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Editorial

GST *i.e. Goods and Service Tax is the latest landmark constitutional amendment done in the field of indirect taxation. It seeks to replace the existing multiple taxation system and bring a single taxation system in the country. It is limited to indirect taxation system and would not affect any direct taxes. The Goods and Services Tax is governed by the GST Council which is headed by the Finance Minister. It is expected to be implemented from 1st July 2017.*

Under the Goods and Services Tax (GST), four tier tax structure has been finalized i.e. of 5%, 12%, 18% and 28% where lower rates will be levied for essential items and higher rates for luxury goods.

The Goods and Services Tax (GST) will replace numerous indirect taxes including Central Excise Duty, Service Tax, Value Added Tax, Luxury Tax, Central Sales Tax, etc.

Education is one of the most important sector in the Indian economy as it is directly relatable to the advancement of the country.

Education is provided both by the public and private sector. After Right to Education has been recognised as a Fundamental Right, it is the duty of the Government to provide education to all children between the age of six to fourteen years. Thus, it is the primary duty of country becomes to provide education at low cost and make it more accessible to the Indian citizens.

At present, education is considered a service and only subject to the service tax and no other indirect taxes. But, only those services which the government has laid down within educational service will be exempted from service tax.

However only those services which are related to delivery of education as 'a part' of the curriculum that has been prescribed for obtaining a qualification prescribed by law are exempted from service tax. It includes the conduct of degree courses by colleges, universities or institutions which lead to grant of qualifications recognized by law. Similarly, vocational training is also out of subject of taxation.

Therefore training or coaching imparted by coaching institutes would not be covered in this exclusion as such training does not lead to grant of a recognized qualification. Such services are liable to service tax.

Following services are not exempted from GST-

- *Services or supplies provided by third parties like academic instruments, computers, sports, equipment, etc.*
- *Activities offered by third parties after school hours*
- *Food and accommodation provided for excursion*
- *Non-academic related supplies provided like stationary, bags, uniforms, etc.*

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Effects of Pool-Based and Land-Based Aerobic Exercise on Functional Status and Physical Fitness among People with Fibromyalgia

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Abstract

Despite the substantial economic and human costs of fibromyalgia and important role of training programs in reducing symptoms, few randomized studies have evaluated such treatment programmes. This study evaluated the effectiveness of two method of aerobic training (pool-based and land-based) on 45 patients. The pool-based group had significantly higher scores in all three physical fitness factors (muscular strength, cardiovascular endurance and flexibility), but the land-based group had improvement just in the muscular strength. Both experimental groups showed advances in functional status compared with the controls. The protocol of warm water therapy failed to achieve a significant improvement in all sub-scales of FIQ, but significant improvements were shown in physical function, pain, morning tiredness, fatigue and stiffness. A more prolonged course is suggested to significantly improve the anxiety and depression due the greater and longer lasting benefits it have.

Key words: fibromyalgia, aerobic exercise, physical fitness, functional status

Introduction

Fibromyalgia (FM) is a syndrome of extensive chronic pain related to tenacious fatigue, general morning rigidity, cognitive dysfunction, sleep disturbances, anxiety, depression, stiffness and intolerance to exercise (Bylaws, et.al. 2009). This condition affects women about eight times more often than men (). Emotional distress is common in FM and quality of life is impaired (Bennet, et.al. 2007), often more so than in other painful diseases such as rheumatoid arthritis. The FM may a□ect peripheral and/or central mechanisms of postural control, and is associated with balance problems and an increased frequency of falls (Jones, et.al. 2009).

According to dysfunction model, fibromyalgia syndrome has three etiological factors (biochemical, biomechanical and psychosocial) that interact with acquired features to determine proneness of individuals. The proposed interactions between these factors are as follows: 1- negative emotional state produces specific biochemical alterations and amendment of muscle tone; 2- hyperventilation changes blood oxygenation and produces a state of anxiety which directly influences the structural components of the thoracic and cervical area; and 3- chemical changes in blood flow may produce physical and mental modifications (Craig, 2007).

Several treatment programmes have been proposed to deal with various features of the

disease, particularly psychological distress, poor quality of life, functional impairments (Cedraschi, et.al. 2004), decreased muscle strength and endurance (Maquet, et.al. 2002), and low levels of physical fitness (Valim, et.al. 2003). The key features of successful self-management programmes for FM include education about the syndrome and a well-informed patient at the centre of the management team (Adams & Sim, 2005). Such programmes emphasise communication and a combination of cognitive-behavioral techniques and physical training such as pool exercises which, together with walking, are well tolerated by patients with FM (van Koulil, 2010).

Whereas numerous investigations have validated the e□cacy of various complementary therapies, e□ective and readily available methods of manual therapy could be valuable in the treatment of fibromyalgia. Jones et al. (2009) in a study on fibromyalgia and balance disorders and falls, showed that some fibromyalgia symptoms (pain, sti□ness, sleeping problem, fatigue, feeling depressed and anxiety) were related to di□culties in knowing how far one can lean from a seated position, maintaining balance while standing with eyes closed, and reaching forward. They report that whole fibromyalgia symptoms (rather than pain alone) may accounts for the poor balance showed in the study (Jones et al. 2009). A recent study on the e□cacy of myofascial rehabilitation in fibromyalgia patients found that one session in week produces a considerable progress in sleep and quality of life (Castro-Sánchez, 2011). Exercise is widely applied as a treatment option and some recommendations have been proposed for ideal results: minimize micromuscle trauma, minimize central sensitization, emphasize low-intensity exercise, individualize exercise, and maximize self-efficacy (Curtis, et.al. 2011).

Despite the substantial economic and human costs of FM, few randomized studies have evaluated such treatment programmes. There are no published studies on multidisciplinary programmes including pool exercises and education which enrolled a large number of patients and conducted follow up over a period of at least 2 months. This study evaluated two method of aerobic exercise training (pool-based and land-based) developed in consultation with a local FM association. The programme explicitly promoted self-management strategies, combining pool exercises and education. It was suggested that the programme would improve the participants' physical fitness as well as decrease the functional and symptomatic consequences of FM, as compared with a control group.

Methods

This experimental study evaluated the Intragroup and intergroup di□erences (two experimental groups and one control group) at baseline (pre-test), immediately after the 8-week intervention, and again at two month. The experimental period was from 1 August 2016 to 30 September 2016. Before enrollment, written informed consent was obtained from all patients, which was approved by the ethics committee of the Tehran welfare association. Participants were told they could leave the study at any time.

The target population consisted of patients diagnosed with fibromyalgia syndrome by physicians at the care centers of Tehran, receiving pharmacology therapy (with antidepressants, corticoids, anti-inflammatories, and muscle relaxants). Inclusion criteria were: age 40–50 years, agreement to attend therapy sessions at indoor pool, and/or moderate or worse average pain level. Exclusion criteria were: receiving non-pharmaceutical therapies,

treatment-limiting problems (e.g. respiratory disorders, hypotension, allergies, etc.) and alterations in cutaneous integrity.

The groups were balanced for age by using a stratification system. The sequences assigned to patients were placed in envelopes containing the allocation to each study group. After the initial interview, patients were randomly assigned to the experimental or control group. Both intervention groups underwent their corresponding intervention for 8 weeks. Assessments were repeated immediately after the final treatment session and at two months.

Intervention protocol

Patients in the experimental groups underwent two different exercise therapy protocol. The intensity of training was always keeping at moderate level (60 to 80 percent of maximum heart rate) and the frequency was three times-weekly for 8 weeks (Hauser, et.al. 2010). Recommendations about life style were provided to the participants of control group which were based on instructions of American pain association. The life style sessions focused on helping the participants to plan their activities in order to minimize fatigue and pain, and thus eventually to increase their level of activity.

Land-based training

Cardiovascular training including walking with different speeds and rhythmic activities were applied to the large muscle groups. Exercises using weights were administered 2-3 sets of 15-20 repetitions. These exercises consisted biceps curl, lateral arm raise, bench press, standing from seating position, leg abduction and forward-backward step. Flexibility develops with static drills at the end of warm-up and cool-down bouts.

Pool-based training

Pool-based intervention group do exercises in a swimming pool with water at the chest level (the temperature was always at 28 – 30 °c). A modified training version which is designed based on limitations of aquatic environment was used. The intensity and muscle groups engaging in pool training was identical to the land-based condition. Cardiovascular training included bicycle leg, walking in water, rhythmic and consistent activities which affect large muscle.

Outcome measures

Baseline and follow up examinations were performed by experienced physiatrists, according to the protocol described by Wolfe et al. Participants were interviewed by the examining physician using a standardized questionnaire to record sociodemographic characteristics, date of symptom onset, duration of symptoms, concurrent health problems, and use of healthcare services in the previous 6 months. The heart rate was assessed using a Heart Rate Monitor (Polar Electro OY, Finland).

To assess the functional and symptomatic consequences of FM the questionnaire included elements of the Fibromyalgia Impact Questionnaire (FIQ), which has 10 subscales to assess “physical function”, “number of days feeling bad”, “work missed”, “job ability”, “pain”, “fatigue”, “morning tiredness”, “stiffness”, “anxiety”, and “depression”. Higher scores indicate a negative impact.

Factors of health related physical fitness included muscle strength, cardiovascular endurance and flexibility which were evaluated by 1-RM tests (bench press and leg press), 6-Min walking and seat and reach, respectively.

Results

45 patients were enrolled and randomly assigned to two intervention (pool-based and land-based) and one control group. Data on patient characteristics are given in Table 1.

Table 1 – demographic characteristics of patients

Group Variable	Pool-based (mean & SD)	Land-based (mean & SD)	Control (mean & SD)
Age (yrs)	44/71 ± 2/34	44/40 ± 2/57	44/37 ± 2/32
Stature (cm)	166/45 ± 5/23	165/50 ± 6/64	166/15 ± 6/37
Mass (kg)	76/07 ± 6/71	75/86 ± 8/63	76/59 ± 10/70
BMI (Kg/m^2)	28/65 ± 2/39	27/21 ± 2/38	29/18 ± 2/89

No significant di□erences were found between three groups in mean baseline mean scores for any demographic variable. The effects of testing stages and groups (3 × 3) on functional status and physical fitness factors were analyzed using mixed analysis of variances as follows:

Table 2 - Results of mixed analysis of variances for muscular strength

	Sum of Squares	df	mean of squares	F	P
Group	639/340	2	312/983	6/457	0/005
Stages of testing	287/365	1	142/263	96/27	0/005
Group × Stages of testing	231/183	2	115/265	110/26	0/001

The Bonferroni follow up test was performed to determine the main effect of group on muscular strength at p<0/05 level of significance; the control group had no significant difference neither with pool-based (P=0/067), nor with land-based group (P=0/090). Besides, there was no significant difference between pool-based and land-based groups (P=0/53).

Table 3 - Results of mixed analysis of variances for cardio-vascular endurance

	Sum of Squares	df	mean of squares	F	P
Group	249/233	2	128/437	84/73	0/001
Stages of testing	374/557	1	374/557	196/32	0/002
Group × Stages of testing	268/621	2	136/830	120/28	0/001

The results of Bonferroni follow up test to determine the main effect of group on cardio-vascular endurance at p<0/05 level of significance showed that there are significant differences between both pool-based and land-based groups with control group (P=0/001 and P=0/001, respectively). Besides, a significant difference was shown between pool-based and land-based groups (P=0/005).

Table 4 - Results of mixed analysis of variances for flexibility

	Sum of Squares	**df**	**mean of squares**	**F**	**P**
Group	58/542	2	27/635	9/872	0/014
Stages of testing	468/113	1	468/113	130/63	0/001
Group × Stages of testing	347/543	2	171/19	135/37	0/006

The results of Bonferroni follow up test for the group main effect on flexibility at p<0/05 level of significance demonstrated that there are significant differences between both pool-based and land-based groups with control group (P=0/001 and P=0/003, respectively). Moreover, a significant difference was shown between pool-based and land-based groups (P=0/035).

Table 5 - Results of mixed analysis of variances for functional status

	Sum of Squares	**df**	**mean of squares**	**F**	**P**
Group	48/125	2	24/485	5/376	0/015
Stages of testing	75/314	1	75/314	134/76	0/005
Group × Stages of testing	49/462	2	24/863	53/62	0/005

The results of Bonferroni follow up test for the group main effect on functional status at p<0/05 level of significance showed that there are significant differences between both pool-based and land-based groups with control group (P=0/005 and P=0/005, respectively), but there was no significant difference between pool-based and land-based groups (P=0/8).

Discussion

This study found that patients with FM enrolled in a 8 week aerobic exercise programme which included warm water activities and exercise on the ground had significant improvements in both physical fitness and the functional consequences of FM as compared with a control group who just received education about life style. The pool-based group significantly enhanced the scores in all three physical fitness factors (muscular strength, cardiovascular endurance and flexibility), however, there was no significant enhances in physical fitness factors of the land-based group except the muscular strength. The increases in physical fitness scores were consistent in the follow up tests in both experimental group. Pool-based group also showed significant improvements in functional status, particularly when compared with the controls. These improvements were sustained 2 months after completion of the programme. Although similar advances was seen in land-based group, these improvements were not consistent after 2 months. Overall, this randomized control study reports the results of warm water activities, exercise on the ground, and education with sufficient patient numbers and follow up to have the power to begin critically evaluating these treatments.

In the present study, an intensive protocol of warm water therapy failed to achieve a

significant improvement in all sub-scales of FIQ. However, a significant improvement was found in physical function, pain, morning tiredness, fatigue and stiffness after the therapy. A more prolonged course may be required to significantly improve the anxiety and depression in these patients by obtaining greater and longer lasting benefits in terms of quality of life. Authors who adopted multiple approaches in fibromyalgia patients (pharmacological therapy, physical exercise and cognitive education techniques) obtained significant improvements in almost all Fibromyalgia Impact Questionnaire items (Redondo, et.al. 2004; Oh, et.al, 2010). There were no changes in the pharmacological therapy of the patients during the present study. Other authors who used a multimodal approach stressed that the presence of depression is a key factor influencing Fibromyalgia Impact Questionnaire results (Busch, et.al. 2008).

The lack of a cardiovascular endurance test with a higher level of di□culty is a study limitation. However, the decision was taken not to exceed the moderate level due to the loss of physical function shown by fibromyalgia patients. Another limitation is that the therapist who administered both intervention protocols and the patients themselves could not be blinded. Further research is warranted to compare outcomes obtained with our protocol with those of other exercise therapies. This study has demonstrated that fibromyalgia patients can benefit from aerobic exercise techniques. In these patients, the decrease in loss of stability secondary to the increase of muscular strength improves physical function, pain, morning tiredness, fatigue and stiffness.

This study has demonstrated that fibromyalgia patients can benefit from aerobic exercise in warm water and on the ground. Therefore, aerobic exercise therapy can contribute to improving physical function and health related physical fitness in fibromyalgia.

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Effects of Progressive Dual-Task Training on Motor Performance, Cognitive Status and Fall Risk among Older Adults with and without Mild Cognitive Impairment

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Abstract

Patients with MCI demonstrate suffer from inadequacy in compensatory techniques and lacking motor control while falling, hence it appears that cognitive and motor deficiencies are inter-related. While epidemiological evidence in support of motor and cognitive risk factors for falls exists, the effects of cognitive impairment on postural control have barely been studied. Moreover, the mechanism of the increased occurrence and relentlessness of falls is vague. The aim of this study is to investigate the progressive dual-task effects on motor performance, cognitive status and fall risk between older adults with and without MCI. The mean age of the participants who entered the trial was 75.65 years (range, 65–90). Examinations after 12 weeks showed that the MCI group experienced more positive changes in cognition, while the normal group had the most evident effects in fall risk and performance in FR test (P<0/05). This finding supports the previous results which implied the positive effects of dual-task training on cognitive variables are associated to biological variations which arise during exercise training. We also suggest that the physical benefits of progressive dual-task training (e.g. flexibility) are overriding the cognitive changes. In future research, the pathophysiology and further clinical implications should be investigated.

Keywords : Mild Cognitive Impairment, dual-task, cognition, elderly, motor performance

Introduction

Mild Cognitive Impairment (MCI) represents a clinical deteriorating condition. Neurological studies have demonstrated that the relative risks of progression to MCI in subjects with mild, moderate, and severe cognitive disorders (without MCI) were 3.6, 5.4, and 7.0, respectively (Teng & Cummings, 2007). Nevertheless, in individuals with MCI, 11% remained stable, and 25% showed improvement of cognitive function from baseline to follow-up tests (Ganguli, et.al, 2011). This difference in MCI participants should be inspected to enable the development of methodologies for constraining the advancement of MCI. Some randomized controlled trials (RCTs) have administered to examine the effects of exercise or physical activity on cognitive function in older adults with MCI (Anderson, et.al, 2012). These studies have discovered the positive effects of exercise or physical activity on cognitive function in older adults with MCI, though the effect of exercise on motor performance of elderly people with MCI remains uncertain.

Tasks that require the concurrent performance of two or more cognitive functions accompanied by motor activities (e.g., walking while rehearsing a word list) can be largely

affected by the disease. Particular cognitive features, like altering attention and executive function is specifically related to deficiencies in dual-tasking ability in MCI patients (Amboni, et.al, 2013). While lack of dual-tasking performance do not exclusively predict the possibility of falls, they are associated with gait parameters accompanying falling (Zijlstra, et.al, 2008). Deficits in execution of a cognitive task while walking may reveal problems not apparent under single-task conditions, and may be a more profound test of everyday cognitive deficiencies in patients in the initial stages of MCI, with mild symptom severity and distinct neuropsychological deficits. The ability to walk while performing another task can have a significant effect on cognition, gait and mobility. Dual-task deficiencies in MCI patients is perceived during standing (Hamacher, et.al, 2014) and gait tasks. MCI elderly demonstrate shorter strides and lower functional ambulation values than healthy adults (Wild, et.al, 2013).

