subcortical encephalopathy from vascular effects (ischaemic origin).
  v. 5-fluorouracil (5FU) - encephalopathy from hyperammonaemia and lactic acidosis. Ammonia is a metabolite of 5FU, which accumulates due to inhibition of ATP dependent urea cycle

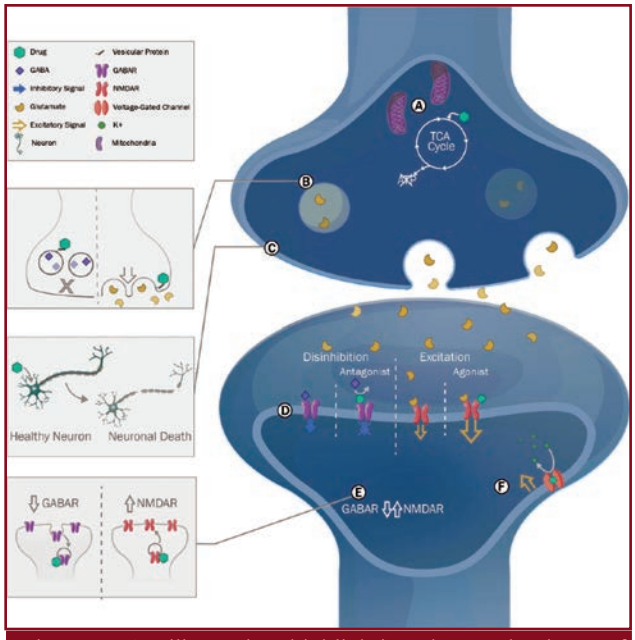


Figure 1. An illustration highlighting the mechanisms of drug-induced seizure. (a) impacts to metabolic pathways. (b) changes to synaptic neurotransmitter release. (c) cell death due to neurotoxicity. (d), (e). Altered function/expression of synaptic receptor proteins. (f) altered function/expression of voltage gated ion channels.

Table 1 : List of some drugs implicated in drug induced hyperuricaemia

Anti-tubercular drugs	Increased uric acid reabsorption (pyrazinamide) Decreased uric acid secretion (pyrazinamide) Reduction in the fractional excretion of uric acid (ethambutol)
Aspirin (low dose)	Increased uric acid reabsorption Decreased uric acid secretion
Cylotoxic chemotherapy	Massive disruption of tumour cells
Diuretics	Increased uric acid reabsorption in the proximal tubules Increased uric acid secretion Volume contraction
Immunosuppressant agents	Increased uric acid reabsorption in the proximal tubules (ciclosporin) Decreased glomerular filtration rate secondary to afferent arteriolar vasoconstriction (ciclosporin) Reduced urate excretion (tacrolimus) Inhibition of the synthesis of guanine nucleotide (mizonbine)
Fructose	Increased nucleotide turnover and nucleotide synthesis Increased uric acid tubular reabsorption
Lactate infusion	Increased uric acid reabsorption
Nicotinic acid	Decreased uric acid secretion Increased uric acid synthesis Increased uric acid reabsorption
Testosterone	Increased purine degradation
Xylitol	Increased production of lactate

mediated by 5fluoroacetate (an intermediate of 5fu metabolism) induced krebs cycle inhibition

vi. Interferon alpha treatment - (1-4%) disruption of blood-brain barrier and subsequent vasogenic brain oedema.

vii. Busulfan - it is tightly bound to plasma proteins, can cross blood brain barrier- prolonged exposure to the drug and/or its metabolites leading to transient and self-limiting excitotoxic neuronal damage.

CASE 2

- A 34-year-old man presented with severe pain and swelling of his 1st right metatarsophalangeal joint. There was no history of local trauma. On examination, 1st MTP joint on right side was erythematous, warm, swollen and tender with reduced range of motion at the joint. Laboratory tests showed neutrophilic leucocytosis (12500/cumm) and serum urate level 11mg/dl.
- Significant history included initiation of 4drug ATT 3 weeks back. Patient had no comorbidities or other regular medications.

The question being- is pyrazinamide the culprit?

Drug-induced hyperuricaemia and gout

Table 1 shows list of some drugs implicated in drug induced hyperuricaemia.

Hyperuricaemia = serum uric acid > 6mg/dl. Mechanism:

- Increase of uric acid reabsorption
- Decrease in uric acid secretion
- Increased urate synthesis

i. Diuretics:

- Diuretics enter the proximal tubular cell from the blood side via OAT1 and OAT3 transporters acting as competitive inhibitors of uric acid transport.
- Hydrochlorothiazide enhances the uric acid uptake via organic anion transporter OAT4.
- Furosemide and hydrochlorothiazide, as substrates of human multidrug resistance-associated protein 4 (MRP4), inhibit MRP4-mediated uric acid transport resulting in hyperuricaemia
- Induce substantial salt and water loss, causing volume contraction, which in turn stimulates the reabsorption of uric acid.
- Loop and thiazide diuretics inhibit the human voltage-driven drug efflux transporter NPT4, located on the apical side of renal proximal tubules, consequently promoting uric acid secretion.

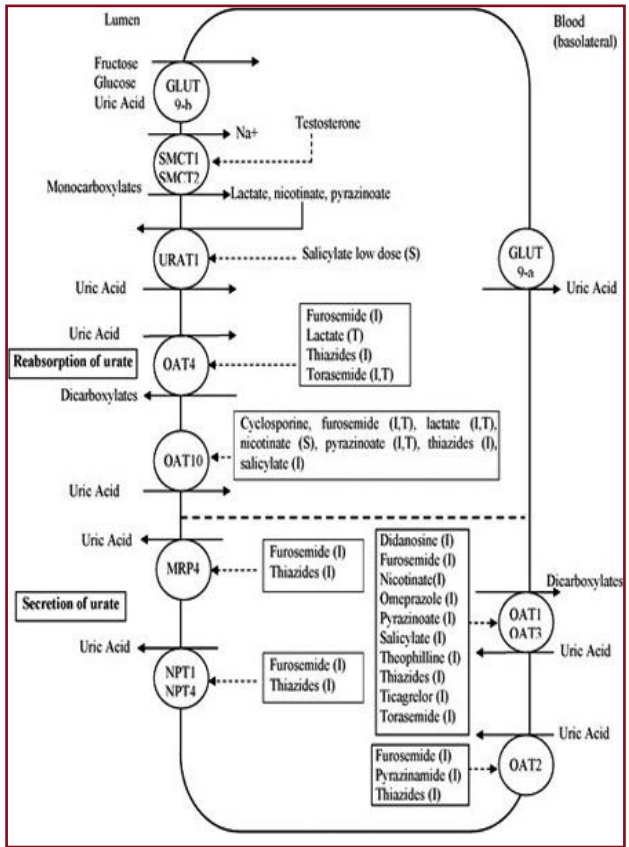


Figure 2: Interference of drug leading to hyperuricaemia with renal urate transporters

i. Anti tubercular drugs:

- Pyrazinamide and ethambutol can produce hyperuricaemia and also precipitate acute gouty attacks.
- At 300mg daily therapeutic doses, pyrazinamide can decrease renal urate clearance by >80%. Pyrazine carboxylic acid or pyrazinoate (PZA), an active metabolite of pyrazinamide, raises serum uric acid based on its trans-stimulatory effect on URAT1-causing the reabs orption of urate from the luminal side into tubular cells.
- Pyrazinamide also inhibits OAT2- basolateral transporter involved in urate secretion.

ii. Immunosuppressants:

- Cyclosporin can cause an accelerated form of gout,

resulting in tophi over a relatively quickly and at atypical sites like soft tissues, intraspinal sites and sacroiliac joints.
- Cyclosporin may increase proximal uric acid reabsorption, accentuated by volume depletion associated with diuretic use, and reduced glomerular filtration rate following afferent arteriolar vasoconstriction.
- Tacrolimus can cause hyperuricaemia in patients with renal transplantation; risk lower than cyclosporine.

iii. Aspirin:
- Low dose (60-300m)- inhibits uric acid excretion, produce hyperuricaemia- acts as exchange substrate to facilitate urate reabsorption
- Higher doses -uricosuric
- Also inhibits MRP-4 mediated urate transport even at very low doses.

iv. Cytotoxic chemotherapy:
- Tumour lysis syndrome (TLS)- an oncological emergency- widespread breakdown of tumour cells -> hyperuricaemia + dyselectrolytaemia- hyperkalaemia, hyperphosphataemia, hypocalcaemia and metabolic acidosis.
- Acute rise in uric acid levels can also cause acute urate nephropathy- occurs 48-72 hours after initiation of cytotoxic therapy. It may also occur after dexamethasone, zoledronate, thalidomide and newer agents like bortezomib, rituximab and ibrutinib.

v. Testosterone:
- Causes hyperuricaemia +/- gout in a dose dependent manner.
- Testosterone induces SMCT-1 (sodium dependent anion cotransporter that acts with URAT1 to enhance urate reabsorption at proximal tubules)
- Raised urate levels can partly be due to increased muscle mass during testosterone therapy.

Prevention and management

Omitting the offensive drug, adequate hydration, regular monitoring of uric acid levels and appropriate urate lowering therapy when indicated are the steps for preventing and managing this rising problem of drug induced hyperuricaemia.

CASE 3

- A 56-year-old lady with recurring depressions and without any history of comorbidities or addictions was admitted to the hospital for refractory dysthymia with generalised anxiety disorder, along with poor tolerance to antidepressants prescribed to her in the past few months.
- She had been tried with fluoxetine, trazodone, quetiapine and olanzapine, venlafaxine, mirtazapine and duloxetine. Among these, quetiapine and olanzapine were stopped due to dizziness and fatigue, venlafaxine due to liver damage (ALT 175 and AST 148 iu/ml) which returned to normal after withdrawal of drug, and rest due to ineffectiveness.
- During her hospital stay, she was put on successive medications as per the following timeline (Figure 3).
- Two episodes of liver injury were noted- following venlafaxine and another following vortioxetine+clomipramine+trazodone.
- Other causes of liver injury- infections etc- were ruled out.
- Lymphocyte transformation test (LTT) was done for drugs based on Rucam scale assessment for causality- positive immune response was seen with venlafaxine and clomipramine.

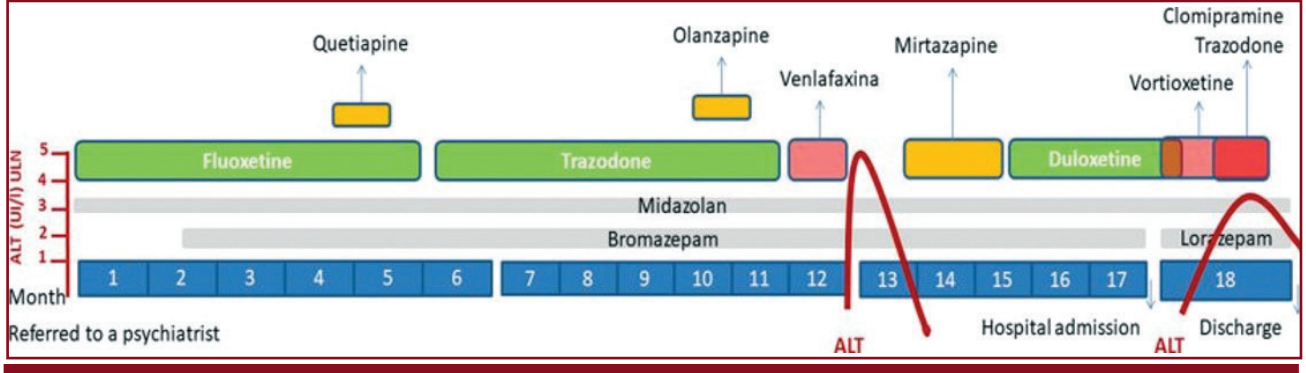


Figure 3: Successive medications timeline in the hospital

- Patient was started on escitalopram and good clinical response was obtained.
- Liver injury can be caused by different factors such as infections, toxic substances, autoimmunity, and drugs.
- Drug-induced hepatotoxicity or drug-induced liver injury (DILI)- it is an acute or chronic response to a natural or manufactured compound. DILI is a possibility when there is suspicion on a pharmacological cause after ruling out other causes.

Drug-induced liver injury (DILI)

- Liver injury can be caused by different factors such as infections, toxic substances, autoimmunity, and drugs.
- Drug-induced hepatotoxicity or drug-induced liver injury (DILI)- it is an acute or chronic response to a natural or manufactured compound. DILI is a possibility when there is suspicion on a pharmacological cause after ruling out other causes.

A. Aetiology:

- Intrinsic DILI - most common- acetaminophen - less often seen in aspirin, tetracycline, and vitamin A
- Idiosyncratic DILI -
  i. Antibiotics (45.4%): coamoxiclav (most common), cotrimoxazole, ciprofloxacin, isoniazid
  ii. NSAIDs
  iii. Herbal and dietary supplements (16.1%): green tea extract, anabolic steroids, multi-ingredient nutritional supplements
  iv. Cardiovascular drugs (10%): statins, amiodarone
  v. Central nervous system (CNS) agents: valproate, phenytoin
  vi. Antineoplastic drugs: tyrosine kinase inhibitors, TNF inhibitors, methotrexate

B. Pathophysiological classification

- Immune-mediated- the latency is shorter (1–6 weeks); presence of fever, rash, eosinophilia, autoantibodies (such as antinuclear and anti-smooth muscle antibodies) and Stevens-Johnson syndrome.
- Non-immune mediated reactions have long latency (1 month to 1 year).

C. Histopathological classification

- Hepatocellular DILI- ALT ≥3 times the upper limit of normal (uln) and ALT/ALP ratio ≥5 times uln;
- Cholestatic DILI- ALP ≥2 times uln and ALT/ALP ratio of ≤2 times uln;
- Mixed DILI- ALT ≥3 times uln, ALP ≥2 times uln and ALT/ALP ratio <5 but >2 times uln.
- Other forms of dili -steatohepatitis (amiodarone, tamoxifen, methotrexate), neoplasms (hepatic adenomas due to androgenic anabolic steroids (AAS)) and vascular (nodular regenerating hyperplasia due to azathioprine).

D. Presentation

- Mostly asymptomatic
- Symptoms- jaundice, then weakness, abdominal pain, dark stools or urine, nausea, and pruritis; acute or chronic liver failure; fever, rash, eosinophilia, and even Stevens-Johnson syndrome in immune mediated dili
- Signs- jaundice, the presence of right upper quadrant tenderness, and sometimes hepatomegaly

E. Evaluation

Liver biopsy is not necessary for diagnosis but can be useful in exclusion, especially if other causes of liver disease are suspected.