Patients with MCI demonstrate major difficulties in performing quick postural adjustments (Gschwind, 2012). They suffer from inadequacy in compensatory techniques and lacking motor control while falling. It is not yet clear that if cognitive and motor deficiencies are interdependent or additional risk factors. Even though epidemiological evidence in support of motor and cognitive risk factors for falls exists, the effects of cognitive impairment on postural control have barely been studied. Moreover, the mechanism of the increased occurrence and relentlessness of falls is vague. Studies with dual-task designs showed that control of attention have an association between postural instability and particular cognitive sub-performances in MCI individuals. Deterioration of attention, which is caused by reduced speed of mental inputs processing and the inadequate distribution of restricted cognitive resources, have been suggested as reasons of reduced dual-task performance in persons with cognitive loss.

Poor stability in older adults is consistent with slower walking, increased stride variability, higher fall rate, and poorer performance on complex mobility tasks (Ambrose, et.al. 2013). There is also many debates about the role of stability in falling and gait control. Jorgensen and colleagues found that balance was not a risk factor for falling in elderly. On the other hand, Lamb et al and Hyndman, Ashburn and Stack showed that balance was a risk factor (Lamb, et.al, 2002; Hyndman, et.al, 2002). Nonetheless, the query of balance as a risk factor is not fully answered yet. Also, the evidence is not conclusive as to whether balance or mobility are enhanced by mixed exercises when the sample is individuals with MCI and intact cognitive status.

Since keeping postural control is typically linked with dual-task challenges in normal life, it is among the most-affected areas in these individuals. The incapacity to talk while walking is a predictor of falls in housing care facilities. Problems in coordinating concurrent tasks in activities of daily life have earlier been correlated to attentional shortages in MCI patients. Just a few studies have considered the effects of dual-task training in MCI people. The hypothesis of this study is that progressive dual-task training have a significant effect on motor performance, cognitive status and fall risk between elderly with and without MCI.

Methods

2.1 Participants

Subjects of this study included 20 male older adults diagnosed with mild cognitive impairment and 20 adult controls (Mean=75.65, Range= 65-90) recruited from community. Participants of MCI group met the definition of MCI as per the Petersen criteria. They also

had objective damages in either episodic memory or executive functioning.

Exclusion criteria for MCI patients and controls included the use of psychotropic medication, neurological disorders (other than MCI) and injuries with recognized significant effects on cognitive functioning (e.g., traumatic brain injury), major unsteady medical condition (e.g., metastatic cancer), past neurosurgical procedure, past history of illnesses affecting gait or posture, severe depressive symptoms and visual and hearing impairment incompatible with the neuropsychological tests. The informed consent was obtained from the study participants. Ethical approval for research involving human subjects sought and received via the Hamedan Welfare Organization ethics review procedure.

2.2 Measurements

2.2.1 Motor performance

Functional Reach: Functional reach (FR) is a new clinically accessible measure of balance and it equals the furthest distance in front of the body that a person, standing in a fixed position with arms fully extended, can touch without falling. The FR test, as originally devised by Duncan et al, is a measure of frailty in addition to an assessment of balance, flexibility, and fall risk. Norms for this test are: reach < 6 inches = high risk of falls/frailty; reach > 6 inches and < 10 inches = moderate risk for falls/frailty; reach > 10 inches = low risk for falls/frailty (Wernick-Robinson, et.al, 1999).

The Timed Up & Go Test (TUG) measures the time it takes a subject to stand up from an armchair, walk a distance of 3 m, turn, walk back to the chair, and sit down. It was developed originally as a clinical measure of balance in elderly people and was scored on an ordinal scale of 1 to 5 based on an observer's perception of the performer's risk of falling during the test. Podsiadlo and Richardson modified the original test by timing the task (rather than scoring it qualitatively) and proposed its use as a short test of basic mobility skills for frail community-dwelling elderly. Intra-tester and inter-tester reliability have been reported as high in elderly populations. However, test-retest reliability of measurements obtained with the TUG in a group of mainly community-dwelling older adults without cognitive impairments was moderate. Construct validity has been supported through correlation of TUG scores with measurements obtained for gait speed, postural sway, step length, Barthel Index, Functional Stair Test, and step frequency (wall, et.al, 2000).

2.2.2 Cognition

MMSE is a quick and easy measure of cognitive functioning that has been widely used in clinical evaluation and research involving patients with MCI. The maximum MMSE score is 30 points. A score of 20 to 24 suggests mild dementia, 13 to 20 suggests moderate dementia, and less than 12 indicates severe dementia. This tool is used extensively in clinical and research settings to measure cognitive impairment. It can be used by clinicians to help diagnose MCI and to help assess its progression and severity. It is also used to follow the course of cognitive changes in an individual over time (Mitchell, 2009).

2.2.3 Fall risk

The ABC scale measures balance confidence while performing 16 different activities incorporating static, dynamic, proactive, and reactive balance ().The ABC Scale can be self-administered or administered via personal or telephone interview. There are 16 items, representing daily activities. Participants are asked to answer, with a score from 0% (not confident at all) to 100% (completely confident) in increments of 10%, how confident they

are in performing each activity. The average score obtained is an indication on balance confidence (). A score of > 80% indicates high level of functioning. A score of 50%-80% indicates moderate level of functioning. A score of < 50% indicates low levels of functioning. Additionally, a score of < 67% suggests substantial risk of falling.

2.3 Training protocol

The training protocol consisted of physical exercises with low to high cognitive load and covered two types of challenging demands; 1) motor demand such as changing center of gravity, alternative gait, and moving limb in full range of motion, 2) cognitive demands like attention, quick response to visual stimulus, decision making and response inhibition. Intensity and duration of the program were chosen based on the guidelines published by the American College of Sports Medicine (Pate, et.al, 1995). Training sessions were conducted in groups of four or five participants to encourage exercise class participation and to form group cohesion (Midtgaard, et.al, 2006). A training session lasted on average 45 minutes and consisted of 6 progressive dual-task exercises in 2-3 sets of 5-10 repetitions. Training intensity was controlled by perceived exertion rate. To maintain the intensity of the stimulus during the training period, the number of repetitions and the cognitive load were progressively increased as tolerated by the participants. As such, the training program was designed to include three levels (A, B, and C) in which the cognitive and physical load was progressively increased from level A (lowest load) to Level C (highest load). All participants started the training at level A and only after mastering this level progressed to next level.

2.4 Testing protocol

Testing was conducted in a special place, which were reserved uniquely for data collection on test days. Subjects were told to wear comfortable walking shoes for the test session. Informed consent was acquired when the subject came into the session. Demographic data were collected in order to describe the study sample (age, height, weight, medical diagnoses, resting blood pressure, and heart rate). Subjects also answered several questions concerning daily activities in order to describe the activity level of the participants, as well as MMSE as a measure of cognitive status. The postural control tests were administered to each subject in the same order: TUG and FR. The same test sequence was followed to limit participant waiting time. No one complained of fatigue or asked for a rest during the session. All examiners were trained in the standardized instructions for administering the tests.

2.5 Statistical analysis

Differences between groups were analyzed by calculating the difference between baseline and after three months. The calculated difference was used when comparing the difference between groups at three months using the Mann–Whitney U test. Normally distributed quantitative data were investigated with two-factor repeated-measures ANOVA, as a mixed design, main effect of factor 1 (time) and factor 2 (group) and interaction effects of factors 1 and 2. The significance level was set at $P \leq 0.05$.

Results

3.1 Baseline scores

The mean age of the participants who entered the trial was 75.65 years (range, 65–90). The values for basic characteristics, cognition and different functions for the all tests of subjects are shown in table 1 and 2. At baseline, there were no significant differences between groups regarding demographic characteristics. However, the mean scores of MMSE was

significantly higher in normal group. Moreover, an analysis of separate questions from WHOQOL showed significant differences between the two groups in two of the 26 questions (p=0.034, p=0.38), but there was no significant difference in other items.

Table 1 Baseline characteristics of participants

Factors	MCI (20)	Normal (20)	Overall (40)
Age	78.60 (7.79)	72.70 (5.85)	75.65 (7.42)
Height	160.80 (6.21)	160.25 (7.76)	160.53 (6.94)
Weight	66 (6.31)	61.55 (8.72)	63.78 (7.84)
BMI	24.53 (2.14)	23.88 (1.90)	24.20
MMSE	16.44 (2.18)	25.57 (2.15)	21
Education level (% only primary school)	81	76	78
Medication (% ≥2 per day)	36	29	32
ABC	85.56 (14.9)	82.37 (15.2)	
FES-I	39.65 (10.36)	30.50 (8.83)	39.65 (10.36)
FR	21.10 (7.98)	25.15 (5.62)	23.12
TUG	18.35 (4.45)	17.70 (4.30)	18.02

Table 2 comparison of scores between the MCI and normal group

	Mean difference from baseline (95% CI) in all subjects		P Value ANOVA for repeated measures			ES
	MCI group	Normal group	Group	Time	Group × time interaction	r
MMSE	3.5 (-2.8, 8.7)	4.1 (-2.1, 9.3)	0.19	0.01	0.34	0.12
ABC	10.3 (4.3, 14.2)	10.1 (5.7, 14.2)	0.25	0.08	0.15	0.14
FES-I	6.9 (1.2, 9.7)	6.4 (2.4, 8.6)	0.28	0.02	0.67	0.18
FR	1.7 (-0.6, 5.4)	4.2 (1.3, 9.1)	0.09	0.06	0.46	0.03
TUG	2.1 (-1.7, 5.2)	4.3 (0.9, 7.5)	0.29	0.04	0.08	0.12

3.2 Intervention effects

There were two dropouts in normal group due to discharging from center, though, all subjects in MCI group were persistent in whole period of training. Thus, adherence rate to the training sessions was more than 80 percent (mean 89%).

The post intervention assessments showed that both groups experienced significant improvements after training period. The BMI of the MCI group was unchanged after training, but it had significantly decreased by 14% in the normal group (P=0.04). On the other hand, cognitive state was significantly improved in the MCI group, whereas there was no change in the normal group (P=0.01).

Examinations after 12 weeks showed that, the distance covered in FR test was unchanged in the MCI group, whereas it was significantly increased by 21% in the normal group (P=0.02), demonstrating an increase of flexibility. The normal group performed

significantly faster in the TUG test (P=0.001), while there was no change in the MCI group performance of this test.

There were no significant differences between the groups after three months for fall risk. However, there was a significant decrease in the BMI in favor of normal group. The results of tests after 8 weeks of no training showed that both groups maintained all the changes occurred in training period. Analysis over time and between groups after the intervention revealed no difference in ABC and TUG tests, but a significant change in FR test was shown (p=0.001).

Discussion

The purpose of this study was to examine the effect of a progressive dual-task training protocol on cognition, motor performance (postural control) and fall risk in older adults with/without MCI. We expected a lower cognitive state in the MCI group compared to the group without MCI. In addition, we hypothesized that people in the MCI group would have more difficulty performing postural control, resulting in a more pronounced dual-task training effect on balance tests. Nonetheless, two groups significantly differed in the results of FR test after training period (in favor of normal group).

The current study demonstrated that in older people living in care center, a 12 weeks combined exercise program improved cognitive status, postural control and fall risk both in individuals with MCI and intact cognitive state. The MCI group experienced more positive changes in cognition, while the normal group had the most evident effects in fall risk and performance in FR test. Therefore, in contrast to what we assumed at first, postural control was improved in both groups regardless to initial cognitive state and somehow it was affected more in cognitively intact individuals. Although these findings support the dominant effect of our training protocol on physical aspects, the benefits of training on cognition is not decisive.

Current knowledge shows that the positive effects on cognitive variables are associated to biological variations which arise during exercise training. An advancement in cognitive performance could be the result of increased brain functioning and brain volumes, which arose after controlled physical exercise training (Deslandes et al., 2009). Also, increased release and synthesis of neurotrophic factors might be accompanying to better cognitive function and diminish depressive symptoms in psychiatric patients. Fluctuations in the neurotransmitter release as a function of physical exercise, such as serotonin, are proposed to be linked to a reduction of depressive symptoms in varied cognitive disorders.

The present study aimed to extend the prior work in some ways. First, previous studies explored postural control with merely a single test. In contrast, we implemented a battery of tests, including three different postural control tests (i.e. BBS, FR, and TUG). These postural control tests were used because falling in old age is highly prevalent, and there is a few study evaluating the effects of dual-task training on balance/postural control which are critical components in fall prevention. Although, most of previous works concentrated on a population of elderly people without MCI or other neurological disorders, we recruited two groups of elderly persons with/without MCI living in a health care center. Moreover, as cognition is linked with postural control, this study assessed cognitive status prior and after training period. We should also remind that all measures were administered two months after last session of training which indicated that the results were consistent. A major strength of our study is that we examined both static and dynamic balance.

Shigematsu et al administered Physical tests of balance, leg strength and coordination, which showed that Functional fitness of lower extremities improved more in training group than in control group (Shigematsu, et.al, 2008a). Shigematsu et al (2008) in another research used different measures of postural control and showed a significant within-group improvement in one leg balance (Shigematsu, et.al, 2008b).

Only two studies examined postural control as an outcome for progressive dual-task training in older people. Silsupadol et al (2006) found that BBS, DGI and ABC scores increased and Time to complete TUG decreased under Dual-task balance training (Silsupadol, et.al, 2006). Lamb et al used a measure of walking (i.e., gait speed) along with specific one-item functional tests (Lamb, et.al, 2002), whereas Hyndman et al implemented just a functional measure (Rivermead Mobility Index) (Hyndman, et.al, 2002). These researchers suggest that comprehensive assessments with focus on the physical, cognitive/ psychological, and environmental factors are important.

Our results fit in with the results of the group of Shigematsu and colleagues but are partially in contrast to the results reported by the groups of Silsupadol and colleagues. They found that Subject who received DT-training, showed improvements on other dual-tasks that were not directly trained. Future research should evaluate if a progressive dual-task training protocol can improve postural control in older people with MCI.

Conclusion

This study provides additional insight in the interaction of aging with cognitive status and postural control in elderly people living in a care center: progressive dual-task training improved postural control, but only in FR test results. This finding suggests that the physical benefits of progressive dual-task training (e.g. flexibility) was dominant. In future research, the pathophysiology and further clinical implications should be investigated.

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The Impact of Power Generators Noise on the Systolic and Diastolic Blood Pressure for the Second years Students/ College of Physical Education and Sport Sciences/ Al- Qadisiya University

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Abstract

The study aims at identifying The Impact of Power Generators Noise on the Systolic and Diastolic Blood Pressure for Second years Students/ College of Physical Education and Sport Sciences/ Al- Qadisiya University. The researcher uses the descriptive approach in his study due to its appropriateness for the nature of the study. The population study includes 30 students. They divided into two groups (the experimental group consist of 15 students and the control group includes 15 students). Noise level was measured on November 24, 2014 near the three generators, about 1.5 meter of the indoor sport hall and in the middle of it. Measures were taken including (height, weight, systolic and diastolic blood pressure), which were concurrent with operating the three generators at 9 A.M for the first group that is near the indoor sport hall, and the second group (control group) in the wrestling hall that is away of the noise of the generators but under the same conditions. The researcher uses statistical methods to manage the raw data. The study shows that there are differences of statistical significance for the systolic and diastolic blood pressure for the two groups (the first and the second) in favour of the second group that is away of the generators noise.

Keywords: Noise and blood pressure.

Introduction and significance of the study:

One of the merits of the technological revolution is the use of the modern techniques in the scientific field, and the demerit is the refuse of these techniques. Due to shortage of power supply and the current conditions of Iraq, this situation requires using on-site generators to provide power, especially those used in the college of physical education and sport sciences/ Al-Qadisiya University. It leads to consequences and results according to the use, vicinity of the generators to the study halls and the level of noise produced by those diesel generators. [(1)] shows that the level of the sound is measured by decibel* (dB) as cited in [(2)] and according to the recommendations of WHO (World Health Organization), which stipulated that the permissible sound during day time and on 3 meters away of the wall is 55 db. This value is somehow acceptable to prevent severe disturbance for people. Ecosystem is defined according to [(3)] as the interaction of society with inanimate factors that surrounded him with his environmental area. Environmental pollution has effects on public health especially noise including psychological as worry, lack of concentration and attention in the educational field. [(4)] Affirms that environmental pollution has neural effects as (blood pressure and tachycardia).

The importance of the study is that it is one of small number of studies that

investigated and diagnosed the generators noise, and its relation to the university environment, its harmful consequences on the students' health through two variables of systolic and diastolic blood pressure.

Study Problem: The second year students at the college of physical education and sport sciences/ Al-Qadisiya University suffer from noise resulted from the college of physical education and sport sciences power generators, which are neighbouring the indoor sport hall. This phenomenon has negative results related to the student's systolic and diastolic blood pressure and their consequences on the scientific level and lack of concentration. Due to small number of studies in this area, the researcher adopts this study.

- DB : a unit of measuring sound, which is called decibel and it is 1/10 logarithm, the percentage between the pressure resulted from sound wave and the standard pressure about 0.0002 dyne/ square centimeter.

Study Aims:

The study aims to identify the Impact of power generators noise on the systolic and diastolic blood pressure for the second year students/ college of physical education and sport sciences/ Al-Qadisiya University.

Study Hypothesis:

There are differences of statistical significance between the first experimental group near the source of noise of power generators and the second control group far from the noise source of power generators. The results are in favour of the second group for the two variables of systolic and diastolic blood pressure for the second year students at the college of physical education and sport sciences/ Al-Qadisiya university.

Fields of the Study:

Female students of the second year/ college of physical education and sport sciences/ Al- Qadisiya university.

Location:

Wrestling hall, indoor sport hall at the college of physical education and sport sciences/ Al-Qadisiya university.

Date:

19-24/11/2014.

Noise is defined by [(5)] as the unwanted or harmful sound, which causes several psychological and physiological disorders for living organisms. The researcher defines noise as " unwanted sounds of different and continuous frequencies that effect on the systolic and diastolic blood pressure, human hearing system and causes mental stress and inability to learn and understand information"

Blood Pressure:

It is resulted from the pressure of blood on the internal walls of the arteries [(6)]. The researcher defines it as " the pressure of the heart on the blood vessels due to the flowing of blood inside arteries". [(7)] refers to the blood pressure as the pressure during time of rest.

2-Research Procedures:

The researcher uses the descriptive approach since it fits the nature of the study.

2.1. Research Sample:

In order to get approvals and information, the researcher makes some contacts with the

officials and the students at the college of physical education and sport sciences. The researcher has been notified of the college's approval on the condition of getting students' approval to start the study.

The sample includes (30) second year students then the aim of the study is explained for the students to get their agreement. The sample is divided into two groups (the experimental group is 15 female students). Measures are taken in the indoor sport hall neighbouring power generators. The second (control group is 15 female students) where measures taken in wrestling hall far from power generators.

Tools of the Research:

- Weighting and height device, Chinese origin (2), Mercurial Blood Pressure Monitor, Japanese origin(2)
- Sound level meter (Svantek 955), Polish origin (2) model 2013. In order to check the accuracy of these devices, calibration is made before the two experiments on Nov. 19, 2017 where the accuracy of measurement is ensured.

Study Means:

- Health application for data, results, measurement and tests for the two groups in annex (2), and the application of the results of measuring noise of power generators before and during operation as attached in annex (3).

Exploratory Experiment:

To ensure the accuracy and validity of the devices, the researcher has conducted, Nov. 20, 2014 at 9:00 A.M, an experiment on (3) female students of the experimental in the indoor sport hall adjacent to power generators and (3) of the second control group in the wrestling hall, which was far from power generators in addition to noise meter.

2.2.Field Survey and Noise meter:

The noise of power generators has been measured to identify the level of sound emissions. There are (3) diesel-fueled generators adjacent to the main gate of the indoor sport hall on the east-southern side. The noise results of the field mensuration were adopted.

The experiment includes the following:

1- Conducting a field survey on Nov. 20, 2014 for the generators sites and their generative capacities. It is worthy to mention that the visited generators were working for 4-6 hours/day.

2- Using portable devices to measure the level of noise pollution type (Svantek 955) resulted from generators. The experiment was conducted on Nov. 24, 2014 in cooperation with the department of environment in Al-Qadisiya governorate. Measurement were taken from (1.5 meter of the generator, which is the same distance of the gate of sport hall to the generator) and (18.5 meters inside the indoor sport hall). The measurements were taken before and after starting generators so that there were no interference of sound vibrations (noise) of the generators and other sources of noise as cars and students. Three generators adjacent to the indoor sport hall started before five minute of the measurements for the first group. The results of the two devices were taken where the quantity of noise, which is used to describe the noise energy is termed Sound Pressure Level. Noise pollution depends on two important factors; the duration of noise and the level of sound pressure.

National Determinants of Noise Level outside Buildings measured by Decibel (DB)

Location	Noise level at night	Noise level at noon
1- Hospitals and places for rest.	40	50
2- Populated places inside the city.		
3- Populated places outside the city	50	60
4- Hotels	45	55
5- Schools, kindergartens, universities and institutes	50	55
	45	55
6- Industrial areas and public facilities.	65	70
7- Service and commercial areas		
8- Special areas		
A- Airports	60	65
B- Railroad stations		
C- Ports	60	70
9- Cultural areas and reservations		
10- Recreation areas		
11- Populated areas within industrial areas.	50	60
	50	60
	45	60

National Determinants of Noise Level inside Buildings measured by Decibel (DB)

Location	Noise level at night from 8 PM to 8 AM	Noise level during day
Hospitals, schools, kindergarten.	35	50-55
Hotels		
Offices, services and commercial	40	50
buildings	55	60
Houses		
	45	50

Table(2) shows noise levels before and after starting power generators at the indoor sport hall.

Data registered of the three stages before starting generators at hall gate				Data registered of the three stages after starting generators at hall gate			
P3	P2	P1	Profile	P3	P2	P1	Profile
Level [dB]	Level [dB]	Level [dB]	LN	Level [dB]	Level [dB]	Level [dB]	LN
92.5	91.9	86.8	L01	76.5	74.8	70	L01
91.7	91.4	85.9	L10	69.8	68	60.5	L10
91.3	90.9	85.7	L20	67.6	65.5	56.1	L20
91	90.7	85.5	L30	66.4	64.1	54.1	L30
90.8	90.6	85.4	L40	65.4	63.1	52.8	L40
90.6	90.4	85.2	L50	64.6	62.2	51.8	L50
90.4	90.2	85.1	L60	63.8	61.3	50.9	L60
90.2	90	84.8	L70	63	60.4	50.2	L70
90	89.7	84.5	L80	62	59.5	49.4	L80
89.5	89.3	84.1	L90	61	58.3	48.3	L90

Table (3) shows noise registered data after starting generators inside indoor sport hall

P3	P2	P1	Profile
Level [dB]	Level [dB]	Level [dB]	LN
80.5	80.2	76.3	L01
79.1	78.9	74.6	L10
78.8	78.6	74.1	L20
78.5	78.3	73.8	L30
78.3	78	73.6	L40
78.1	77.8	73.4	L50
77.8	77.6	73.3	L60
77.6	77.4	73.1	L70
77.3	77.2	72.8	L80
77.1	77	72.3	L90

The following procedures have been applied:

A- The first group near generators was tested on Nov. 24, 2014 at 9 A.M in the indoor sport hall.

B- The second group near generators was tested on Nov. 24, 2014 at 9 A.M in the wrestling hall.

The two groups Measurement include weight and height (systolic and diastolic blood pressure). The results were documented in a health application designed by the researcher for every participants as attached in annex (2). By the help of three specialized groups, one for using noise pollution device and two groups for measuring the first group and the second group. The names of the team work are attached in annex (3).

-Consistency between the two groups

Table (4) consistency of the two groups

Consistency of the first group near generators			
Statistical processing	age	height	weight
Arithmetical mean-s	19.461	162.538	52.230
Standard deviation-A	0.518	1.050	0.832
torsion	0.175 random	0.136 random	0.498 random
Consistency of the second group far from generators			
Arithmetical mean-s	19.461	162.769	52.230
Standard deviation-A	0.518	1.091	0.832
torsion	0.175	0.373 random	0.498 random

Valency between the two groups

Table (5) shows the valency between the two groups

the first group near generators			
Statistical processing	age	height	weight
Arithmetical mean-s	19.461	162.538	52.230
Standard deviation-A	0.518	1.050	0.832
torsion	0.175 random	0.136 random	0.498 random
the second group far from generators			
Arithmetical mean-s	19.461	162.769	52.230
Standard deviation-A	0.518	1.091	0.832
T value	0.000 random	0.549 random	0.000 random

- Arithmetical mean, standard deviation, T. test for correlative samples.

3- Results and Discussion:

Table (6) shows the differences between the two groups

Variables	Measuring unit	The first group near generator		The second group near generator		T. value	significance
		Mean S	Standard deviation	Mean S	Standard deviation		
Systolic blood pressure	Mm/Hg	115.692	1.974	119.076	1.37	5.472	significant
Diastolic blood pressure	Mm/Hg	82.692	0.947	0.947	0.800	5.367	significant

tabular T value is 1.701 at the significance level (0.05) and freedom degree 28.

Results Discussion:

Table (6) shows that the first experimental group adjacent to noise of generators has registered a variable mean for the systolic blood pressure (115.692) mm/ Hg in comparison to the second control group, which is far from the noise of the generators that registered (119.079) mm/hg. The researcher explains statistically the approximation of results in the systolic blood pressure variable due to the physiological nature of women (female students). **(8)** mentions that systolic blood pressure decreases because of the small size of the heart. The researcher shows that the noise of generators affected on the first group students, where the systolic blood pressure decreases (4) degrees below the natural level according to WHO standard blood pressure (120) mm/hg. The decrease has negative sides on health and physical performance. If compared with table (1) for national limitations of noise level, under the item of universities and institutes, the noise level should not exceed (55) db during a day, **(9)** refers to and according to WHO that the permissible sound level for 3 meters from the wall should not exceed (55) db. While table (3), which identified the noise level inside indoor sport hall adjacent to the three generators has reached average level of (73.73) db. This average exceeds the permissible limit about (70)db as stipulated by WHO, which is considered the highest

average of outdoor noise as shown by the study of (Ahmed Mohammed Abdulrahman Shahata, 2004). Also, [10] show that the noise increases muscular tension and optical aberration, where exposing to severe noise stimulates hormone and neural responses, which leads to vasoconstriction [11] . The researcher notices the numerical difference among natural limits and by using the equation, the limits were (73.73 db registered inside the sport hall-natural limit according Iraqi limits 18.55 db and 55 =db). The study of [12] supports that claim that due to the high frequency that the exposition of the employees of textile to the machines, it is noted that they suffer from headache, lack of concentration and irritability in comparison with the other employees who are far from machines. The decrease of systolic blood pressure below the natural level should be taken into consideration because the continuous low level of blood pressure with physical exhaustion is an indication that should be watched as one of safety indicators of the body organs. The decrease of the pressure effects on the physiological aspects of body activities. High or low blood pressure due to noise have neural and physiological effects on the body. [13] mention that the irritation of neural noise leads to the feeling of fear, nervous breakdown, lack of concentration, thinking. Working and learning. The results of diastolic blood pressure show that the mean of the first group adjacent to the generators by (82.692)mm/hg while the mean of the second group that is far from power generators is (80.846) mm/hg. The noise level registered indoor sport hall was 73.73 db in comparison with Iraqi national limits in the university classrooms and international permissible limits and WHO, as cited in (Ahmed Mohammed Abdulrahman Shahata, 2004) shows that the level of 70 db is the highest outdoor permissible limit. We see the differences are huge if compared with the noise of power generators inside indoor sport hall with the Iraqi limit (73.73-55=18.73), and the international limit (73.73-70=3.37). These numbers, as seen by the researcher, are serious threat for the public health especially the increase of the systolic blood pressure without exerting efforts during training and educational lectures. As far as the first group is concerned, the researcher shows that exposition to noise during starting generators leads to numerical increase between the first group adjacent to generators noise and the second group that is far from the noise of generators by (82.692-80.846= 1.846) mm/hg. The numerical difference according to physiological standards is a negative indicator on health. According to [14] study, one of the reasons of high blood pressure in the world is the noise and the shrinkage of blood capillaries, which leads to headache that is a natural reaction to excessive noise. If we take the continuity of the noise and simple systolic blood pressure of the female students with little efforts into consideration and as mentioned by [15], blood pressure will be considered high when exceeds natural levels (80/120) for certain period of time and it is a serious factor for heart, kidney diseases and may cause apoplexy.

CONCLUSION

- **Conclusions:**
- The continuous noise of the power generators near the indoor sport hall of the college of physical education and sport sciences has affected on the first group adjacent generators and leads to decrease of systolic blood pressure and increase diastolic blood pressure in comparison with the second group far from the noise of the generators, which are within the natural limits. The results of the study show statistical significance between the two groups in favour of the second group for the students of the second stage at the college of physical education and sport sciences/ Al-Qadisiya university.

- **Recommendations:**

In the light of the conclusions, the researcher recommends the following:

1- Changing the location of the generators that are near the indoor sport hall in coordination with Qadisiya Environment office and the department of environment/ college of sciences/ Al-Qadisiya university.
2- Conducting future surveys before installing generators.
3- Re- studying the effect of the sound (noise) of the teacher and students during the lecture.

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Documentation on Religious Practice on Politics and its Influence on Youth with Special Reference to Chhattisgarh State, India

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Abstract

The subject chosen for research documentation is an effort to study the religious exercise in politics and vice versa and to explore the negative and positive effect on present youth. The role of youths in nation building in recent times has generated serious discussions and clear-cut policy agenda which are necessary for the development, plan and policy action of country and does religious exercise has effect on youth. There is a large population of youth in India. India's youth matter, politically and economically. The political majority lies with them as does the advantage of contributing most productively to the workforce. The views of the youth provide a glimpse into India's future. Often these views are in apparent contradiction. Religion and politics are so closely tied together that the very idea of India and its premise for pride revolve around religion-related issues. After the study we might be able to answer the questions which will arise sometime in future. Study will focus how religious exercise in politics will influence the present youth with special reference to Chhattisgarh State, India.

Keywords: - Religion, Politics, Youth and Chhattisgarh State

Introduction

The brand new state of Chhattisgarh has a short immediate history but a past that goes back many thousands of years. In Chhattisgarh, anthropologists have found evidence of some of the earliest settlements by humans in this part of the world. Its mythological history stretches back to the period of the epics Ramayana and Mahabharata when the area was known as Dandakaranya. The region was called Dakshin Kosala in the 4th century AD and was known as Gondwana in the medieval period. Chhattisgarh was a part of the kingdom of the Chedi dynasty between 1000 and 1400 AD. Chhattisgarh was amongst the first places to fire off salvoes against the British during the First War of Independence in 1857, spearheaded by Vir Narayan Singh, a local zamindar. Condemned to the gallows by the British, Vir Singh went on to acquire cult status as martyr, hero and symbol of regional aspiration. The Madhya Pradesh Reorganisation Act 2000 paved the way for the creation of India’s 26th state and on the 1st of November 2000 was born the state of Chhattisgarh in the densely forested, mineral rich, predominantly tribal region of central India.

Hinduism is the major religion in Chhattisgarh though Muslims, Christians and Buddhists also form a sizeable group in Chhattisgarh. People belonging to the Gond tribe follow Hinduism and it is believed that they influence other people as well. To avoid the stringent caste system, many tribes follow alternative religions and do not believe in deity worshipping. Instead, they believe in nature worship. They consider Mother Nature as God and are superstitious in their beliefs. Jainism and Christianity are other two religions that are followed by people here. It is believed, that religion influences political system of the place. Satnami, Ramnami Samaj and Kabirpanth are some of the religious sects that have emerged

from caste-based Hinduism.

Religious places are used for political propaganda and the religious sentiments of the people are excited in order to gain political control of the State. This emergence of religion-political party has threatened the secular character of India. It is feared that if it succeeds there is a possibility that many other political parties with caste and religion as the basis may come up. All the crimes committed in the name of religion in the past as well as in the present one cannot forget. In the new democracies the role of youth is of special importance. The role of youths in state building in recent times has generated serious discussions and clear-cut policy agenda which are necessary for the development, plan and policy action of any state. The majority of our youths are on the edge of reason and good conduct. Rather than exploring the opportunities for securing better lives, facing the challenges of a rapidly changing world, and thinking about the future of their nation, it is quite disappointing that the majority of our youths know more of how to showcase anti-social behaviours. Young people always ready to face the challenge of fitting into an established political system or making changes [1-12].

The study of the role of religion in politics has emerged recently in the field of political sciences; probably this is one of the reasons "my" topic to be under researched. As I will point later, religion impact political systems through values, norms, beliefs, symbols, institutions and movements. All of them have to do with its capacity to become political ideology, a form of identity, an "interpretive community", a tool for political mobilization. Youth is a key to both the successful functioning of democracy and socioeconomic development of the country. And perhaps, more importantly, it is an essential condition for human dignity. Religion and politics are so closely tied together that the very idea of India and its premise for pride revolve around religion-related issues. After the study we might be able to answer the questions which will arise sometime in future [13-20].

Study will focus how religious exercise in politics will influence the present youth with special reference to state Chhattisgarh, India. The research methodology will be comprised of:

Literature survey related to various religious communities having intense influence on the politics of Chhattisgarh, India.

Preparation of questions to collect the appropriate data (question will be hard core based on the youth interest toward religion and politics).

Analysis of data to explore the religious exercise in politics and its influence on today's youth.

Study will focus to understand and assess the importance of religion within the wider context in politics (major focus will be the youth).

Study will emphasize to make clear that does religion has no clear or necessary connection with political beliefs or activism because sometimes religion leads to more political involvement, sometimes none at all, and still other times the political involvement affects religion.

DOCUMENTATION METHODOLOGY

Religious believe in Chhattisgarh

Hinduism is the major religion in Chhattisgarh though Muslims, Christians and Buddhists also form a sizeable group in Chhattisgarh. People belonging to the Gond tribe follow Hinduism and it is believed that they influence other people as well. To avoid the stringent caste system, many tribes follow alternative religions and do not believe in deity worshipping. Instead, they believe in nature worship. They consider Mother Nature as God

and are superstitious in their beliefs. Jainism and Christianity are other two religions that are followed by people here. It is believed, that religion influences political system of the place. Satnami, Ramnami Samaj and Kabirpanth are some of the religious sects that have emerged from caste-based Hinduism.