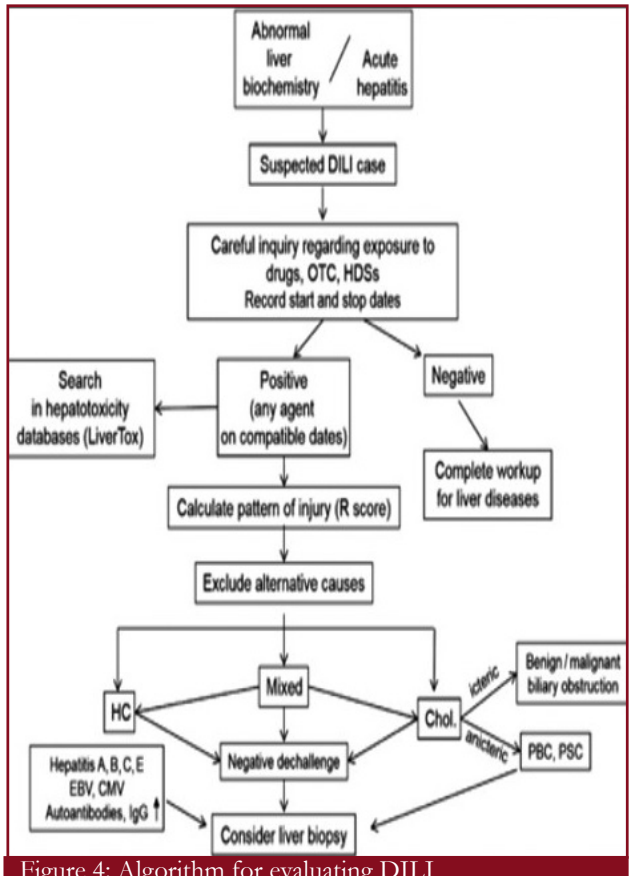


Figure 4: Algorithm for evaluating DILI

Table 2: Differentiating 'drug-induced AIH' from idiosyncratic dili can be difficult- liver biopsy might be helpful.

	Idiosyncratic DILI	Drug Induced' AIN	Idiopathic AIH
Histology	Portal neutrophils, intracellular cholestasis	Interphase hepatitis, plasma cells	Interphase hepatitis, plasma cells, emperipolesis, rosettes
Rash, eosinophilia	±	±	
Fibrosis ±	*	**	
Response to steroids	+	*	*
Relapse on steroid withdrawal	*	±	*

F. Novel biomarkers: (help in earlier diagnosis)

a) Microrna 122-hepatocyte specific mirna
b) Hmgb1- chromatin binding protein released by necrotic cells
c) Keratin 18
d) Glycodeoxycholic acid-predicts outcome of ALF induced by PCM
e) ANTICYP3a in anticonvulsant hepatitis; ANTICYP2e1 in halothane and INH hepatitis

G. MANAGEMENT

- Principle treatment- removal of the offending agent and close observation for resolution.
- N-acetyl-cysteine- for intrinsic DILI due to pcm toxicity- regenerates glutathione
- L-carnitine - valproate overdose
- Steroids- when DILI histologically resembles autoimmune hepatitis
- Symptomatic therapies such as bile acid sequestrants for cholestatic DILI or antihistamines for pruritis can be used with some efficacy
- Hospitalisation if ALF is suspected- early liver transplant.

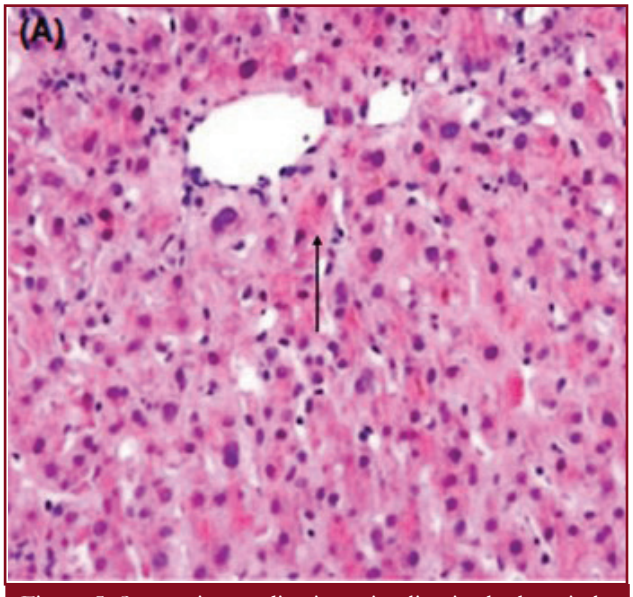


Figure 5: Successive medications timeline in the hospital

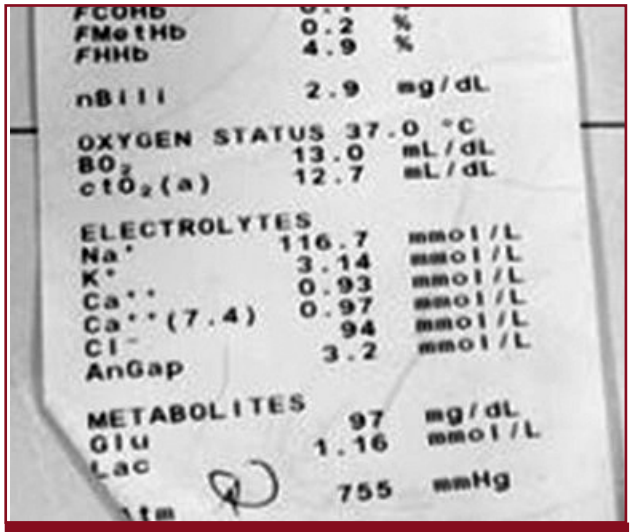


Figure 6: Successive medications timeline in the hospital

CASE 4

- a 78-year-old woman presented with sudden onset drowsiness, irrelevant talk, confusion and disorientation for 1 day.
- She is a known hypertensive on ARBs, CCBs and thiazide diuretics.
- We often have come across such ABG's

Drug induced hyponatraemia

- Hyponatremia- defined as a serum sodium concentration < 135 mmol/l- commonest electrolyte abnormality in hospitalised patients.

- Often asymptomatic and found incidentally
- May present with symptoms of increased intracranial pressure = headache, nausea, and vomiting- if the onset is acute or the severity of serum Na^+ lowering is remarkable.
- Emergency active treatment is important when symptomatic- altered consciousness including confusion, drowsiness, seizures, and coma.
- However, rapid correction of hyponatremia which is asymptomatic and/or chronic can prove to be harmful.

B. Classification of hyponatraemia:

Hyponatraemia can be divided into three diagnostic groups based on clinical history and clinical volume status of the patient- "hypovolaemic", "euvolaemic" and "hypervolaemic".