Religion in Chhattisgarh is of prime importance in the life of the people. The state of Chhattisgarh is largely populated by the tribals who follow various religions. The region was mainly influenced by traditional Hindu culture but with the increasing oppression of caste system and social hierarchy, many of them have accepted other forms of religion. A large proportion of them do follow Hindu religion in Chhattisgarh like the Gond tribe and in turn they influence other tribes. A sizeable population of Muslims, Christians and Buddhists also exists in Chhattisgarh. The various missionaries working in Chhattisgarh have resulted in the conversion of many people to Christianity. The influence of Jain religion is evident in the several Jain memorials in Aarang, Malhar, Maheshpur and Sirpur. For the Hindus Lord Rama is the most popular figure even today. Chhattisgarh has undergone many tribal rebellions due to which various alternative religions have gained preference at times. Followers of Satnam Panth, Rae Das Panth, Ramnami Panth and Kabir Panth gained importance and followers, especially among the poors and outcastes because they abhorred caste system and deity worshiping. Religion in Chhattisgah is often also mixed with superstition and sorcery. The tribes believe in various totems, and, nature worship in varying forms is common. Mother Nature sustains human beings and so it is considered as God by various communities. Such folk Gods and Goddesses unique to the communities have gained importance. In fact, religion in Chhattisgarh is so strong that it even influences and defines the political loyalty of the people of the state.

State Building (Chhattisgarh)

The task of state building has been argued to be historically contingent due to the fact that the process is inextricably tied to the formation, growth and demise of nations as well as factors that influence the process. The attempt at integrating the diverse elements in a country in order to promote a sense of belonging among people is also part of state building process. State building therefore, involves not only the implementation of political and economic policies that will improve the lives of the citizenry, but also a recognition of values and other aspects of the state that would act as a national catalyst to bind the people. Culture, which is the totality of a people's way of life, is crucial to nation building because its non recognition could promote fissiparous tendencies among the citizenry. State-building refers to the process of constructing or structuring a state identity using the power of the regional youths.

However, State building as "the process whereby people transfer their commitment and loyalty from smaller tribes, villages, or petty principality to the political system". State building can also be defined as a process of bringing diverse groups together to develop their common land.

Process also involves the unification of the people within the state so that it remains politically stable and viable in the long run. State-building can involve the use of propaganda or major infrastructure development to foster social harmony and economic growth. It is also the development of religion, behaviours, values, language, institutions, and physical structures that elucidate history and culture, concretize and protect the present, and insure the future identity and independence of a nation.

This research work focused on the state-building is viewed as purposeful interventions in the affairs of a nation-state for the purpose of changing the state's method of governance. It

includes deliberate efforts to promote institutions which will provide for a people's enhanced economic well-being and social equity.

State building is a dynamic process involving all segments of the locality, including the often-overlooked and undermined youth population. Youths represent a vast and often untapped resource for immediate and long-term community development efforts. They also provide an invaluable resource for the progress of any society as well as its development.

As youth are brought into and connected with national issues and programmes (they have often times been ignored/excluded), they can participate actively and contribute to decision-making at multiple levels. As youths are engaged in more sustained positive relationships with adults, other youths, and national development programmes, apart from realizing that they are valued citizens of their nations, such collaborations and participation may lead to skill enhancement, empowerments and confidence-building traits, which will help prepare them for active interest and involvement in nation building (even in future).

Youth participation in State building programmes/activities therefore is to:

i. Strengthens young people's abilities to meet their own subsistence needs;
ii. Prevents and reduces vulnerabilities to economic, political and socially unstable environments;
iii. Promotes ownership and sustainability of change interventions;
iv. Helps gain entry into target communities and build up trust and social capital.

A Supplemental Material: Design of Studies

Chhattisgarh: Survey Experiment

To obtain a sample that had an equal number of different religions we exploited the fact that many urban areas in India are segregated along religious lines. We went to same areas where we had carried out our study outside. In the urban areas of different district of Chhattisgarh we first identified polling stations that were majority of different religion. Within each of the selected polling stations we did a systematic sampling of the voters by using the question violet. First, we went through the list of voters and excluded the ones who had been deleted since the last listing of voters in this polling station, as well as added people who had been recently added. From this new list we drew a systematic sample from a random starting point, in other words an equal probability sample, in which every kth element in the frame was selected. The sampling interval k was calculated as round (N n -1), where N is the number of people in the polling station and n is the size of the sample selected. However, our main aim was to target the youth, which have the major role in today's politics. The sample size was 100 for each of the polling stations. The Dehat sample differed somewhat from the other two. In this case we target the 50 majority polling stations having different religion to have a reasonable hope of getting a sample of 1000. We split the polling stations into five majority religious places from which we sample 500 respondents (100 from each) [5].

To generate a sample that included an equal number of different religions we first identified polling stations. We obtained the voters list for each polling station. We first went through the list of voters and excluded the ones who had been deleted since the last listing of voters in this polling station, as well as added people who had been recently added basically youth. After that we identified the voters by name for each polling both. This gave us two lists for each polling booth. In each list different religious voter were listed serially depending on where they lived in the catchment area of the polling station. From each list we drew a systematic sample from a random starting point. This was an equal-probability sample, in which every kth element in the frame was selected. The sampling interval k was calculated as

round (N n -1), where N is the number of people in the polling station and n is the size of the sample selected. This clustered and sequential design was followed to minimize interference problems and to maximize the probability that the experiment would be administered correctly. The design reduced concerns about interference between subjects. An important step in the process was to ensure that we would not sample households that were listed in the voting rolls, but were no longer registered. A significant number of households remain on the voting rolls, but are removed by a mark in the official record. Unfortunately, they are still given a household number in the precinct records. We skipped these removed household numbers.

Sources and methods of gathering information

Here, I use mainly two bodies of literature: As sources, I use analytical materials, official documents and state text, sociological surveys, personal communications with experts, media publications.

Textual sources: include the policy documents, normative and legal acts; publications by individual researchers, international organizations and think tanks; current news, interviews and speeches of relevant. One of the challenges here was that the local sources are strongly biased, and several times instead of analysis, they offer ideology. The absence of political opposition does not give chance alternative views or concepts to appear in public debate.

In depth semi-structured interviews were probably the most exciting part of my field work. The list of the interviewees includes local politicians, voters and youths of state. Important sources are **secondary sources**, which include data collected by other researchers or by various institutions in the course of their business, or by some sociological agencies. The challenge here was that not all the surveys concerning security are available to the academia; some of them are not public. The same can be said about the statistical data.

Sampling

Judgment sampling is a common non probability method. The researcher selects the sample based on judgment. This is usually an extension of convenience sampling. For example, a researcher may decide to draw the entire sample from one "representative" city, even though the population includes all cities. When using this method, the researcher must be confident that the chosen sample is truly representative of the entire population.

Judgmental sampling design is usually used when a limited number of individuals possess the trait of interest. It is the only viable sampling technique in obtaining information from a very specific group of people. It is also possible to use judgmental sampling if the researcher knows a reliable professional or authority that he thinks is capable of assembling a representative sample.

About public opinion

Public opinion are based on the structured approach in which the mind remains open, enabling one to examine each element of the decision or problem separately, systematically, and sufficiently, ensuring that all alternatives are considered.

Without any doubt public opinion supports and shares the values of security culture of ruling elites. India/ states of India is a closely knitted society, people have a tendency to favour the people belonging to their castes or religion given the fact that the politics here is based most of the time luring a particular segment of society belonging to certain caste or religion. For example a leader of certain community will keep telling I belong to this community, if you want to see the development of this community vote us. Caste system in

India is still dominant in villages and it plays a role in politics. Changes are coming now where people are now thinking beyond religion and focusing on basic issues which they have to deal on everyday basis. Not only politics. An average religious person will relate every single thing with religion. It's just like a scientist relating every single thing with scientific process. It's just how a person sees things from the point of view they had faith.

Politics in state has been done around religion only. Caste-ism in politics started after mandal commission but religion was there since independence. Even before that. Isn't religion the reason of India's partition?

But politics without religion is impossible and if i am allowed to say this It should be there in politics. Every religion, caste, class should be represented well in the temple of democracy called parliament.

Both religion and politics have one common goal: that is to acquire political power and use it to fulfill their aims**.** However, to achieve this object, their methods are different. Religion mobilizes religious sensibilities of people in order to get their support to capture power; while politics uses intrigue, diplomacy, and makes attempt to win public opinion either democratically, if the system allows it, or usurps power with the help of army, if the society is under-developed and backward.

Therefore, in power struggle, both politics and religion make attempts to undermine each other. If religion holds political authority, its ambition is to exploit it to fulfill a divine mission. It claims that it derives authority from divinity and therefore its mission is holy, motivated to reform society under the spiritual guidance. Politics, on the contrary, bereft of any value, directs its policy on the needs and requirements of society where upon, it obliges to change laws and system of government accordingly**.** This is a basic difference between two approaches of religion and politics:

- Religion determines its authority on divine laws which could not be changed with human intervention;
- While in pragmatic political approach society should move ahead, change and adjust itself with the new arising challenges of time.

In its secular approach man is responsible to determine his destiny. He is not under the control of divinity to remain submissive and inactive. On the contrary, he is supposed to initiate and plan to build a society according to his vision.

On the opinion of public three models were identified related to religion and politics.

- In one when religion and politics both unite with each other in an attempt to monopolize political power. We call it integration and sharing model.
- In the second model, politic, after subduing and overpowering religion, uses it for its interests. In this model religion plays subservient role to politics.
- In the third model both come into conflict with each other that subsequently lead their separation. In this model they appear as rivals and compete to struggle for domination.

  On that base questionnaires were prepared to collect the data view of the voter including youth.

Questionnaires for collecting the opinion

Name of the voter:
Date of sampling:
Religion:
Age:
Q1. What is the role of religion in relation to human society?

Q2. Does there is the benefits of religious practice in politics?
Q3. What youth / voter think about religious practice in politics?
Q4. Does religious politics gives youth freedom and security?
Q5. Does religious exercise in politics effect the youth in some or the other form?
Q6. Do politicians use religion as their loopholes and use youth for their success?
Q7. Politician use religion for their way to success which one affects the youth lives and why?
Q8. Does it is necessary that the people should keep religion apart from politics if we want to consolidate democracy and to give firm foundations to it to make it work successfully?
Q9. Religion is a private affair and if it is allowed to appear in public affairs will it corrupt politics?
Q10. Does religious practice should be stopped in politics?
Q11. Do religion and politics mix today?
Q12. Do politicians use religion as their loopholes?
Q13. Do politicians use religion segmentation for their way to success?
Q14. Do they hide their black money in the names of religion and trusts?
Q15. What does youth of Chhattisgarh state think about the religious practice in politics?

Opinion on the above stated question from the sampled voters including youths

Opinion for Question 1

The positive effects of religion is that it brings people together in a community, allows people to share a common goal of the religion, makes them feel united, gives them something to believe in, provides meaning to life, explain any questions they may have, allows people to believe in something greater than themselves and lets people come together to worship one God. The negative effects of religion are that it creates conflict, people disagree on issues, it creates discrimination and prejudice between people and it means that generally people cannot see beyond certain factors in other people.

Opinion for Question 2

When religion becomes the dominant influence everything else is forgotten and hence there are benefits of religious practice in politics

Opinion for Question 3

As long as religion remains strong in the minds of people, it will definitely have an influence on politics. For strong believers in religion, politics is only secondary. When religion is given greater importance, all other activities are viewed in religious angle.

Opinion for Question 4

In fact there is an infinitely complex combination of contingencies that can bring conflict and spark violence, including many different social triggers, flashpoints, contexts and characteristics of the protagonists involved. Accordingly, seeking simple and short-term solutions can be counterproductive and lead to greater problems in the future. Hence, religious politics will not give youth freedom and security

Opinion for Question 5

That is, in certain situations it can be a threat, in other situations it promotes security. As a consequence, it is crucial that practitioners (policymakers, academics and journalists) get a deep understanding of a particular context before they evaluate or seek to predict the role of religion in security issues. So we can say yes religious exercise in politics effect the youth in some or the other form.

Opinion for Question 6

Yes politicians use religion as their loopholes and use youth for their success.

Opinion for Question 7

Yes politician use religion for their way to success which will affect the youth lives in many ways mostly in term of violence.

Opinion for Question 8

Does it is necessary that the people should keep religion apart from politics if we want to consolidate democracy and to give firm foundations to it to make it work successfully

Opinion for Question 9

Religion is a private affair and if it is allowed to appear in public affairs it will not corrupt the politics.

Opinion for Question 10

70% no/ 30% yes religious practice should be stopped in politics.

Opinion for Question 11

The idea of the interface or mixing of religion and politics being problematic and potentially dangerous is a by product of the rise of secularism, often regarded as one of the hallmarks of modern society. But where did the assumptions and expectations associated with secularism come from, and how have they come to play such an important role in mediating our understanding of how (and whether) religion matters in politics? There is an almost total absence of references to religion in books about politics. It is as if scholars were blind to religion as a force in affairs, or did not find it to be helpful in explaining politics.

Opinion for Question 12

Yes politicians use religion as their loopholes.

Opinion for Question 13

Yes politicians use religion segmentation for their way to success.

Because of the religious variety and existing large minorities, religion continued to remain as a factor, contributing to the segmentation of state/ Indian society. Religious segmentation as a basic factor to other political functions of religion, on one hand, provided a ground for conflicts and it led to political disorders. The politicians used religious minorities as symbolic internal enemy and religious conflict. So, in the context of state/ Indian politics, the function of religion has had the positive aspect, when it led to unity and cohesion and negative, when it led to violence and disorders. Indeed, the existence of weakened religious cleavages has been in favour of state/ Indian politics because it has been used to cover other important social cleavages.

Opinion for Question 14

Yes they hide their black money in the names of religion and trusts. But it is hard to describe how because of the lack of transparence policies of religious body and trusts.

Opinion for Question 15

The religious practice in politics must go on unless until they have the common goal of providing safe and secure future to the society.

Findings

Religion should play a role on the political scene and does have a place. Sadly these days it is put on the back burner and turned off. People long forget that our country was founded in an image of god. The reason that politics are so corrupt these days is because of a lack of religion. Without religion one losses his sense of morals and values and sins at will without discretion, without fear of consequence or what is right. Without religion, money, power, and greed become the driving forces, all of which represent everything that is evil and corrupt. Religion does and needs to be brought back to the political scene all of which has

long since become an act of smoke and mirrors.

Religion is everywhere and politics is no exception. Many politicians speak openly about their religion and you see many people that work in politics reference religion a lot. Religion is very much in politics and it is here to stay. To get rid of it, you would have to get rid of religion all together and that is not happening any time soon.

Some says, No, religion does not have a place in politics. This is to ensure the most religious freedom, or the freedom to not follow a religion. As such, religion does not have a place in politics. Someone should not be able to make something the law of the land because that's what their religion says. However, those who are religious often have strong convictions about a variety of issues, and those opinions may be rooted in religious belief. There is nothing that can be done to change that, nor should we try.

Theses opinion data were collected and analyses using the sample test and was found that:

Youth plays an important role in religion and politics both.

Still religious practice on politics had great influence.

Literacy is the major factor between religion and politics.

Youth future stability is the major concern.

From a politician's point of view, anything that can be done to give more color and depth to the portrayal of religion and what the core interests of those different religions, groups, are and how they are represented in our media and what the difference is between what they actually think and what the media view appears to be, is of great interest. Because I think it would give us all great insights into the gap which I perceive exists. The radicalized fringes of some religions are unfortunately the legacy that most people have in their embedded understanding of what religion actually means. The common ground of shared values is often lost, because politicians and media often tend to go to extremes. I think a good example of where people have come to terms with religion, but of course it also reminds us that this isn't just about religion. And I am skeptical about how effective it is to evaluate religion as a concept without looking at the wider forces around culture, political representation, and disaffection that go hand in hand, particularly in a mature democracy. So any analysis of religion must take account of those political, representation factors which I think condition the way religion is sometimes appropriated as a vehicle to motivate in those unsatisfactory societal constructs which don't give representation sufficiently to certain groups. A final thing I'd say is, one of the things we really lack in parliament is the space, I think, to actually look at these things in a grown-up way, underpinned with substantive research. The tendency to always need to respond to a journalist's call or to make a speech that merely scratches the surface is a very difficult one to resist. So anything that can be done to give more depth to our understanding and to make this important topic more accessible I think is welcome.

DISCUSSION

Politics of Religion makes an extremely important and timely contribution to a conversation that the discipline of political science should be but still isn't really having. The continued lack of serious, analytically sophisticated attention to religion and religious phenomena and comparative politics is all the more baffling given the place of religion in political life around today. The aim of research documentation is to achieve a better understanding of religious exercise in politics and to discuss its various positive and negative on the present youth with special reference to state Chhattisgarh, India. There are a large

number of religions, castes and sub- castes in India, and unfortunately some of them are opposed to one another as far as their practices are concerned. Under such circumstances, there is no possibility of keeping them together if once there is fragmentation. The majority of our youths are on the edge of reason and good conduct. Rather than exploring the opportunities for securing better lives, facing the challenges of a rapidly changing world, and thinking about the future of their nation, it is quite disappointing that the majority of our youths know more of how to showcase anti-social behaviours. Hence, it is important to explore its effect of religious exercise in politics which is somehow related to youth. It is hard to underestimate the prevalence of religion among the youth, the impact of religion on their lives, and their agency over their own religious and spiritual development. A more accurate and youth-focused understanding of the role of religion and spirituality in the lives of youth and adolescents should inform policies and practices regarding religion and youth. Best practices are guided by a youth development perspective, which capitalizes on youths' own strengths and assets and trusts them to make informed decisions regarding their own lives in order to ensure positive outcomes and preparedness for adulthood.

Present research documentation researcher is discussing the changing relationship between religion and politics in the context of Chhattisgarh state of India. As hooped it was found that spiritualism has deep historical roots in the region and has always played an important role in governance. However, the interplay between religion and politics has been recently restructured as a result of two phenomena. First, youth are now really forcing on the built of better future "the vision of development in terms of social and economic prosperity in the region". Second, changes in the national and international climate must provide the space for global growth in the importance of religion. If religion is conceptualized in its traditional sense, as a construct of an "imagined community," then the growth of politic-religious movements does not undermine secularization theory. Religion in the traditional conceptualization is disappearing. But the meaning, role, and operation of religion had changed over time, especially in the context of globalization. The new movements reflect the needs of modern political communities which need to be incorporated in the discourse on religion and politics.

Unsurprisingly, research has found that many politicians act on their religious beliefs in the political arenas. For example, research has shown the voting records of Congresspersons are often predictable from their religious beliefs. Certainly this makes sense on such morally and ethically charged issues. However, research has shown that the relationship between voting patterns and religion extends into other spheres such as defense spending, minimum wage laws, and welfare reform. Although such issues may seem less strongly linked with religious beliefs, they are, in fact, issues of social justice that are strongly related to one's religious beliefs. However, although there is an empirically-derived relationship between religion and politics, it is not necessarily a straight-forward one.

The youth of Chhattisgarh state, India is interested in politics and their interest in it is rising. But they want to engage in politics of a different kind, not the kind of politics they have been seeing for the last 30 years. They support ideas to clean politics, of having a retirement age, of having a provision to recall representatives if they are not performing. The interest is there. Their only disappointment is with the kind of people who are contesting elections. But they are looking forward to engaging in politics if there is a different kind of politics.

Besides voting, the caste/ religion is an important factor, influencing the selection of

candidates in elections. The policy of reservation has given further impetus to the role of caste/ religion in politics, particularly in the last few years. The role of caste in the different aspects of politics is given below:

Caste/ religion had influenced the policy-making of the government, for example the policy of reservation in favor of certain castes/ religion.

The programmes, policies and declarations of political parties are made, keeping in view the caste/ religion factor. Even different positions within a political party are distributed in terms of caste configurations.

Caste/ religion play a very important role in elections and voting. Political parties select their candidates on the basis of caste composition in the constituency. The voting in elections and mobilization of political support from top to bottom moves on the caste lines.

The caste/ religion factor also influences the formation of the council of ministers and making appointments to various political positions in the government.

Caste/ religion also functions, as a pressure group in politics. Political bargaining is also done on the caste lines. Caste organizations have emerged to organize caste members for collective bargaining with each other.

The political leadership in many political parties emerges and survives in politics on the basis of the support of certain caste/ religion groups.

There are many political experts who consider the increasing influence of caste in politics as a negative tendency, not helpful in the development of democracy. However, the role of caste/ religion is essential to give momentum to the political process.

I would say that social division plays no different role in state politics than it does in any democratic order. The greater social division there is, the greater the likelihood that politicians will use those differences to consolidate their own power. As long as there are significant rifts in the social tapestry whereby individuals can embrace their own social order to come together in cohesive weaving, politicians will be able to maximize these divisions. In state politics, political parties make their reputation off of "representing" different interests, but in reality what is happening is that these leadership groups are furthering the wedge between their represented group and the social unit as a whole. Social cohesion asserts the pure right of the people and in this process may destabilize political parties who are based off of division. Until social orders recognize that while there is legitimate difference of opinion does not necessarily have to translate into social division and fragmentation, politicians will be able to maximize these tears at social fabric and gain power in the process.

CONCLUSION

While Chhattisgarh state of India is constitutionally secular, the reality of communal divisions among the people has encouraged political forces to attempt capitalization of religion to achieve their political ends, particularly to win elections. Chhattisgarh is a state of diverse culture, languages, multiple races and regional and economic disparities. Truly religious people are not supposed to fight against each other, whatever be their religious affiliations. Rather, they are to use the values in their respective religions for the good of the state/ nation, for peace and harmony among the heterogeneous groups which constitute the whole state/ nation. Any religious fundamentalism, especially its use in politics, should be condemned by all the Indian citizens, for it directly negates and attacks the core value of unity in diversity, which makes state/ India great, beautiful and proud. The results of the recent elections in states has clearly re-affirmed that Indian democracy and secularism hold true, despite the pressure exerted on them by communal antagonisms inspired by religious

fundamentalism.

We find that religious beliefs are significantly related to national political participation. Different types of religious beliefs influence political participation differently. Although some macro religious beliefs significantly increase macro political behavior, believers in an involved God are less likely to participate politically. Individualistic, micro beliefs have no affect on national politics. Thus, the scope of the religious belief fits with the scope of the political activity, in that more macro concerns translate to national political participation.

The following recommendations are discernibly based on the foregoing:

a. Youth should be given the opportunity to develop their capacities through balanced education and exposure so that they can explore the importance and facts of religion and bale to utilize it in politics in a proper way of state building.
b. Skills acquisition and entrepreneurship will help reduce idleness among youths and keep them from being involved in crime and other activities generated by the religious and political persons.
c. Youths should be made relevant and involved in leadership at different levels of government.
d. We must moderate our demands on our youths and as well condition their behaviour in line with our cultural values.
e. Strengthens young people‘s abilities to meet their own subsistence needs.
f. Prevents and reduces vulnerabilities to economic, political and socially unstable environments.
g. Promotes ownership and sustainability of change interventions;
h. Helps gain entry into target communities and build up trust and social capital.
i. Adopt more pragmatic approach in the relations between religion and politics.
j. Recognize the differences and identify commonalities between the security culture values which must be shared by the two side’s religion as well as politics of the state.
k. Base its strategy not only on values, but on interests of state.
l. Find the golden middle between values and interests in constructing its future strategy mainly for youths.
m. Religion and politics must recognize the values of youths in terms of stability, security, economic potential.
n. Keep setting "good example" and norms, by transferring experience and good practices and helping the enforcement of rule of law state.

It was also found that the economic inequality increases the positive evaluation of the role of religion in politics through its effect on religiosity and participation in religious organizations.

The question of religion in politics is nothing if not highly complex. In addressing the framing question with which we opened the discussion, Does religion matter in politics?, it would seem that we need to answer this in the affirmative, but with certain very important qualifications. More specifically, three points bear drawing out (1) the importance of understanding when and how to grant importance to religion in seeking to understand politics in other words, recognizing that religion is present in a given political situation does not mean that that situation should be read exclusively or even primarily in terms of religion; (2) the importance of recognizing the presence of enormous diversity within religions and the dangers entailed in treating them as monoliths; and (3) the fact that religious identities and

political claims framed in terms of religion are not necessarily categorically distinct from or unconnected with other kinds of political and ideological claims. Indeed, as several examples today can show, these sorts of claims are often motivated by a desire on the part of both the 'religious' and the 'non-religious' to achieve similar goals even where the language they use may differ.

However, this research work had strongly pointing the youth thought who believe that politics and religion aim must be emphasize to make the world a better place for future generations.

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Effect of Yogic Exercises Program on Positive Mental Health of School Boys Suffering from Postural Deformities

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Abstract

The present study was conducted to find out the effect of specific yogic exercise program of short duration on positive mental health of school boys suffering from postural deformities. This study was conducted on 58 school boys studying in B.M.C. School Kurla suffering from various postural deformities. Junior Positive mental health inventory prepared by Agashe and Helode (2009) was used as psychological instrument in the present study. The result reveals statistically significant beneficial effect of three months yoga program on positive mental health of school boys suffering from various postural deformities. It was concluded that yoga may be used as alternative therapy to enhance positive mental health of school boys suffering from postural deformities.

Keywords : Postural Deformity, Yoga, Positive Mental Health, Yoga

Introduction:

Mental health is one of the related concepts to quality of life. According to the definition of World Health Organization (WHO)[1], mental health means whole richness of physical, mental and social concepts of each person, and so, mental health is one of key reasons in people's general health. Mental health has also been viewed has positive aspect. Strupp and Hadley (1977)[2] also conceived mental health in its positive perspectives. This model has considered self-acceptance, ego-strength and philosophy of human nature/life as the major components of positive mental health. The importance of mental health in quality of life is well known. Apart from psycho-pathological stand point it has been observed that ancient India practices of yoga is useful in enhancing psychological well-being. Deshmukh (1971)[3], Carrington et al. (1980)[4], Deshpande et al. (2008)[5], Knobben (2013)[6] have concentrated their research on effect of yoga on mental health of adults. Apart from normal people it has been observed that person with postural deformities is more prone to psychological problems [Babekir et al. (2007)[7], Saligheh et al. (2013)[8]] Fortin et al. (2011)[9] defined posture as the alignment or orientation of body segments while maintaining an upright position. Ningthoujam (2014)[10] considers "posture" as a product of human behaviour, emphasizing that factors affecting a wrong posture are features of daily behaviour. According to him "posture" reflects the well-being of the individual, reflects its activity and somehow relevant personality. But all these studies are on adult population and did not address the issue of positive mental health in school children. Since nations prospect and development is dependent upon their future torch bearers i.e. school children, hence the researcher decided to explore the efficacy of yogic exercise program on positive mental health of school boys suffering from postural deformities.

Objective of the Study

The main objective of the present study is to find the effect of short duration yogic exercise program on positive mental health of primary and middle school boys suffering from postural deformities.

Hypothesis

In was hypothesized that follow up data on positive mental health will show significantly encouraging signs after three months yogic exercise program imparted to school boys suffering from postural deformities.

METHODOLOGY

SAMPLE :

To conduct the study 1500 school children between six to 12 years were selected from B.M.C. School Kurla. Kypholordometry was used to determine presence of postural deformities namely kyphosis and lordosis among selected subjects. Out of these 1500 school children, 58 were found to be suffering from postural deformity of some or other kind. These 58 school children were selected as sample.

TOOLS

Kypholordometer Test for Kyphosis:

Postural deformities in selected subject were screened with the help of Kypholordometer.

POSITIVE MENTAL HEALTH INVENTORY:

The Junior Positive Mental Health Inventory (JPMHI) prepared by Agashe and Helode (2009) was used to assess positive mental health of selected subjects. The inventory consist of 36 items with three dimensions i.e. ego strength, self acceptance and philosophy of life as sub variables. This inventory is highly reliable and valid.

YOGA PROGRAM:

Three months yoga exercise program was chalked out by the researcher with the help of experts in the field of yoga. The asanas were increased as per the time schedule set by the experts. Asanas with supine, prone and sitting position were incorporated in this program. Savasan, Ardha, Chakrasan, Padmasan, Pranayam, OM chanting and Anulom Vilom were included in this yoga exercise program along with other asanas.

PROCEDURE:

Screening with kypholordometer was performed on 1500 school boys from primary and middle school. Out of these 58 primary and middle school boys were found to be suffering from postural deformities. Junior Positive Mental Health Inventory prepared by Agashe and Helode (2009) were administered to these subjects. Since the study was based on single group experimental design, the administration of JPMHI was done twice i.e. before and after study period of three months. The pre post response of the subjects on JPMHI was scored off and put to statistical analysis. Results shown in table 1.

ANALYSIS AND INTERPRETATION :

Table 1

Depicting Pre and Post Test statistics (Before and After Yoga Training Program) of Mental Health in a Group of School Boys Suffering from Postural Deformities

Variable	N	Statistical Scores		Mean Diff.	'r'	't'
		Pre-Test	Post Test			
		Mean±S.D.	Mean±S.D.			
Positive Mental Health	58	19.60±2.69	22.48±2.45	2.87	.94	18.49**

** Significant at .01 level

Results shown in table 1 show that in a group of school boys suffering from postural deformities, mean scores on positive mental health differ before yoga exercise program (M=19.60) and after yoga exercise program of three months (M=22.48) at .01 of statistical significance. The mean difference of 2.87 shows that after imparting yoga exercise program mean positive mental health scores was increased significantly increased as compared to what it was before the commencement of study period. (t=18.49, df=57, r=.94, p<.01). It indicates that three months program of yoga has significantly enhanced positive mental health of school boys suffering from postural deformities.

RESULT AND DISCUSSION :

On the basis of analysis it was found that after participating in three months yoga program, positive mental health of school boys suffering from postural deformities. Knobben (2013) also reported that yoga interventions can be effective in reducing depression, depressive symptoms and the promotion of well-being. In other words it has positive effects not only on depression, but also on the positive functioning of a person. Hence the efficacy of yoga is also true for school boys suffering from postural deformities.

CONCLUSION

On the basis of results it was concluded that yoga exercise program of short duration is beneficial in enhancing positive mental health even in school boys suffering from postural deformities.

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Comparison of Selected Motor Fitness Components among Different Sports Teams

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Abstract

The purpose of the study was to compare the Health related fitness components among different sports teams. To achieve this purpose fifty male sports person from the Pune city were selected as the subject. All subjects were practicing regularly and related from different team games like Volleyball, Basketball and Handball, Kabaddi & Kho Kho. Their age ranged from 16 to 19 year old, the study was confined to the selected Heath fitness components namely Muscular Strength, Muscular Endurance & Flexibility. The data of selected subject for fitness components were recorded by different measures for namely Muscular Strength, Muscular Endurance and Flexibility data were observed by performing the Push Ups, Sit Ups & Sit & Reach.

There is significant difference found between the mean value of Health relates fitness components (muscular endurance (F= 10.20) and Muscular Strength (F= 15.79) and that of Flexibility(F= 5.02) among different Sports. With the limitations of the study it may be concluded that, there was significant difference found between the different sports teams i.e. Volleyball, Basketball and Handball, Kabaddi & Kho Kho in relation to their health related fitness component.

Introduction

Sports can be a great way to get in shape or stay that way. Having a specific goal can be a great motivator. Physically, you need strength and endurance. Sports is one of the avenues of mankind's never ceasing strive for excellence. Its uniqueness lies in the intimacy between the physical happenings of our bodies and their repercussions on our minds, as well as in the general re-cognoscibility of the social and aesthetic value. Sports evoke experience that is exclusively human and independent of the changing forms, patterns customs of a civilization, which involves profoundly modifying concepts of our environment. From its very simple form, a sport has emerged into highly organized form of play and play is a general innate tendency. Health and physical fitness have remained the motto of man from ancient times. The marked deterioration in health and physical fitness of people may be due to present automation and a short of mechanized day to-day life. Because of very limited movements caused by scientific and acute stress and strain has caused considerable damage to the health of the people by and large. Physical fitness is a matter of fundamental importance to individual well-being and to the progress and security of a nation. It is the basis for all other forms of excellence. With increased mechanization there has been a corresponding decrease in the number of tasks that require an expenditure of energy, sufficient vigorous exercises are not done to develop and maintain equate levels of physical fitness. Many individuals must rely on attain an acceptable level of physical fitness.(Robert,1973)

Fitness does not only refer to being physically fit, but also refers to a person's mental state as well. If a person is physically fit, but mentally unwell or troubled, he or she will not be able to function optimally. Mental fitness can only be achieved if your body is functioning well.

There are a range of fitness components that contribute to successful handball performance. More than one is usually important, though in this poll we ask you only to nominate what you consider the most important fitness component. There are many other factors for success in this sport - see the survey and rate each of them. Volleyball is a team sport that requires great skill and can be very rewarding when played properly. Certainly considered to be both a competitive and leisurely activity, it can be played by school teams, professional athletes and families enjoying a day at the beach. The Components of Fitness is a term given to grouping of aspects relating to conditioning and attributes athletes can work on for sport. The components of fitness include Strength, Power, Speed, Endurance, Balance, Coordination, Reaction Time, Muscular Endurance, Cardiovascular Fitness, Body Composition and Flexibility. These are broad areas but help with categorising drills and activities as well as assisting in describing the different physiological requirements for a sport such as basketball Kho-Kho (Prabhodan Goregaon, 2009) is the most popular traditional sports in India but unfortunately scientific training is not being given that widely for this game. The game is a great test of the participant's physical fitness, strength, speed and stamina. Kho-Kho is quite thrilling and speedy game where in the players do dodging, feinting and burst controlled speed.

Objectives

Objectives of the study were derived as follows

14.1 To measure the health related physical fitness of players from different disciplines

14.2 To compare health related physical fitness of players from different disciplines

Hypothesis

14.3 H_0:. There is no significant difference in the Muscular Strength of players from different sports disciplines.

14.4 H_0:. There is no significant difference in the Muscular Endurance of players from different sports disciplines.

14.5 H_0:. There is no significant difference in the Flexibility of players from different sports disciplines.

Methodology of Study

The purpose of the study was to compare the health related fitness components among different sport teams. For this 50 sports person from Volleyball, Basketball and Handball, Kabaddi & Kho Kho sports from Pune city were selected as the subject for this study. Their age ranged from 16 to 19 year, the study was confined to the selected health related fitness components namely Muscular strength, Muscular Endurance, Flexibility.

The data of selected subject for fitness components were recorded by different measures for namely Muscular Strength, Muscular Endurance and Flexibility data were observed by performing the Push Ups, Sit Ups & Sit & Reach.

The Descriptive statistics and one-way analysis of variance (ANOVA) were applied to finding out the difference in selected health related fitness components at 0.05 level of significance among different sports team games.

After collecting the data of selected Health related fitness components of different sports team players, score of each category of subjects were subjected of F analysis of variance (ANOVA) and Descriptive statistics applied for finding out the critical difference. In mean performance of selected Health related components among different sports teams, the findings are presented in following Tables.