Drug-induced hyponatremia caused by renal water retention is mainly due to syndrome of inappropriate antidiuresis (SIAD). SIAD can be grouped into syndrome

Table 3: Drugs causing hyponatraemia

AVP Analogs
Desmopressin (dDAVP)
Oxytocin
Drugs that stimulate the release of arginine vasopressin
Vincristine
Ifosfamide
Drugs that stimulate the vasopressin V2 receptor in the kidney
Chlorpropamide
Antidepressants: selective serotonin reuptake inhibitors
Anticonvulsants: carbamazepine
Antipsychotics: haloperidol
Cyclophosphamide
Diuretics
Thiazides: bendroflumethiazide, hydrochlorothiazide
Thiazide-like agents: chlorthalidone, indapamide, metolazone

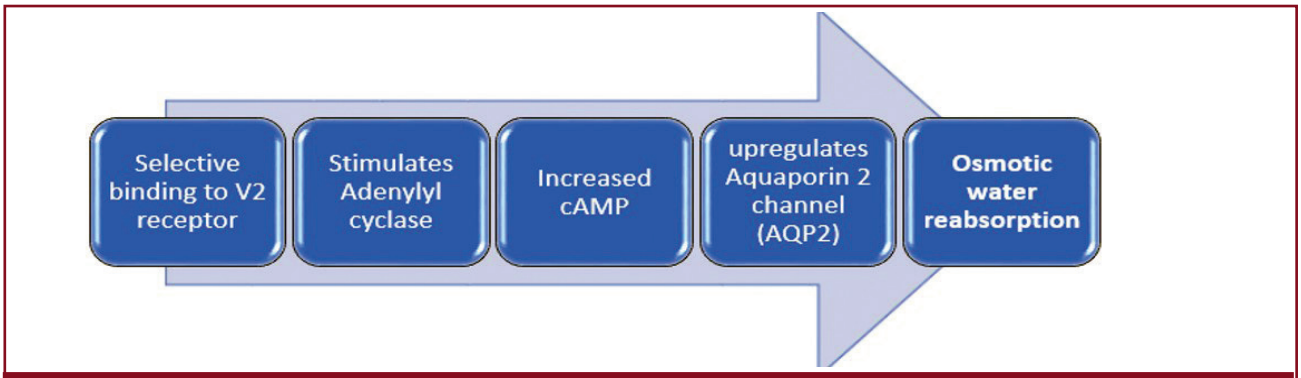


Figure 7: Mechanism of SIAD

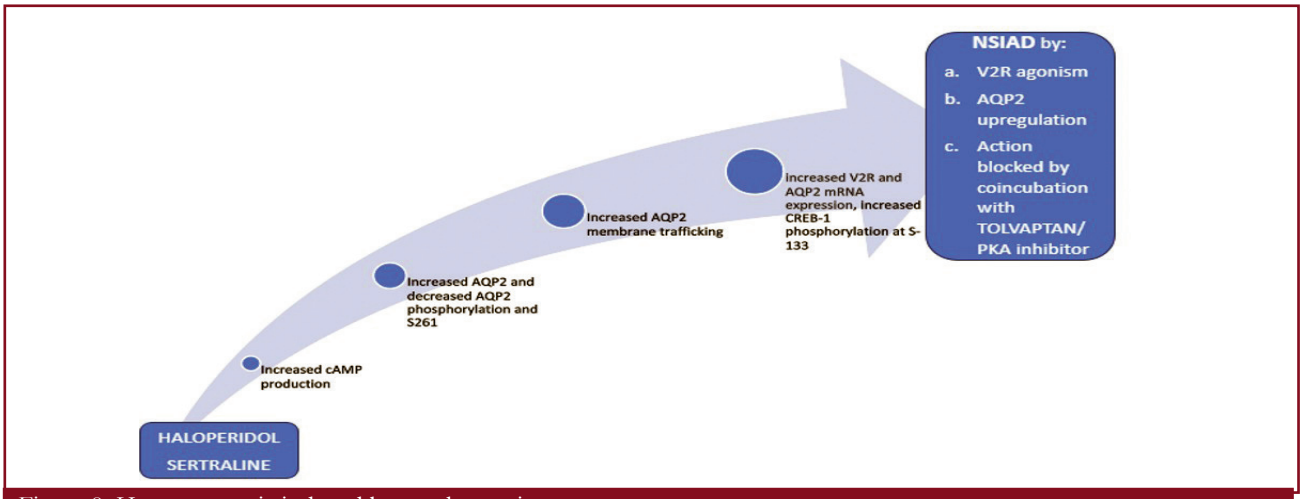


Figure 8: Hyponatraemia induced by psychotropic agents.

of inappropriate antidiuretic hormone secretion (SIADH) and nephrogenic syndrome of inappropriate antidiuresis (NSIAD).

i. Hyponatraemia induced by avp analogues:

- Desmopressin has higher propensity due to high t1/2 and more selective binding at v2r.
- Oxytocin can produce siadh when used during labour.

ii. Hyponatraemia induced by anti-cancer agents:

- Vincristine, vinblastine, cisplatin, carboplatin, cyclophosphamide, and ifosfamide - commonest
- Vincristine- raised plasma and urine AVP level- features of siadh.
- Cisplatin nephrotoxicity may produce renal salt wasting causing hypovolemic hyponatremia; can rarely be associated with raised AVP level.
- Cyclophosphamide- active metabolite of cyclo-phosphamide (4-hydroperoxycyclophosphamide) increased CAMP production, AQP2 protein and MRIYA expression, and v2r mrna expression in the absence of vasopressin stimulation- v2r-mediated NSIAD.
- Ifosfamide - possible SIADH associated hyponatraemia with raised plasma AVP level.

iii. Hyponatremia induced by psychotropic agents

Includes antipsychotics, antidepressants and anticonvulsants

- antipsychotic related hyponatraemia from polydipsia / antipsychotics
- antidepressant related hyponatraemia - SSRI and SNRI had highest risk of hyponatraemia among antidepressants.

iv. Anticonvulsants related hyponatraemia:

- Carbamazepine and oxcarbazepine most commonly associated with hyponatraemia; others like valproate, lamotrigine, gabapentin and levetiracetam can also be a cause.
- Mechanism similar to antipsychotics- v2r upregula-tion-NSIAD

v. Thiazide induced hyponatraemia

- Hyponatraemia is dose dependent
- Hyponatraemia induced by thiazides/thiazide like diuretics is usually induced within a few weeks of starting medication

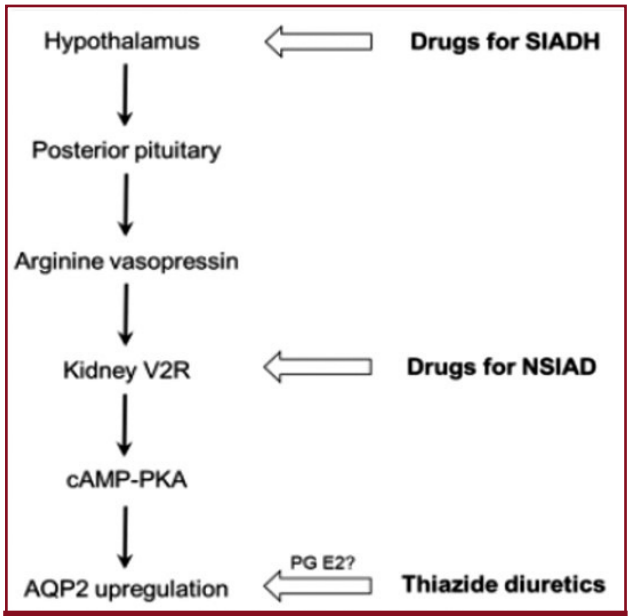


Figure 9: Summary of pathogenetic mechanisms

- Mechanisms of thiazide-induced hyponatremia:

1. Renal (primary)
   - a. NCC inhibition-related
   - Sodium loss leading to GFR reduction and enhanced proximal tubular fluid reabsorption
   - Impaired urinary dilution
   - b. Independent of NCC inhibition
   - AQP2 upregulation in the collecting duct
   - a. Direct effect
   - b. Prostaglandin e2-mediated
2. Extrarenal (subsidiary)
   - a. Insufficient solute intake
   - b. Excessive water intake
   - c. Coexistent hypokalemia leading to transcellular cation exchange

C. MANAGEMENT

- Discontinuation of all offending drugs
- Fluid restriction
- Increased oral salt and protein intake
- If symptomatic- 3% NaCl infusion- with frequent monitoring of serum NA^+ levels to prevent overcor-rection- osmotic demyelination syndrome is a risk.
- Potassium repletion
- Oral urea- causes solute diuresis
- Avoid reintroduction of offending drugs
- V2r antagonists - tolvaptan- select cases.

CASE 5

- An elderly male with background of hypertension, sick sinus syndrome and on pacemaker, was started on amiodarone + metoprolol + anticoagulants due to recurrent atrial fibrillation. Later amiodarone was stopped as he was maintaining normal rhythm for >6months.
- 3 weeks after amiodarone was withdrawn, he presented with sudden onset dyspnoea without any other symptom. On examination he was tachypnoeic, hypoxaemic with other vital parameters being normal. On auscultation there was reduced breath sounds bilaterally at the basal regions. No other significant findings could be elicited.
- On investigation: hypoxaemia on ABG, paced rhythm with some QT prolongation on ECG, inr 3.1, neutrophilic leucocytosis, CT chest-multiple conglomerate consolidation in both lung bases without evidence of embolism.
- Extensive workup ruled out any common infective/ autoimmune/neoplastic cause as the precipitant.
- Managed successfully on steroids and empirical antibiotics.
- Patient refused bronchoscopy
- Amiodarone level was 3.2 mcg/ml (reference range: 0.5–2.0 mcg/ml)
- Amiodarone induced pulmonary toxicity (AIPT)

Drug induced pulmonary toxicity (DIPT)

- Fatal complications of amiodarone include adult respiratory distress syndrome (ARDS) with mortality rate of 50%, advanced pulmonary fibrosis, and malignant dysrhythmias.
- Amiodarone usually has a higher pulmonary than cardiac concentration, besides a long t1/2 of 30-108 days.
- Amiodarone induced pulmonary toxicity (AIPT) is a multifactorial process:
  a. Reduced phospholipid degradation leading to its accumulation ->
     Lipid-laden macrophages formation
  b. Lipid peroxidation
  c. Generation of reactive oxygen radicles
  d. Disturbance of cellular calcium and prostaglandin metabolism
  e. Deposition of collagens resulting in lung injury.
  f. Eventually, interstitial inflammation follows that resembles infectious, granulomatous, or neoplastic diseases. N.b., the asymptomatic lipoid pneumonia is a unique drug effect and not toxicity
- AIPT can develop in the initial days of treatment. symptoms include:
  a. Progressive exertional dyspnoea/fever
  b. Weight loss
  c. Dry cough- sputum is less common, haemoptysis rarer.
  d. Diffuse rales/ hypoxaemia may occur
  e. These symptoms can overlap with background cardiac/pulmonary disease.

Radiological:

The radiologic patterns seen in DIPT can be divided into:

- Diffuse alveolar damage (DAD)- amiodarone, cyclophosphamide, bleomycin, carbamazepine, etoposide, cocaine, heroin, methotrexate (mtx), and mitomycin c.
- Interstitial pneumonitis- both usual interstitial pneumonia (UIP) and nonspecific interstitial pneumonia (NSIP) have been associated. NSIP-manifestation of - amiodarone, mtx, carmustine, (more common), gold salts and chlorambucil toxicity (less common).
- Cryptogenic organizing pneumonia (COP) (bronchiolitis obliterans-organizing pneumonia [BOOP])- acebutolol, amiodarone, amphotericin b, bleomycin, and carbamazepine.
- Pulmonary oedema
- Eosinophilic pneumonia- nsaids, penicillamine, sulfasalazine, nitrofurantoin, para-aminosalicylic acid. Patients also may have blood eosinophilia.
- Pulmonary haemorrhage- uncommon. Typical causative agents include anticoagulants, amiodarone, high-dose cyclophosphamide, mitomycin c, cytarabine, and penicillamine. Penicillamine can cause a pulmonary-renal syndrome similar to goodpasture syndrome.
- Granulomatous pneumonitis- seen in Non-hodgkin lymphoma treated with chemotherapeutic agents, cocaine, cromolyn sodium, fluoxetine, mtx, nitrofurantoin, procarbazine, and pentazocine.

Bronchoalveolar lavage

- Bronchoalveolar lavage (BAL) findings are not specific for any DIPT.
- BAL is helpful in narrowing the differential diagnosis, primarily in excluding an infective/ underlying cause of involvement of the lungs (metastatic cancer, malig-

Table 4

1. **Amiodarone toxicity-**
   - Positive for neutrophils and "foamy" macrophages
   - Possibly positive for lymphocytes
   - Negative for eosinophils and birefringent particles
2. **Bleomycin toxicity-**
   - Positive for neutrophils and "foamy" macrophages
   - Possibly positive for lymphocytes
   - Negative for eosinophils and birefringent particles
3. **Talc toxicity-**
   - Positive for neutrophils
   - Possibly positive for lymphocytes and eosinophils
   - Negative for macrophages and birefringent particles
4. **Methotrexate toxicity-**
   - Positive for birefringent particles
   - Negative for neutrophils, macrophages, lymphocytes, and eosinophils

nant lymphoma).

- High eosinophil counts (>40%) in BAL fluid- drug-induced pulmonary eosinophilia (Table 5).

Management: drug withdrawal -> supportive symptomatic therapy.

Bronchospasm:

- Most common drug induced pulmonary adverse event.
- Clinical features similar to non-drug induced bronchospasm

Table 5: Mechanism of bronchospasm of few drugs groups

Penicillin, sulphonamides, cephalosporin, cimetidine, tetracycline, allergen extract	• Anaphylaxis-IgE mediated
Acetate, Bisulfite, cromolyn, smoke, inhaled steroids, N-acetyl cysteine	• Direct airway irritation
Methydopa, carbamazepine, spiramycin	• **Precipitating IgG antibodies**
Aspirin, phenylbutazone, acetaminophen	• Cyclooxygenase inhibition
Adrenergic receptor blockers	• **Pharmacologic action**
Narcotics, ethylene diamine, benzalkonium chloride, local anaesthetics	• Anaphylactoid reaction
ACEi, Hydrocortisone, piperazine, losartan, isoproterenol, monosodium glutamate	• **unknown**

- Risk factors:
  1. Pre-existing hyperreactive lung disease
  2. Smoking
  3. Advanced age
  4. Respiratory infections

Management-

- Withdrawal of offending drug
- Treat acute anaphylaxis with low dose epinephrine
- Oxygen, inhaled Beta-2 agonists, corticosteroids, antihistaminics

News from Pune

NATIONAL NUTRITION WEEK CAMP ORGANISED AT DR. D.Y PATIL HOSPITAL PUNE

In an initiative led by Dr. Pradnya Diggikar, General Medicine Professor and GSI Member, a National Nutrition Week camp was organized under the age of GSI on Thursday, 7th September 2023, in the Medicine OPD of Dr. D.Y Patil Hospital, Pune.

The event aimed to educate patients and their relatives about the significance of a balanced and healthy diet. Special attention was given to tailormade advice for specific health conditions. Diabetic patients received guidance on a suitable Diabetic diet, while those dealing with hypertension were informed about the benefits of a Salt Restricted Diet.

The participants of the camp included residents and interns from Dr. D.Y Patil Hospital: Dr. Mayank, Dr. Hansini, Dr. Tushar, Dr. Bhavya (Residents), and Dr. Arnav, Dr. Ananya, Dr. Sushmita (Interns).