Table 1. Descriptive Statistics of Push Ups Test

	Mean	Median	SD
Kabaddi			
Kho Kho	22	20	10.16
Volleyball	38	37	14.48
Handball	25	25	3.58
Basketball	23	24	3.62

Table 2. Descriptive Statistics of Sit Ups Test

	Mean	Median	SD
Kabaddi			
Kho Kho	26	27	5.33
Volleyball	32	29	8.88
Handball	28	29	5.38
Basketball	30	30	4.74

Table 3. Descriptive Statistics of Sit & Reach Test

	Mean	Median	SD
Kabaddi			
Kho Kho	26	26	8.37
Volleyball	32	29	8.88
Handball	25	25	5.94
Basketball	31	30	7.64

Table 4. Muscular Endurance among Different Sports Teams

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1481.44	4	370.36	10.20	.00
Within Groups	4355.36	120	36.29		
Total	5836.80	124			

Table 5. Muscular Strength among Different Sports Teams

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4629.23	4	1157.30	15.79	.00
Within Groups	8795.280	120	73.29		
Total	13424.51	124			

Table 6. Flexibility among Different Sports Teams

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1076.11	4	269.02	5.02	.001
Within Groups	6431.44	120	53.59		
Total	7507.55	124			

Discussion and Findings

The analysis of data reveals that there is significant difference in muscular endurance, Muscular Strength and flexibility between different sports teams were obtained. Usually handball players, Basketball players, Volleyball players, Kabaddi players and Kho Ko players are employ different type of fitness while taking part in a game.

Conclusions

With the limitations of the study it may be concluded that, there is significant difference found among the different sports teams i.e. Volleyball, Basketball and Handball, Kabaddi & Kho Kho in relation to their health related fitness component.

Suggestions

Motor fitness of Volleyball, Basketball and Handball, Kabaddi & Kho Kho players can be compared in order to decide which factors to be trained more in case of a particular game. Also it will help coach to give emphasis on the selected fitness factors more than others.

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Raja Rao – A Staunch follower of Hindu Philosophy

(With Special Reference to 'Kanthapura', 'The Cat and Shakespeare' and 'On the Ganga Ghat')

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Abstract

If any Indian Scholars expressed so elaborately and concisely on the concept of life through the medium of English language, it is none but Raja Rao. Such is his microscopic vision that he has realized the microcosm of humanity at large in himself. His prose style skillfully conveys his appreciation of the Indian way of life. To be more specific about contribution of Raja Rao in the matter of fiction there is hardly anyone in the entire arena of Indian English fiction to equal Raja Rao in the field of wisdom and empire of art. More than any other writer, Raja Rao's use of quotations from religious scriptures, Sanskrit literature and devotional literature of India has been amazingly educative and in an extremely appropriate style. He highlights the 'Spiritual and Philosophical India' in his characters and their dialogues. The study deliberately wishes to highlight Hindu culture, mythology and philosophy revealed to the world by Raja Rao in his fictions.

Keywords: Scriptures, wisdom, myths, Sanskrit literature

Introduction

As a prolific writer, Raja Rao has a penetrative perception of the man and the world. He is profoundly metaphysical in the way he thinks and feels. Most of Rao's works give vent to the philosophical concepts of Hinduism. His works are deeply rooted in the soil of Brahmanism and Hinduism. For him, writing is a SADHANA, a spiritual discipline whose goal is realization of truth itself. Rao's themes include the metaphysical apprehension of god, the nature of death, immortality, illusion and reality, duality and non-duality, good and evil, existence and destiny, *Karma and Dharma,* the quest for self-knowledge, the place of the guru, the influence of the religion and social concept on individual and collective life and also the meaning of India's real and symbolic content.

Raja Rao is a true *Karmayogi*, who considers literature – a spiritual experience. He was deeply impressed with India's spiritual tradition and therefore his works are highly and deeply influenced by invisible string of traditional Hindu culture. There is no denying of the fact that Hinduism is one of the world's oldest organized faiths and religions that primarily exist in India. India has always been a breeding ground for spirituality, right from the world's oldest city, Kashi and Varanasi, where Lord Shiva seems to come or visit once in a while. Thus, Hinduism has grown to become the world's third largest religion, after Christianity and other western religions in which it does not have a single founder, a specific theological system, a single system of morality, or a central religious organization. It is actually made up of thousands of different religious groups and sects that have evolved in India over the last 5000 years or more. Hinduism is generally regarded as the world's oldest organized religion.

Testimony of intellectuality serves the hallmark of the work of Raja Rao well tuned with a deep-levelled spiritual dimension pronouncing a lot about India's ethos well-linked with Hinduism and looking through his Vedantic lenses he has brought about a rich harvest of

Philosophy that fills the core of his writing. Keeping such a fact in tune, the present study highlights the Hindu culture mythology as well-toned up and enriched by Raja Rao.

Objective of the Study

- To understand Raja Rao's endless and unfathomable experiments at evolving diction which would successfully combine native Sanskritic features with the English language.
- To study mythological, socio-cultural and philosophical elements of Hinduism reflecting in Rao's fictions.
- To understand how most of his character act and react with incidents to throw light on Hindu mythology and religious folkways in Rao's fictions.
- To study Hindu ideas and fundamental realities of Hinduism which are the real foundation of Rao's fictions.
- To study Raja Rao's selected work in a systematic manner with reference to Hindu Philosophy in his fictions.

Significance of the Study

It may sound exaggerated that the fact remains uneclipsed that Raja Rao is the most significant and interesting writer that the world has ever produced. Great is his knowledge of Hindu religion what we ever find in his work being an epitome of the Geeta and all such Hindu epics. It seems that his work is packed like a capsule being pregnant with the knowledge of the whole cosmos. To fully understand what Raja Rao says in his short stories and novels requires some knowledge of the philosophical and metaphysics of Hinduism. His commitment to Vedanta – a universal religion, to interpreting India to the west in the right perspective, and to creating international understanding has resulted in his master pieces. It is Raja Rao alone who has proved the ancient nature and superiority of Hindu religion through his work quite vehemently. He made a clarion call that Hindu religion is never a superstition but the fundamental way of Indian life that bears a passport to our rich cultural heritage. What he did to Hindu religion is simply an eye-opener to the world Hindu Community. To this context, it may be said well that his literary works are no more static and inorganic rather their living and breathing realities to speak louder than the loudest term of Hindu Philosophy. Rao has been very significant in introducing a several intrinsic Hindu preoccupations into English novel form. The study is reinterpretation of Indian religious philosophy (Hinduism) in selected works of Raja Rao.

Methodology

While turning the page of history we find that in 1930 the actual historical and political situation served the background of the story as narrated by Raja Rao in the novel *Kanthapura*. The action of novel dates back to the time when Gandhian idea fired the imagination of the Indian nation and paved the way for a non-violent revolution against the British rule. Whatever happens at Kanthapura was happening everywhere in India. In spite of its social realistic mode, the novel evolves round its mythic, philosophical and symbolic framework. As a *purana*, it recalls the legendary exploits of Ram and Krishna which are known to most Indians from their very childhood. Rao writes a narrative that not only takes us back to the world of the Hindu epics, but also interprets experience in the form of Hindu thought. Gandhi is an *Avatara* (incarnation) of Rama sent from heaven to rescue India (Sita) from the British (Ravana). Non-violence of *Satyagraha is* integrated with ancient Hindu tradition.

As Shakespeare borrowed the soil of ideas from the creative gardens of different writers and put in his own garden by adding his own flame of literary vigour, the same way Raja Rao borrowed the style and structure of *Kanthapura* from Indian Vernacular tales and Hindu folk epic. He too elaborated the concept by enriching the same on his own literary vigour that stood gigantic as a milestone in the history of Hindu mythology. There are a number of mythical or *Puranic* devices in the novel. The central myth of *Kanthapura* is of **Rama-Sita-Ravana**, which is used to illustrate the fight between Mahatma Gandhi and the British. The battle between the *Suras* and *Asuras* is a recurrent motif in the Hindu mythology and in *Kanthapura* too, the fight between the Britishers (*asuras*) and Indian (*suras*) is found. Myth is like a religious ritual which makes life more meaningful and enriches it by penetrating to its essence. Thus, both myth and ritual are seen renewing the life of the community in *Kanthapura*. In this novel, Rao shows full reverence to the Hindu gods and temples, the hills, the rivers, the sun, the saints and sages and all forms of Hindu religious celebrations. The entire novel is a monument to Hindu worship, myth, legend and tradition. The novel also preaches a philosophy of *Karmayoga*.

The liberalism of Gandhian values is taken into the account by the novelist while focusing on the luminous concept of casteism and untouchability. The partition of the villages into Brahmin quarters and the quarters of the Potters speak largely of the era of age-old casteism as well as untouchability of Hindu Society. It was Gandhiji who vehemently rejected and condemned the tenant of Hindu Casteism. The opening of the temples to the Pariahs whom Gandhiji called Harijan is an event of historical importance in the novel. The technique of storytelling is like the technique of the *Mahabharata* and *Ramayana* which tells an interminiable tale, without punctuations and prepositions. It is essentially *Puranic* in spirit and technique of narration. Raja Rao's spiritual doctrine presented in *Kanthapura* has a *Puranic* pattern which fundamentally suits the socio-spiritual cosmic insight articulated in the novel. The novel is full of *Vedantic* nuances focusing the doctrine of incarnation as nucleus of the philosophy of *Avatar*. It is a novel having Hindu metaphysical Vigour, Philosophical death and Symbolic richness.

So far as the third novel of Raja Rao is concerned, the title 'The cat and Shakespeare' is well-suggestive of a Philosophical comedy. It is a novel that can be read at various levels of significance. What we find in this novel is nothing but the Philosophy of *Marjaranaya* – that of total surrender to God. The "cat-hold theory" which is the central doctrine of *Visista – Adavaita* (qualified monoism) is well exemplified by Raja Rao at thematic level through the life of Nair (name of character in the novel). The novelist has projected the Hindu metaphysical truths and spiritual values. The novel is also called 'tale of modern India' as the novelist gives picture of India at social level-depiction of Indian life at physical plains. Raja Rao here highlights the *Vedantic* idea of Hinduism.

To speak the truth, the third novel of Raja Rao primarily is an outcome of his deep interest in the arena of Hinduism and spiritualism. In the realm of such an arena the motives of the novelist stands as a manifestation of his quest of truth of life well-triggered up by Hindu religion. What he desires for is nothing but to know the reality as revealed by his metaphysical bent of mind. His predilection for Hindu Philosophy has provided a Philosophical ethos to this work which he calls a spiritual discipline. The subject in this novel is a problem of individual destiny and the solution. It is conveyed by an analogy by Govindan Nair which he explains by describing the way of kitten. He tells Pai to allow the mother Cat to carry him. Here Raja Rao with the help of *Vedantic* idea explains how the world is a Play-

Lila of Absolute. This fiction is essentially in the form of spiritual quest where Hindu theories are at foundation. Rao's vision of life is articulated by these characters and incident in the novel. Metaphysically, Rao wishes to portray life as a mode of celebration as said by the Hindu *Shahstra* which successfully catches readers' attention as well as compels them to think about themes, symbols and the metaphors with their metaphysical Connotation. Both stylistically and thematically, Raja Rao succeeds in capturing the true spirit of India and the Hindu theories in this novel.

In 'The Cat and Shakespeare', Raja Rao not only visualizes the Hindu myth and philosophy at the level of the narrative but also in the craft and technique of writing. His deep rooted Hindu thought has influenced Raja Rao in writing this novel. This work of Rao holds universal appeal in its presentation of the traditional Hindu world-view. 'The Cat and Shakespeare' is more like one of the longer *Upanishads,* part narrative, part speculation, part dialogue or discussion. It has a philosophical basis of the great tradition of Hinduism.

The soundness of the religious principle (Marjara-naya : Kitten Principle – complete surrender to God Almighty) by which both Pai and Nair, tackle all the problems of their routine life is clearly vindicated by the novelist here. The word Shakespeare used in the title of the novel indicates the universality of application and the usefulness of the simple religious philosophy which is much easier to be understood and practiced by the common people. Thus, in 'The Cat and Shakespeare', Raja Rao has projected the metaphysical truths and spiritual values of Hindu culture, tradition and religion with full of colour, freshness and vitality.

On the Ganga Ghat

It is the third collection of Raja Rao's short stories. These stories from myths and reality are associated with the Ganges. The collection has a broad canvas of river Ganga at the backdrop. Here we find that Benares has served not merely as a holy Centre of Pilgrimage but also as a great saint of traditional Hindu learning and culture. In this work, Raja Rao presents Benares as a city of life or a city of enlightenment. Once a person becomes free from fear of death, he/she begins to celebrate the carnival of life. Benares is the place where one can attain the state of fearlessness. Death is considered auspicious – emancipation or "*Moksha*". Therefore, life is not a burden but a celebration. It reflects Rao's point of view about life and death based on Hinduism. Like *Malgudi* of R.K. Narayan, the 'Ganges' is the real hero of the eleven stories. These compelling stories with their metaphysical and philosophical content from Hindu religion make a delightful reading. They are paradigmatic and lovely as mother Ganges is. Death and cremation on the Ghats makes one immortal. Benares is part of eternity and is above cause and effect.

From the above discussion, it will not be improper to conclude that after reading this novel it is evident that Hinduism is revealed throughout the novel. This novel presents Hindus' attachment to this holy city – Benares. The centre of all the stories is the Ganga Ghat which has the invaluable importance to all the castes of Hindu. They believe that their birth, living and death become holy if they go to Benares and take bath in the flowing water of the holy Ganga. It seems that Rao's profound attachment for Benares forced him to write the novel in a story form, *On the Ganga Ghat.* Here Benares is viewed as an inter-entity connecting the above and below – between heaven and earth, that what can be called as the Hindu view of life. Hindu folklore, spiritual beliefs, legends and myths are deftly depicted in this work. In *On the Ganga Ghat,* Raja Rao's overt concern appears with a particular city, river, nation or people. But his true concern is with the universal human condition rather than a specific group or a place. Hinduism strongly gives importance to life, death and life after

death and here, such themes are made universal. Such themes have been important since time immemorial in Hindu culture. Essence of the novel is based on Hindu belief that anyone who takes life as a spiritual mode of celebration becomes fearless of death.

The novel presents Rao's unity of vision of the rich and the age-old yet vital and living Hindu tradition. In Benares death is desired as it leads to release and liberation. That is why it is so important in all the stories. So is the case with Ganga. It is celestial river. A bath in her is supposed to make one free from the cycle of rebirth forever.

Conclusion

The writing style of Raja Rao demands different level of competence in the reader, the sincerity and capacity to share something deeper than physical experience. His predictions for Indian and Hindu Philosophy have provided a Philosophical ethos to all his literary creativity which he calls a spiritual discipline. India, to him is not merely the country with hills and valleys, cities and villages, poverty and prosperity – India, for him is an idea, metaphysics and above all a Hindu Consciousness.

Kanthapura is Indian both in theme and treatment. His English is replete with Indian phrases translated into English and sometimes he employs the Indian mode of expression. It is Indian in theme, myths, images, narration and style. Rao regards the Indian philosophy superior to other philosophies in the world, including the Greek philosophy and he thinks that it too is an off shoot of the Indian philosophy. *Kanthapura* shows how the call of Gandhi turns thousands of youths into soldiers against the rule of England, shouting and struggling for freedom of their motherland from slavery. This novel of Rao is often regarded as *Gandhi Purana*. It will always have a central place in Gandhi literature.

The Cat and Shakespeare represents a modified western literary form. In other words, he invents and Indianizes the form as no one else had done it. His innovative experiments with novels conveys Raja Rao's metaphysical ideas to the reader which otherwise would have remained enigmatic to readers. Thus, both stylistically and thematically Raja Rao succeeds in capturing the true spirit of India and Hinduism in *The Cat and Shakespeare*. Raja Rao has proved that the novel-form, though intimately related to time and place at the narrative level is also a medium for expression of experience that transcends the limitation of geography and history. His contribution lies in the fact that he has brought to the Indian English fiction an epic vision, symbolic richness, lyrical flavor and above all an essential Indianness of style.

On the Ganga Ghat reveals Raja Rao's attitude to the issues such as life and death. Benares is believed to be a holy place where millions of the Hindus aspire to die. He defamiliarises this aspect and Benares as a holy city of life or a city of enlightenment. Of course, it is a metaphysical process of enlightenment. People from all around the world come here to reach that spiritual state. Physically all (have to) die but the enlightened ones accept death as a necessary event of their life. Thus, death is a constant presence in this holy city. But in Benares, death is considered auspicious – an emancipation or *Moksha*. In fact, what dies in Benares is death itself. Each of the stories of *On the Ganga Ghat* presents this aspect in a different way.

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A Study of Compliance of the Guidelines and Recommendations for Transformation of Collage Libraries in Gujarat with Special Reference to Valsad District

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Abstract

Information and Library Network (INFLIBNET) Centre, an autonomous Inter-University Centre of the UGC was established in1991 as a major National Programme with its Head Quarters at Gujarat University Campus Ahmadabad with a view to according inter university connectivity to libraries in an era of increasing usage of information technologies in all spheres of human endeavor to which library management and services was no exception. This was preceded by a series of recommendations made by various committees set up by the government over the decades post independence to study incumbent situation in the nation's libraries and suggest measures for their modernization to maintain their parity and connectivity with other libraries nationally and internationally particularly in an era when virtual superhighways of knowledge increasingly connect the knowledge centers of the world. The present study conducted on eight collage libraries of Valsad district situated in the same state where INFLIBNET was established in 1991 to ascertain how the establishment of this centre had impacted these collage libraries. ***The study selected eight collage libraries in the Valsad district of Gujarat basing the same on a thoroughly considered plan and procedure to investigate the incumbent conditions, awareness and approach towards adoption of Information technology and the degree of adoption of technology in these libraries. The studies revealed that these libraries have been largely non compliant of the recommendations made by relevant agencies for modernization. The study suggests measures for improvement in the sampled collage libraries of Valsad.***

Key words: INFLIBNET, Valsad Libraries, Information Technology, Gujarat Libraries.