CARDIAC HEALTH CAMP BY DR. PRADNYA DIGGIKAR MARKS WORLD HEART DAY AT DR. D.Y PATIL HOSPITAL

On Thursday, 21st September 2023, Dr. Pradnya Diggikar spearheaded a Cardiac Health Camp at the Medicine OPD of Dr. D.Y Patil Hospital, Pune, commemorating World Heart Day.

The camp prioritized the geriatric population, offering blood tests and various investigations, including bone densitometry. Dr. Diggikar emphasized the significance of cardiovascular exercise to maintain heart health.

The event saw participation from Residents and Interns of Dr. D.Y Patil Hospital, namely Dr. Mayank,

Dr. Hansini, Dr. Tushar, Dr. Bhavya, Dr. Shubhangini, and Dr. Rashmi.

DR. PRADNYA DIGGIKAR HONORED WITH LIFETIME ACHIEVEMENT AWARD AT 2ND WORLD CONGRESS ON NON-COMMUNICABLE DISEASE

In a ceremony on 29th October 2023, at the J.N Tata Auditorium, IISC, Bangalore, Dr. Pradnya Diggikar was bestowed with the prestigious Lifetime Achievement Award during the 2nd World Congress on Non-Communicable Disease.

The accolade recognized Dr. Diggikar's commendable efforts and years of dedicated service in the field of Medicine, highlighting her continuous contributions to society. During the event, Dr. Diggikar delivered a concise yet impactful talk on Cancer Vaccines. Delegates were enlightened about both Preventive and Therapeutic Vaccines, with insights into the promising future prospects of upcoming vaccines for various types of cancers.

GSI PUNE CHAPTER COLLABORATES WITH DR D.Y. PATIL MEDICAL COLLEGE TO ORGANISE PROGRAM ADDRESSING UNMET HEALTH AND SOCIAL CARE NEEDS OF OLDER PEOPLE

On September 8, 2023, from 2:00 PM to 4:30 PM, the Department of Medicine at Dr D.Y. Patil Medical College in collaboration with the Geriatric Society of India Pune Chapter organized a program addressing the UNMET health and social care needs of older people.

Dr. Shubhangi Kanitkar, Professor, and Head of the Department of Medicine, delivered the introductory address, setting the tone for the event. The program included a Group Discussion on UNMET needs, which is part of an ongoing joint project with the University of Gothenburg, Sweden. Professor Nawi and Dr. Maysaa from Sweden, along with Dr. Sarika Chaturvedi and Dr. Shubhangi Kanitkar from DPU, are leading the investigation.

Noteworthy participants in the Group Discussion included

Dr. Sandeep Tamane, Dr. Umarji, Dr. Mrs. Vandana Kakrani, committee members of GSI Pune Chapter, Dr. Amarjeet Singh (CEO and Principal Director), and Dr. Vatsalaswami Madam (Director Academics and IQAC). Faculty members from the Medicine and Geriatric Medicine Departments actively contributed to the discussion.

Following this, Dr. Sandeep Tamane, Chairperson of GSI Pune Chapter, delivered a lecture on Delirium in the elderly. Dr. Anjali Deshpande, Gerontologist, founder, and chairman of MadhurBhav, an organization dedicated to senior care, shared insights on Elderly care.

The event concluded with a productive discussion and a refreshing tea session. Well-attended by senior faculty members and residents from various departments, the program showcased a collaborative effort to address the evolving healthcare needs of older individuals.

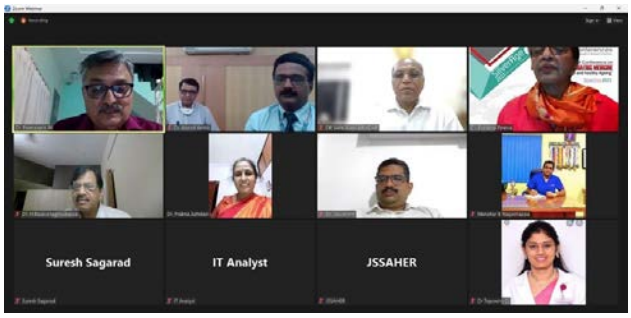
News from Mysuru

SUCCESSFUL MID-MONTH WEBINAR ON GERIATRIC MEDICINE ORGANISED BY ASSOCIATION OF PHYSICIANS OF INDIA KARNATAKA CHAPTER

An insightful mid-month webinar was organized by the Association of Physicians of India Karnataka Chapter on October 15, 2023. The event was hosted by JSS Medical College, focusing on the theme of Geriatric Medicine.

The webinar featured three GSI members delivering lectures. Dr. Premanath, a senior consultant physician from Prem Health Care Mysuru, served as the Chairperson. Dr. H Basavanagowdappa, the Principal of JSS Medical College, took on the role of Moderator, while Dr. Sangram S Biradar, a Professor of Medicine at M R Medical College, Kalaburagi, served as the Chairperson.

The event boasted eminent speakers in the field of



Geriatric Medicine, including Dr. Pratibha Pereira, Prof. & HOD of Geriatric Medicine at JSS Medical College Mysuru; Dr. Prabha Adhikari, Prof. & HOD of Geriatric Medicine at Yenepoya Medical College Mangaluru; and Dr. Anand P Ambali, Prof. of Medicine & Geriatric Clinic at Shri BM Medical College Vijayapura.

The speakers covered crucial topics, with Dr. Anand P Ambali discussing the ABC of Geriatric care, Dr. Prabha Adhikari shedding light on Path Breaking Therapies of Dementia, and Dr. Pratibha Pereira delving into the complexities of Multimorbidity Polypharmacy Saga.

Dr. Vishwanath Krishnamurthy, Hon. Secretary API-KC, extended welcome to the event, while Dr. BV Murali Mohan, Chairman, API-KC, provided opening remarks.

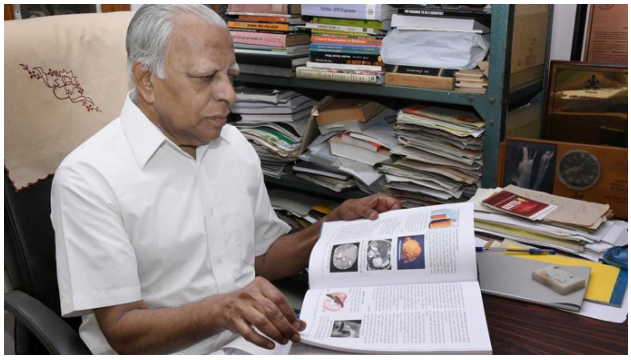
EMERITUS PROFESSOR P.S. SHANKAR HONORED WITH SIXTH HONORARY DOCTORATE

During the 103rd annual convocation at the University of Mysore on October 18, 2023, renowned medical science teacher and Emeritus Professor of Medicine, P.S. Shankar, was conferred with an honorary doctorate in recognition of his exceptional contributions to the field of medicine. The accolade specifically acknowledges his accomplishments in general medicine and chest diseases.

This marks the sixth time Dr. Shankar has received such an honor, having previously been recognized by institutions including the Rajiv Gandhi University of Health Sciences, NTR University of Health Sciences of Andhra Pradesh, Gulbarga University, Tumkur University, and Kannada University of Hampi.

As a Fellow of prestigious medical societies like the Academy of Medical Sciences, American College of Chest Physicians, Geriatric Society of India, Royal College of Physicians, and Karnataka Science and Technology Academy, Dr. Shankar has been twice honored with the Dr. B.C. Roy National Award.