Introduction

Information technology in contemporary times has greatly facilitated free flow of information wherever it has been sufficiently employed. The world with the advent of information technology has been transformed into a global village with internetworking of information superhighways through networks commonly referred to as Internet. This has facilitated electronic librarian-ship with the diversification of library facilities and services to its user. The concept of virtual libraries OPAC, Hypertext, and teleconferences for the purpose of library and information services have become common with new technological developments immensely transforming libraries with almost all functional aspects of libraries getting technologically transformed to greater or less extent by developments in the area of electronics, computerization, and telecommunications. This movement of the libraries is at various stages and at certain places it is yet to catch up as in the instance of the sampled libraries of the Valsad district of Gujarat.

The university libraries of Gujarat are well developed with the precious support of the University Grants Commission. Each grant-in-aid university of Gujarat is well equipped with

the IT tools and techniques using various kinds of library automation software, adopting innovative ideas for development. . The university affiliates colleges as per the norms and guidelines of UGC and also provide for the college libraries to undergo transformation in terms of up gradation technologically. Recognizing the advantages accruing from the application of information technology**(Table-1),** it is now essential for the libraries to provide the facilities to their user community.

Table - 1 Application of Information Technology in libraries

APPLICATION OF IT	ACTIVITIES COVERED
Library Management	Which includes classification , cataloguing Indexing, Database creation, Database indexing etc.
Library Automation	Major areas of the automation can be classified into two organizations of all library database and all housekeeping operations of library.
Library Networking	A group of libraries and information centre are interconnected for some common pattern of design for information exchange and communication with a view to improve efficiency.
Audio-Video Technology	It includes photography, microfilms , microfiches, audio and tapes, printing , optical disk etc.
Technical Communication	It consist technical writing, editing, publishing, DTP systems etc.

.It is important to say several studies have been carried out in Gujarat state and very few investigations have been made on the library service of Gujarat state. Hence there is an acute shortage of literature.Thus, a research was conducted on the uses and application of information technology in libraries of Gujarat state to determine the strength and weakness of information sector of a country. While the application and use of technologies in library and information centers are developing very quickly in other countries, the progress in Valsad District of Gujarat state is not satisfactory. The author investigated the status of IT applications in the collage libraries of Gujarat state even as it makes a detailed survey an analysis of the collage libraries in the Valsad district .

From the findings it is proved that libraries elsewhere are operating in a quickly changing situation, with awareness of latest technologies to sustain and maintain the importance of the services offered. Utilization of Information Technology in present libraries is optimistic to gain right information at the right time in the right place and at the right cost. Information Technology helps to progress the rank of the library and it condenses the work stock of the library professions also. Information Technology has broken the worldwide boundaries, new apparatus and methods help to provide better services to the uses**(Table-2).**

Table -2 Classification of IT based Services

Apparatus & Amenities	Customer Services	Electronic Services
Computers, OPAC, Union Catalogue, CD-ROM, Scanner, RFID, Tele text, Facsimile, Photocopy, Printing Technology, Barcode	Document delivery services, Interlibrary loan, Indexing & abstracting services, Chat services, CAS, SDI, Scanned copies, Bulletin Board services, Electronic services & e- resources, Digital library	Audiovisual materials, Internet, Library website, Database

The study finds its cause on the hypothesis that the resources, services and facilities for application of technology in the sampled libraries are in rudimentary stages , housekeeping services in the libraries are not automated, Users are largely ignorant of the massive developments in the modern day management through reliance on IT, those questioned are given to use of internet , internet facilities are absent in the collage libraries though the need for such is increasingly felt , students rarely use contemporary technology to locate and search information and the library staff is largely untrained in the modern methods of library management and the management of these collages have not been forthcoming in changing the scenario in these libraries.

The main objectives of the study were to examine the existing conditions of the libraries and information services in college libraries of Valsad district of Gujarat state. The specific objectives of the study were to find out the general information of the college libraries, level of employment and extent of usage of IT in the sampled libraries, investigate benefits from IT to the librarians and users, examine availability of modern day library technologies in these libraries, identify specific problems encountered by the professionals manning the libraries in the application of IT.

Eight libraries situated I Valsad district of Gujarat were selected for this study on the basis of having minimum library equipment and facilities that are needed to provide basic library service. All of the surveyed libraries were located at the Valsad district of Gujarat state. The methodology involved recourse to structured questionnaires designed to interview the head of the library or the librarian or the person responsible for library, besides personal observation, informal discussion and through visit of the sites which helped the research correlate the necessary data needed for the study. The revelations emerging from the methodology were then studied in the context of the historical development of libraries and their management to modern times and the sampled libraries in such context.

The picture that emerges from the sampled libraries of Valsad bears a contrast to what import of modern methods into the management of libraries have made them where its importance has been realized and adopted. In the back drop of the content and extent of the scope of Information technology which has in a sense has globalized the information storing and sharing amongst the far flung areas of the world the sampled libraries appear to have not responded to these modern day developments with desirable motivation and initiative thus restricting the quest of the subscribers. The studies of these libraries reveals that these have continued to tread on the traditional lines reducing their status to remotely situated islands far from the super highways of knowledge without apparent inclination to seek connectivity.

The limitation of this study is that it has studied only eight libraries of Valsad district of Gujarat and what has been revealed is an eye opener and creates scope for similar research in other areas of the country for a more holistic stock of the situation prevailing in our libraries.

Study Problem

Modernization of library management and services has occupied importance in India from the British times. First futuristic approach towards their management in India can be seen during the rule of the British East India Company which set up an organized library in Calcutta. Post independence the Indian government took serious view of the importance of libraries in education and to keep them modernized set up a number of committees, to suggest measures for improvement to meet the needs of the emerging trends in modern day education. The University Grants Commission started grants for the university and collage libraries to

keep their modernization at par with libraries in other parts of the world and with the advent of information technology and their application in library management with strong directions and recommendations. In spite of that the findings and the revelations from the study not being encouraging suggests measures for improvement which refers the problem of study about the committees, their recommendations and compliance of the guidelines for transformation of Collage libraries in Gujarat with special reference to Valsad district**.**

Need of Study

It is important to know about the need of formation of various committees, their findings, recommendations, suggestions and up to what extent the suggestions and recommendations compliance by the college libraries of Gujarat state.

Objective of the Study

1. To discuss about the formation of various committees and their recommendations.
2. To identify the views of various committees and guidelines of UGC for application of IT in the libraries.
3. To discuss about the non compliance of recommendations with suggestions.

Hypothesis

1. Keeping in view of the findings during the study of selected college libraries of Valsad, up to what extent the recommendations of various committees were followed.
2. How much recommendations and the guidelines are necessary for library up gradation.

Methodology

The methodology is based on the survey of findings and conclusions obtained when eight libraries situated in Valsad district of Gujarat were selected for the study on the basis of having minimum library equipment and facilities that are needed to provide basic library service.

Findings

The actual process for the development of university libraries in India can be said to have been set in motion with the appointment of the University Education Commission presided over by Dr. S. Radhakrishnan (1948-49) and its recommendations, such as, annual grants, open access system, working hours, organization of the library, staff, steps to make students book conscious and the need to give grants to teachers to buy books. (India, 1949)

The Commission in the course of its study of the academic libraries, found that "libraries were hopelessly inadequate to serve the curricular needs of a modern university. They were ill-housed, ill-stocked, and ill-staffed and were totally lacking in standard literary and scientific journals. Service was in the hands of personnel that had hardly any notion of the objectives of university education.

In addition, the annual grant for these libraries were not sufficient. Therefore, the Commission recommended that at least six percent of the total budget of each academic institution should be set aside for the library. Only then the condition of these libraries will improve. It added that if institutions were not willing to allocate six percent of their budget to libraries, they should spend Rs. 40 per student enrolled. The Commission also suggested that greater attention should be paid to improve the reference services in the university libraries. Therefore, "documentation and bibliographical services must be developed in order to promote research among the faculty and students, make libraries proper centers for research activities, and to raise the standards of services." As far as the library staff is concerned, the Commission was of the view that it is very important to have well-qualified staff (University Education Commission, 1948-49).

Ranganathan Committee (1957)

The most comprehensive and significant document on the university and college libraries is the report of the UGC library committee, chaired by Ranganathan. The report was published by the University Grants Commission in 1959 entitled 'University and College Libraries.' It was perhaps the first attempt by any library committee in India to systematically survey the academic libraries on a national basis, and it was also the first time that the government of India had decided to seek advice from a professional librarian regarding academic libraries. The committee was to advice the UGC on the standards of libraries, building, pay scales, and library training. After the survey the library committee invited all academic librarians to a seminar on "work flow in university and college libraries," at Delhi from March 4 to 7, 1959 to keep them informed about the progress the committee had made surveying the academic libraries. It wanted to discuss its recommendations of the committee included the provision that the UGC and the state government should help the college and the university libraries in the collection development of both books and periodicals.

Kothari Commission (1964-66)

The Education Commission under the chairmanship of Dr. D. S. Kothari (1964-66) marked another important stage in the history of university libraries in India. The commission devoted considerable attention to the deverlopment of the university libraries and made suitable recommendations on the Norms for financial support, Long range planning for library development, The need for the establishment of a well equipped library before the starting of a university, college or department, Suitable phasing over of the library grants, Encouraging the students in the use of books, Inter-disciplinary communication, and Documentation service in libraries etc. The report submitted by Dr. D. S. Kothari, on June 29, 1966, emphatically pointed out that "nothing can be more damaging than to ignore its library and to give it a low priority. No new college, university or department should be opened unless adequate number of books in the library is provided."

The Wheat Loan Programme

During the 1950's and early 1960's the Indian academic libraries received huge grants from the UGC amounting up to Rs. 1,00,000 for books, buildings, equipment and even for additional staff. At the same time many libraries got additional grants from a special US fund called the 'Wheat Loan Programme'.

Foundation of UGC in 1953

The growth of university libraries since independence can be seen in respect of the initiatives taken by the Central Government considering the vital importance of higher education and role of libraries in the educational development, commitment to fulfill the demand of higher education, and the foundation of the UGC in 1953 by an Act of Parliament. The several commissions and committees including the Radhakrishnan Commissions of 1948, did not stress the importance of the college libraries in their reports. However, the University Grants Commission gives more importance to the college libraries. As the quality of higher education and research, especially at the graduate level, depends upon, among other things, the standard of the college libraries and their services. Therefore, the UGC has played a significant role in the growth and development of college libraries since 1953 by giving grants for books, equipment, staff and library building and has done a remarkable job in salary improvement of the college librarians.

Foundation of the INFLIBNET in 1991

One of the most remarkable and identifiable development in the field of higher education and libraries was the foundation of the INFLIBNET in 1991. Information and Library Network (INFLIBNET) Centre is an autonomous Inter-University Centre of the UGC of India. It is a major National Programme initiated by the UGC in 1991 with its Head Quarters at Gujarat University Campus Ahmadabad. Initially it was started as a project under the IUCAA with following objectives (Chakravarty and singh, 2005)

- To promote and establish communication facilities to improve capability in information transfer and access that provides support to scholarship, learning research and academic pursuit through cooperation and involvement of agencies.
- To establish INLIBNET : Information and Library Network a computer communication network for linking libraries and information centres in universities, deemed to be universities, colleges, UGC information centres institutions of national importance and R & D institutions, etc. avoiding duplication of efforts.

UGC – INFONET DIGITAL LIBRARY CONSORTIUM

Another very important and significant landmark in the field of libraries in India is the establishment of "UGC – INFONET DIGITAL LIBRARY CONSORTIUM" by the UGC on the concluding day of its Golden jubilee celebrations by his Excellency the then President of India, Dr. A. P. J. Abdul Kalam at Vigyan Bhawan on 28th December 2003.

UGC – INFONET is an innovative project launched by UGC to facilitate scholarly e-resources to to Indian academies through joint partnership of UGC, INFLIBNET and ERNET. This includes interlinking of universities and colleges in the country electronically with a view to achieve maximum efficiency through internet enabled teaching, learning amd governance.

The UGC – Infonet is overlaid on ERNET infrastructure in a manner so as to provide assured quality of service and optimum utilization of bandwidth resources. The network will be run and managed by ERNET India. A joint technical and tariff committee, has been setup to guide and monitor the design, implementation and operations of UGC – INFONET. Information for Library Network (INFLIBNET) an autonomous Inter-University Centre of UGC, is the nodal agency for co-ordination and facilitation of the linkage between ERNET and the Universities. Under this programme, information and communication technologies (ICT) and internet are used to transform learning environment from a mono-dimensional one to a multidimensional one.

. **Table- 3 Impact of Information Technology in library**

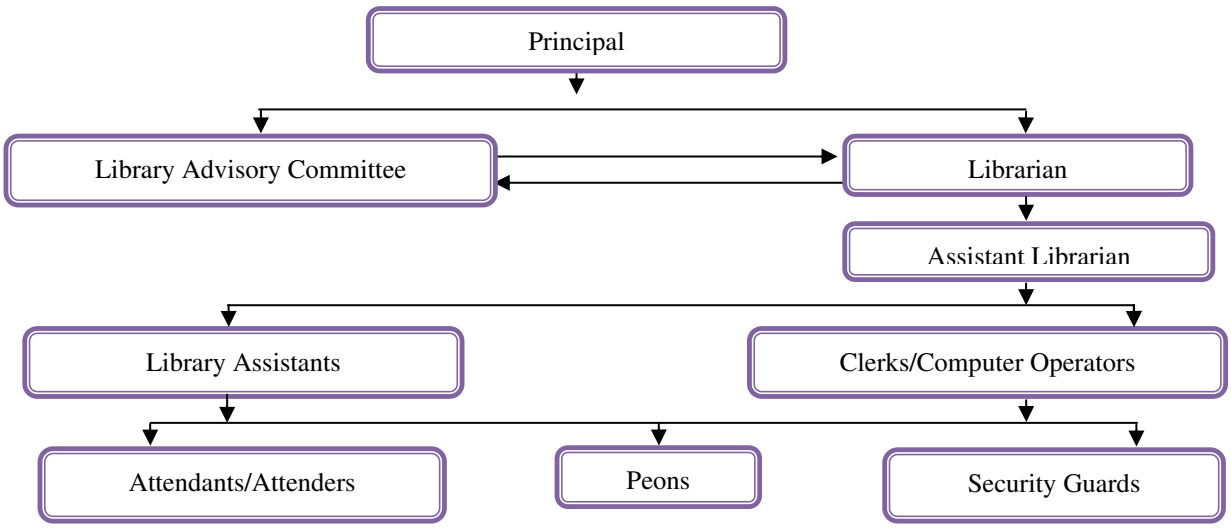
Sl. No	Information Activities	Conventional Method	New Technology
1.	Generate, Originate	Writing, Typing	Word Processing, Text editing, Character Recognition, Voice Recognition
2	Preserve Store	Manuscript, Paper-print Media	Electronic Publishing, Magnetic Storage, Videotext, Tele-text, Computer disk, ROM
3	Process	Classification, Cataloguing, Indexing	Electronic data processing, Artificial intelligence/Expert systems.
4	Retrieval	Catalogues, Indexes	Database management system, Information retrieval off line, on-line
5	Disseminate/ Communicate	Lists, Bibliographies, Abstracts, Hard Copies	Electronic mail, Electronic document delivery, Computer conferencing

The shift from print to digital information has a high impact**(Table-3)** on all components of the academic library system in India, especially the users, the services and the staff. Though information is considered as an important resource, the use of IT tools to collect and disseminate information has been in a slow pace in majority of the University libraries. This may be due to various factors like insufficient funds, inadequate staff trained in handling computers and software packages, administrative concerns, etc. In Gujarat, automation has been initiated in almost all University libraries using library automation software and is under different stages of completion, but this has been extended to only a few department libraries in each university. In the library system in the Universities, comprising of a Central library and departmental libraries, the application of IT has changed the type of services delivered through University libraries in the state, but a dynamic change is not yet reflected in the infrastructure and manpower development in the university libraries and the whole of library profession. The Ministry of Human Resource Development (MHRD) and UGC has played a major role in modernizing library services across the country by providing sufficient funds for modernizing infrastructure and by initiating consortia based subscription to online journals and databases through INFLIBNET and INDEST. This has revolutionized the research activities in the country and increased the demand for more user centric information services. Now users are more knowledgeable in using computers and the Internet for their research, and expect to have access to it in their times of need.

Regulations and Functional Organizational Structures

The Govt. of India, Ministry of Human Resource Development, Department of Higher Education vide its letter No. 1-32/2006- U.I /U.I(i) dated 31.12.2008 has approved a new scheme stipulating revised pay structure, service conditions and educational qualifications in respect of Librarians of Universities and Colleges. Further, the University Grants Commission in its Notification No.F.1-1/2002 (PS) Exmp, dated 12.06.2009 and No.F.3-1/2009 (PS) dated 23.09.2009 has issued guidelines regarding the minimum qualifications. To carry out all the functions of library, trained and qualified library professionals are required.

Figure -1 FunctionalOrganizationalStructures and Job Description of Library Personnel for College Library



Source: THE COLLEGE LIBRARY MANUAL (2015) www.dce.kar.nic.in

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Staff Pattern

The Staff Pattern of college Library is to be formulated and appointed according to the library collection, services, courses offered (UG and PG), users strength and library extension services. (The Ed 146 dated 03-10-1981 order mentioned Library staff pattern. But this good old staff pattern is not yet revised till today.) On the basis of the revised and modern techniques in the library the revised and modified staff pattern is as follows.