A prolific writer in both English and Kannada, he has authored over 250 books, contributing significantly to the accessibility of medical knowledge in Kannada. Dr. Shankar, a professor of medicine for an impressive 61 years, has received numerous awards, including the



Rajyotsava Award.

In addition to his writing prowess, Dr. Shankar has served as the editor of the science journal “Vignana Loka” for the Karnataka Science and Technology Academy for the last 17 years. He has also been the editor of journals for the Rajiv Gandhi University of Health Sciences in both English and Kannada for the past 13 years.

Notably, Dr. Shankar compiled the first-ever medical encyclopedia in Kannada, and a second edition is currently in progress. His literary achievements also extend to works like the Oxford English Medical Dictionary and the English-Kannada Science Dictionary.

News from Vijaypura

GSI, API KARNATAKA CHAPTER HOST SEMINAR IN COMMEMORATION OF WORLD COPD DAY

Vijayapura's Shri B. M. Patil Medical College, Hospital & Research Centre, in collaboration with the Department of Geriatric Medicine, Geriatric Society of India, and the Association of Physicians of India, Karnataka Chapter, organized a seminar on World COPD Day on November 23, 2023.

The event, held from 11.30 AM to 01.00 PM in the Seminar Hall, featured Dr. Anand P Ambali, Vice President of GSI and EC member of API KC, as the chairperson. Postgraduate students specializing in Geriatric Medicine presented on various aspects of Chronic Obstructive Pulmonary Disease (COPD).

Dr. Ambali shared Clinical Pearls of COPD, highlighting the activities conducted by the Geriatric Clinic to assess COPD. Dr. Vijaylakshmi D, Senior Resident, coordinated the seminar. Dr. Muddasir Indikar, Assistant Professor of the Department of Geriatric Medicine, extended warm welcome to the attendees, while Dr. Abrar Ul Huq proposed a vote of thanks.

The program saw active participation from postgraduate students in Respiratory Medicine, interns from Geriatric Medicine, and faculty members, totaling 20

participants. A thoughtful touch concluded the session with a high tea served to all attendees. The seminar succeeded in spreading awareness and knowledge about COPD on a significant occasion.

SENIOR CITIZEN FORUM IN VIJAYAPURA OBSERVES INTERNATIONAL DAY FOR OLDER PEOPLE 2023

On October 19, 2023, from 11:00 AM to 1:00 PM, the Senior Citizen Forum in Vijayapura organized a meaningful event to mark the International Day for Older People.

Dr. Anand P Ambali, a distinguished Geriatric Physician, was the invited guest. Addressing the gathering of 45 older individuals, he discussed the pressing issue of loneliness among seniors and proposed preventive measures.

Adding an active touch to the event, Dr. Basavraj, Head of the Department of Physiotherapy (Life Member of GSI), delivered an informative talk on exercises tailored for older individuals. He demonstrated various exercises aimed at promoting fitness and well-being in the elderly.

To further enhance the health aspect of the day, a health check-up camp was conducted at the Geriatric Clinic of BLDE DU Hospital. Notably, this led to the detection of diabetes and hypertension in one older participant each, marking a vital contribution to their well-being.

GSI COMMEMORATES WORLD PNEUMONIA DAY AT BY HOSTING SEMINAR IN VIJAYPURA

In an effort to mark World Pneumonia Day, the Department of Geriatric Medicine at Shri BM Patil Medical College Hospital and Research Centre Vijaypura and Geriatric Society of India jointly organized a seminar on November 11, 2023, from 11:30 AM to 01:00 PM in the Seminar Hall.

Dr. R. S. Babar, Professor and HoD of the Department of Respiratory Medicine, took on the role of chairperson, while Dr. V. G. Warad, Professor of Medicine, presided over the program. The seminar featured postgraduate students of Geriatric Medicine presenting on various topics related to pneumonia.

Dr. Anand P Ambali, Vice President of Geriatric Society of India, addressed the challenges in pneumonia management and shared insights into preventive activities conducted by the Geriatric Clinic. The event, coordinated by Dr. Vijaylakshmi D, Senior Resident, saw active participation from postgraduates in Respiratory Medicine, interns, and faculty members.

Dr. Muddasir Indikar, Assistant Professor of the Department of Geriatric Medicine, extended welcome to the gathering, emphasizing the importance of the seminar. Dr. Abrar Ul Huq expressed gratitude and proposed the vote of thanks, concluding the session on a positive note. The seminar served as a platform for knowledge-sharing and discussions on pneumonia-related issues in the field of geriatric medicine.

News from Kolkata

3RD GSI WEST BENGAL STATE CONFERENCE HELD IN KOLKATA

The 3rd state conference of the Geriatric Society of India (GSI) West Bengal Branch was successfully convened on October 8, 2023, at Hotel Stadel, Saltlake, Kolkata. The event took place in two halls from 9:30 AM to 6:30 PM, featuring a range of scientific deliberations, including lectures, symposiums, panel discussions, and a Quiz competition. Topics covered various systems, including social issues, providing a comprehensive overview.

The inauguration ceremony had esteemed Chief Guest Soma Mukhapadhayay, accompanied by special guests Dr. Sukumar Mukherjee (Director AIIMS Kalyani), Dr. Ramji Singh (Chief Functionary CMIG), and Dr. Indrani Chakravarty. The ceremony began with the lighting of the lamp after the reception of guests on the dais. Dr.

Mainak Gupta, the General Secretary of the branch, delivered the welcome speech. A book titled "SYNOPSIS ON GERIATRIC PATHOLOGY" by Dr. Gopeswar Mukherjee was released during the event.

Dr. Sukumar Mukherjee, Chief Patron of GSI WB branch, was honored with a lifetime achievement award, and Dr. Indrani Chakraborty, Chief Functionary of Calcutta Metropolitan Institute of Gerontology, also received a lifetime achievement award.

Approximately 400 delegates and faculty members, including doctors, nurses, paramedics, and social workers, actively participated in the program. The organizing team, led by Dr. Jayanta Sharma, Dr. Aniruddha De, Dr. Krishnanjan Chakraborty, Dr. Mainak Gupta, and Dr. Dhires Kumar Chowdhury, worked diligently to ensure the conference's success.

SUCCESSFUL CELEBRATION OF WORLD ELDER'S DAY IN BARRACKPORE, KOLKATA

World Elder's Day 2023 was celebrated at the Assembly Hall of CMDA Nagar, Barrackpore, Kolkata-700122. The event was jointly organized by the Geriatric Society of India West Bengal branch, Barrackpore Elderly Care Society, and CMDA Nagar Barrackpore Cooperative Housing Society Ltd., with support from IMA Titagarh branch. Approximately 200 people, including a significant number of elderly individuals, gathered for the event, creating a lively and engaging atmosphere.

The day's agenda began with a health check-up session from 9:30 AM, offering services such as ECG, Audiometry, Dental and general check-up, Hemoglobin estimation, blood sugar and uric acid estimation, and TSH estimation. The inauguration, discussion, and prize distribution followed at 11 AM.

Asit Banerjee presided over the event, and Utpal Biswas, Senior Special Secretary of the Government of West Bengal, graced the occasion as the Chief Guest. Special Guests included Dr. R.N. Maiti, Dr. Gopeswar Mukherjee, Dr. Krishnanjan Chakraborty, and IMA doctors, Dr. S.N. Dutta, Dr. Monoranjan Sarkar, Dr. R.K. Sarkar, Dr. Manik Paul, Dr. Sharma, Dr. N.K. Roy, along with several other dignitaries.

The gathering commenced with a one-minute silence to remember those who passed away during the COVID-19 era. Rose bunches were distributed to all elderly

attendees, and tokens of respect were presented as gifts. Nine Daughter's-in-law were recognized and awarded appreciation for their outstanding contribution to the care of their parents-in-law.

During the discussion on healthy aging, the following resolutions were adopted:

a) Urging the Chief Minister of West Bengal to appoint a nodal officer for elderly issues in all police stations across the state.

b) Advocating for the implementation of programs that strengthen intergenerational bonding by all stakeholders, including the government.

c) Requesting appropriate authorities to ensure geriatric healthcare is delivered at all levels, especially at the primary and secondary levels, by professionals trained in Geriatrics.

The meeting concluded with the President delivering his closing speech, expressing gratitude and delivering a vote of thanks.

Annual Conference GSICON 2023 Karnataka

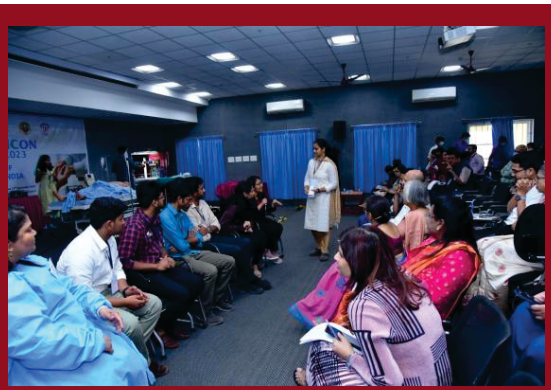
– A photo report by Dr. Anand P Ambali

YENEPOYA MEDICAL COLLEGE

GSICON 2023

36th Annual Conference of Geriatric Society of India

GSI Inauguration



Emergencies in Geriatric Medicine on human patient simulators – work shop 1

API LAHARI a magazine was released

Comprehensive Geriatric Assessment-workshop 2

Convocation –GSI fellows

Vertigo –workshop 3

Panel Discussion

Paper presentation

Model Day Care Centre in a rural setting

Paper presentation

End of life Care and advanced directive

Walking variations for Fall Prevention

Geriatric Oncology tools Debate

Vestibular Rehabilitation workshop and falls clinic-Lecture demo

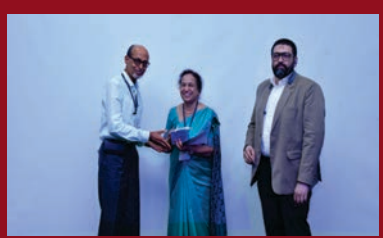
Nutrition guidelines for healthy ageing

Optimising stroke prevention in AF management : Translating the evidence into clinical practise

Haematology interesting case

Geriatric Immunization – Panel discussion

B.C.Bansal Oration



Dementia –Newer therapies

Insomnia in elderly

Unravelling the molecular signalling in neurodegenerative disorders : An Omics approach

Model Day Care Centre in a rural setting

Oration- Rural Geriatrics – Reaching the Unreached

Presidential Oration – Gut microbiomes

P.C. Mohanty Oration

Lectures –macular degeneration newer therapies

Lecture on Insomnia-Approach

Panel discussions Long COVID

Antiageing therapies Panel moderator

Cognitive communication therapy

Geriatric clinics on Gastro case in Geriatric practice

Awards of Oral and Poster Presentations

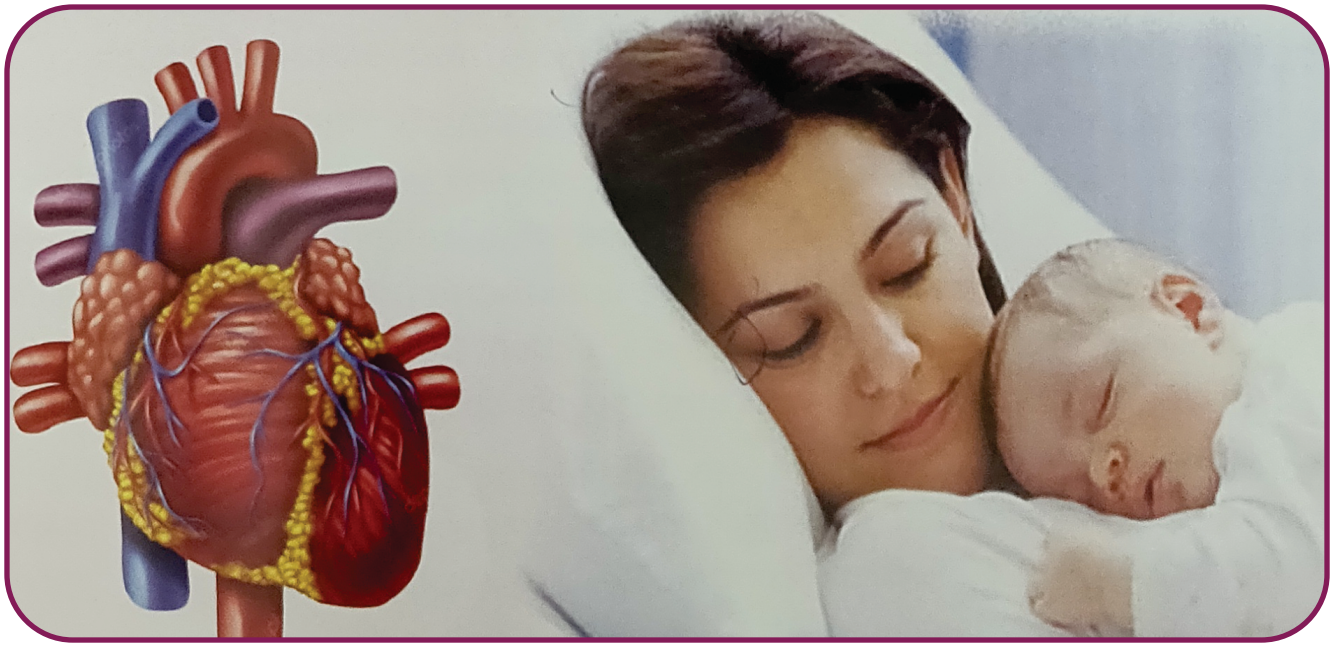
With Best Compliments From

Dr. Satish Gulati
M.D.F.I.C.P., F.I.A.M.S., F.G.S.I.
Consultant Physician & Geriatrician
Cell: +91-9812026168

Dr. (Mrs.) Rita Gulati
M.D., D.G.O., F.I.A.M.S.
Consultant Obstetrician & Gynaecologist
Cell: +91-9896342097

Dr. Dishant Gulati
M.B.B.S. M.D. (Medicine)
Consultant Physician
(Former Assistant Professor SGT Medical College, Budera (Gurgaon)
Cell:+ 91-8930198124

Ms. Divya Gulati
Computer & Administration In-Charge
Cell: +91-9996233397



Bharat Nursing Home

Sonipat Road, Rohtak-124001, Haryana

Equipped with Gynae, Internal Medicine, Pediatric,
Sonography, Biochemistry, I.C.U. & Psysiotherapy Services

Ph: 01262-256955, 01262-313955, 09315507729

DELENG/2012/42798 Dt. 12 June 2012
Price Rs. 20 per copy

All Members are Requested to
Kindly update their
Email ID / Telephone No:
by sending mail to
secretariat office of GSI.