Table- 4 Staff Pattern of a college library

Staff Pattern	PGCourse	UG Student Strength Up to 500 OR Up to 10000 Books	UG Student Strength between 500-1000 OR 10001-20000 Books	UG Student Strength Above 1000 OR Above 20000 Books
Librarian	**1**	**1**	**1**	**1**
Assistant Librarian	**1**	**1**	**1**	**1**
Library Assistant	**1**	**1**	**2**	**3**
Library Clerk cum Computer Operator	**1**	**1**	**1**	**2**
Library Attendants	**3**	**3**	**4**	**5**
Peon	**1**	**1**	**2**	**3**
Security Guard	**1**	**1**	**1**	**1**

Source: THE COLLEGE LIBRARY MANUAL (2015) www.dce.kar.nic.in

The UGC (India) recommends college library should be constructed in five phases. Its1st phase should accommodate 50000 volumes, 2nd phase should accommodate 100000volumes and 3rd to 5th 300000 each. It is advisable to build in each phase, the stack room tothe full height of four tiers so that when necessary all the four tiers may be extended. Thiswill not disturb the work of the stack room when extension is carried out.The committee further recommends that "any proposal for new library building, fittings and furniture or for the adoption for an existing building or for its extension for library purpose should be examined by library experts appointed by the commission. (UGC:1965:117)**.**The Indian Standards Organization (ISO) has set up, at the instance of the chairman, library committee, UGC, New Delhi, a sectional committee library buildings fittings and furniture, certain standards finalized by the said committee and adopted by the UGC are as follows **(UGC:OP:Cit:102):**

Table -5- Size of library

College Library	5000 to 50000 (volumes)	20 to 100 (Journals)	1/5 of the number of student and 1/10 of the number of teachers(readers seat)	3 to 10(staff service points)

Source: Report of the library committee of UGC-Delhi 1965, 104p.

Conclusions

Modernization of libraries has found emphasis in national approach since the dawn of independence and more particularly in the post independence period as can be seen from the views of the late President Dr. Sarvapalli Radha Krishnan and the subsequent findings and recommendations the Ranganathan and the Kothari commissions. The establishment of Information and Library Network (INFLIBNET) Centre, an autonomous Inter-University

Centre of the UGC in1991 as a major National Programme with its Head Quarters at Gujarat University Campus Ahmadabad with a view to according inter university connectivity to libraries at the behest of the University Grants Commission of India was a landmark development aiming at increasing use of Information technology in the nation's libraries and since then libraries across the country have continued to transform themselves with adoption and usage of the existing and the emerging technologies in library services and management but as studies conducted in eight libraries of the Valsad district of Gujarat reveal the said libraries continue to exist in the older times sticking to the traditional methods of library management having failed to realize the importance of the adoption of modern technology . It is only ironical that these libraries which are situated in the same state as INFLIBNET have failed to benefit from the changes that INFLIBNET has brought to the world of library science and management being non compliant of the recommendations of the University Grants Commission in the context.

Suggations

1. **The libraries of the Valsad district of Gujarat will have to realize the greatness of the importance of libraries in education and will have to show desire for and intent to change.**
2. **The collages will have to appreciate the historical development of the libraries and the objectives that drove such development , the recommendations of various committees and the purpose of the establishment of INFLIBNET in 1991 and the changes that same has brought in the overall picture of the libraries and their management on modern lines in the country.**
3. **The libraries will have to adhere to the recommendations of the University Grants Commission and be accountable to the obligations that they have both towards the UGC in terms of the valuable guidelines that it provides and the grants that it makes to support these and the proper education of the students for which libraries are of central importance.**

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Micromechanical Study on PI/ ITO/ PVDF Polymeric Ternary Composite Thin Films

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Abstract

The inorganic material structured polyimide (PI) composite thin films are the revolutionary material, which will play significant role in the present era of technology. The poly (vinylidene fluoride) (PVDF) and indium tin oxide (ITO) particles were structured by modifying polyamic acid (PAA), which is precursor to polyimide. Thereafter, PVDF/ ITO/ PI ternary composite thin films were obtained by subsequent thermal imidization process. Thereafter, micromechanical properties were studied using water absorption, microhardness, strain hardening index and tensile strength. The resultant product exhibits synergisms in overall properties which are attributed to the functional characteristic that of the PVDF and ITO particle structured within the PI matrix. The incorporation of PVDF and ITO in ultra low concentration within PI matrix provides means of achieving excellent combination of micromechanical properties in comparison to unmodified PI.

Keywords: - Polyimide, PVDF, ITO, Composite Thin Films and Micromechanical.

Introduction

The emergence of ternary composite thin films with multidimensional properties has attracted the attention of the scientist's world over. Metal oxide incorporated polymer composite thin films are of great interest to many applications because oxides within polymer matrix display a very wide range of physical and chemical properties which are of interest to applications such as flexible thin films for solar cell, conducting flexible thin film transistors etc. [1-2]. The composite materials wherein inorganic particles are structured in a polymer matrix are likely to exhibit superior properties because of the size of the reinforcing material. The synergism in properties could be attributed to a very high surface/volume ratio of the particle and as well very different inter-phase between nano particle and matrix. Inorganic comprising polyimide (PI) composites are revolutionary materials, which play significant role in today's technology revolution. Aromatic polyimide, a condensation product from the reaction of pyromellitic dianhydride and oxydianiline containing aromatic heterocyclic fused rings finds use in myriad of technical and industrial field such as dielectric materials for microelectronics, high temperature adhesives, photoresists, non linear optical materials, membranes for separation technology, atomic oxygen resistant polymers for low earth oxygen resistant polymer for low earth orbit spacecrafts and Langmuir-Blodgett (LB) films. These applications arise as polyimides are associated with excellent mechanical properties, low relative permittivity, high break down voltage, low losses over a wide range of frequency, good planarization, good processability, wear resistance, inertness expansion, good hydrolytic stability, and long term stability [3, 4]. The pioneering studies in metal incorporated polyimide have been conducted by L.T. Taylor et al [5] in the laboratories of NASA. These studies were intended to assess the effect of metals in polyimide. However, the exact nature of interaction between the metal and polyimide was not reported. A series of Eu^{3+} doped

polyimide nano-composites were successfully prepared by adding very low concentration of metal salt via the solution process. The polyimide was based on two conventional monomers. Benzophenone-3, 3', 4, 4'-tetracarboxylic dianhydride (BTDA) and 4, 4' oxydianiline (ODA) soluble Europium (III) pyridine carboxylic acid was used as the inorganic phase. It was found, apart from the obvious reduction of the coefficient of thermal expansion, that the mechanical and thermal properties were also effectively improved [6-9].

The control of compositions, size and shape means control of new structured and macroscopic properties. Poly (vinylidene difluoride) PVDF is a semi-crystalline polymer exhibits isomorphic characteristics in nature with a melting point of about 170^0C. It has good mechanical strength properties i.e. tensile strength (s) of 48.35 Mpa. and resists distortion and creep at both high and low temperatures. PVDF shows very good weatherability and solvent resistant [10–11]. Indium tin oxide (ITO) $In_2O_3 \bullet SnO_2$ is a ternary composition of indium, tin and oxygen in varying proportions. Depending on the oxygen content, it can either be described as a ceramic or alloy. Indium tin oxide is typically encountered as an oxygen-saturated composition with a formulation of 74% In, 18% O_2, and 8% Sn by weight. Oxygen saturated compositions are so typical, that unsaturated compositions are termed oxygen deficient ITO. It is transparent and colorless in thin layers while in bulk form it is yellowish to grey. In the infrared region of the spectrum it acts as a metal-like mirror. Indium tin oxide is one of the most widely used transparent conducting oxides because of its two main properties, its electrical conductivity and optical transparency, as well as the ease with which it can be deposited as a thin film [7]. Since the key of the synthesis of poly (vinylidene fluoride) (PVDF) and indium tin oxide (ITO) polyimide (PVDF/ ITO/ PI) composite thin films lies on the fact of the modification of PVDF and ITO with polyamic acid (PAA) in micro level quantities, this aspect has been given a re-look and the investigation was made for knowing the size, shape and the structural feature of the micro modified PI composite. It is visualized that the modification of PAA with PVDF and ITO will result in a macro particle as very lightly cross-linked will be produced and a further increase in size will be prevented. In this research paper a deeper insight on the formation of PVDF and ITO particles within PI matrix is discussed and the causes of unusual characteristics exhibited by these functionalized PVDF and ITO material are explained in terms of micromechanical properties. The surface microhardness is one of the important parameter for the evaluation of mechanical properties of the ternary composite thin films, the detail investigations of this will, therefore, be of great importance. The developed films are the promising materials for sensors, light emitting diodes and photovoltaic devices as they exhibits good micromechanical properties along with improved morphology.

EXPERIMENTAL

Material Used

For preparation of pure and ternary blend specimens, commercially available polymers; Benzene-1,2,4,5-tetracarboxylic-1,2,4,5-dianhydride or pyromel-litic dianhydride (PMDA), 4,4'-diaminodiphenyl ether or oxydiani-line (ODA) and analytical-grade tetrahydrofuran were used supplied by M/S Merck Chemicals, Germany, while ITO (powder) was used supplied by Sigma-Aldrich Chemicals, USA. PVDF was used supplied by Aldrich, USA. The chemical were used as received.

Synthesis of PAA

In a 500mL three-necked round-bottom flask fitted with mechanical stirrer, nitrogen inlet and $CaCl_2$ drying tube, was added 0.05mol of ODA in 188g of dry dimethylacetamide.

Then, 0.05 mol of PMDA was added slowly to the solution and vigorously mixed. The solution was again stirred for a further 2 h in nitrogen atmosphere. The concentration of the solution was 10% having an intrinsic viscosity of 29.37dL g^{-1} at 26º C, and was stored at −10º C.

Preparation of PAA/ PVDF/ ITO ternary composite thin films blends

For preparing the ternary composite thin films Polyimide (PI) chosen as a host matrix in which poly vinylidene fluoride (PVDF) and indium tin oxide (ITO) will be incorporated. In PAA, ITO and PVDF were incorporated using solution cast technique to form PI/ITO/PVDF ternary composites thin films of desirable percentage using In-situ Generated Macro/ Nano Phase Structure (IGM-NPS) and with the help of spin coating unit.

Various appropriately calculated concentrations of ITO and PVDF were added to fixed quantities of PAA. The concentration of metal oxide and polymer depends upon its mass density and free surface volume of the host material, i.e. PAA. The blends were stirred for 30 min with a magnetic stirrer in a dust free environment. The concentrations and designations of the various samples are given in Table 1. For preparation of PI/ PVDF/ ITO composite thin films PAA/ PVDF/ ITO blends were weighed onto clean and dry glass plates and spread evenly using a spin-coating unit in a dust and moisture free chamber and cured at 350°C for 2 h using heavy duty oven. The cure cycle involved conditioning at 70°C for 24 h and thereafter for 30 min each at 100, 150, 200 and 300°C. This first step partially imidized the reactants. Subsequently, the films were heated at 350°C for 2h. The films were then allowed to cool slowly to room temperature. The pure PI film was also cured under identical conditions. The films were of 15 cm^2 in area and 25µm in thickness, and the same were used for all the characterizations. Table 1 gives the physical and optical characteristics of the composite films formulated.

S. No.	wt % (g) of ITO/ PVDF in PAA	Sample designations	Thermal imidization (°C)	Color	Flexibility	Transparency
1.	(Nil)	PI	350	Light Yellow	Bendable	Color Transparent
2.	(0.1) & 1	PPVITO-1	350	Light yellow reddish	Bendable & Foldable	Color Transparent
3.	(0.075) & 5	PPVITO-2	350	Light yellow reddish	Bendable & Foldable	Color Transparent
4.	(0.050) & 10	PPVITO-3	350	Light yellow reddish	Bendable & Foldable	Color Transparent
5.	(0.025) & 15	PPVITO-4	350	Light yellow	Bendable	Color Transparent

Table 1. Thermal, imidization, physical and optical appearance of PI/PVDF/ITO ternary composite thin films.

Calculation of PVDF/ ITO particles within PI matrix

Presuming the division of PI chain in domain of 100 by 100 nano meter cube, the volume occupied by PVDF and ITO is calculated. Moreover, the calculation of particles is based on concentration used and the interaction of particles with the polymeric chain, shown in Table 2.

Measurement of film thickness

For measurement of film thickness micrometer gauge was used. This is one of the simplest ways of measuring the thickness of a film sample. A highly accurate micrometer screw gauge of least count I µm manufactured by Mitutoyo Mfg. Co. Ltd., Japan, was used. Measurements were taken at different positions on each sample and the average thickness of the sample was obtained.

Sample designation	Number of molecules of PI and PVDF	Number of molecules of ITO	Number of particle in a domain attached to polyimide chain
PI	$1.434x10^{21}$	0	0
PPVITO-1	$1.567x10^{21}$	$2.605x10^{21}$	~1 domain contains 12 particle
PPVITO-2	$1.786x10^{21}$	$1.345x10^{21}$	~1 domain contains 15 particle
PPVITO-3	$1.890x10^{21}$	$2.56x10^{20}$	~1 domain contains 8 particle
PPVITO-4	$1.987x10^{21}$	$1.428x10^{20}$	~1 domain contains 3 particle

Table 2. Calculated numbers of molecules of PI/ PVDF and number of ITO particle within a domain connected to PI chain.

CHARACTERIZATIONS

Water sorption

The water sorption behavior was performed using ASTM D570 method. Samples were dried at 100°C for 1 hr. and dipped in methanol to leach out residual solvent (DMAc). These samples were dried at 120°C for 2 hrs and then dipped in 100 ml of water. The water uptake at different intervals of time was recorded till it reaches the equilibrium condition. The Perkin-Elmer's Microbalance (Model-AD-4) having accuracy up to 1 microgram was used for the purpose. The water sorption was calculated using equation (1):

Water Uptake (%) = $[(W_0-W_1)/ W_1] \times 100$

where, W_1 and W_0 are the initial and final weight, respectively.

Sample designation	Water absorption %					
	24 h	48 h	72 h	96 h	120 h	144 h
PI	2.41	2.43	2.44	2.45	2.45	2.45
PPVITO-1	1.82	185	1.86	1.88	1.88	1.88
PPVITO-2	1.78	1.81	1.83	1.85	1.86	1.86
PPVITO-3	1.81	1.82	1.83	1.84	1.85	1.85
PPVITO-4	1.92	2.02	2.03	2.04	2.05	2.05

Table 3. Water absorption (%) of PI and PI/ PVDF/ ITO ternary composite thin films for different intervals of time.

Microhardness measurement

Microhardness measurements on nano-composite films were carried out using Carl Zeiss NU_2 Universal Research Microscope - mph 160 microhardness tester with a Vickers diamond pyramidal indenter attached to it. The Vickers Hardness Number H_v) was calculated using equation:

$$H_v = 1.854 \text{ X } L / d^2, \text{ kg/mm}^2$$

Where, (L) is load in kg and (d) is diagonal of indentation in mm. For variation of H_v with load, the load was varied from 10 to 80 g.

Strain Hardening index

The dependence of microhardness on load can be studied by the Meyer's law,

$L = ad^n$, taking logarithm of both sides of the equation, we have

$\log L = \log a + n \log d$,

where, L is load, d is the length of diagonal measured in divisions, 'a' is a constant representing load for unit dimension and 'n' is the logarithmic index number. In the present case, 1 division = 8×10^{-4} mm.

Mechanical analysis

The tensile strength, tensile modulus and elongation (%) of pure PI and PPVITO ternary composite thin films were measured according to ASTMD-882 method using universal testing machine Model No-LR 100K/LLOOYDS. The samples used were of 100 micron in thickness 15 cm^2 in size. The samples were conditioned at 70^oC for 3 hrs before characterization.

RESULT AND DISCUSSION

The water sorption behavior of pure and ternary composite thin films was studied and results are stated in Table 3. The lower values of water sorption were observed for ternary composite thin films in comparison to pure PI. This can be explained on the basis of synergistic improvement in the core properties of PI due to chain boundation with PVDF and of the dispersed ITO particle in micro/ nano region within the PI/ PVDF matrix. This results in greater interfacial interaction and dense packing fraction within interstitial sites or in the available free volume of polymeric matrix, thereby filling the free space created by residing water molecules.

The variation of microhardness with load and different concentration ratio of the ternary composite thin films are discussed in this section.

Variation of H_v with load

Figure 1 exhibits the variation of Vickers hardness number (H_v), as a function of applied load (L), for PI and PPVITO ternary composite thin films. Initially, the microhardness increases with load, but thereafter beyond certain load, (H_v) tends to attain saturation value. The saturation value of H_v is due to permanent deformation caused by chain-chain slipping in polymer and can be explained on the basis of strain hardening phenomena in polymers [12]. The shape of H_v-load profile is found to be curvilinear and the trend is almost similar for all specimens. As the load is increased, the specimen is subjected to greater strain hardening and H_v is increased. Finally, when H_v tends to saturate the polymer specimen is fully strain hardened so that no appreciable change in the value of H_v is observed. This phenomenon can also be explained with the help of theory given by Amontons [13-14], where the microhardness may be correlated with the frictional force. The coefficient of friction decreases with increasing load and the frictional force is found to increase linearly with increasing load. Hence, the variation of H_v with load is curvilinear. PPVITO films have higher

level of microhardness as compared to PI Film. However, PPVITO-1 film exhibits maximum value of hardness. The increase in microhardness for PPVITO films is due to the presence of ITO crystallite particles within the compound matrix of PI/PVDF. Thus, hardened ternary composite film can be obtained when the content of ITO mixed with PI and PVDF calculated weight percentage. ITO, which is a metal oxide when added in calculated weight percentage with PI and PVDF, introduces some crystallinity, which hardens the ternary composite with better compatibility. The presence of crystallite particles of ITO in the composite matrix with size in nano/ micro regime contributes in strengthening of the ternary composites as compare to PI film. The forgoing observation thus correlates the increase in microhardness of the entire ternary composite thin films with maximum hardening for PPVITO-1 system.

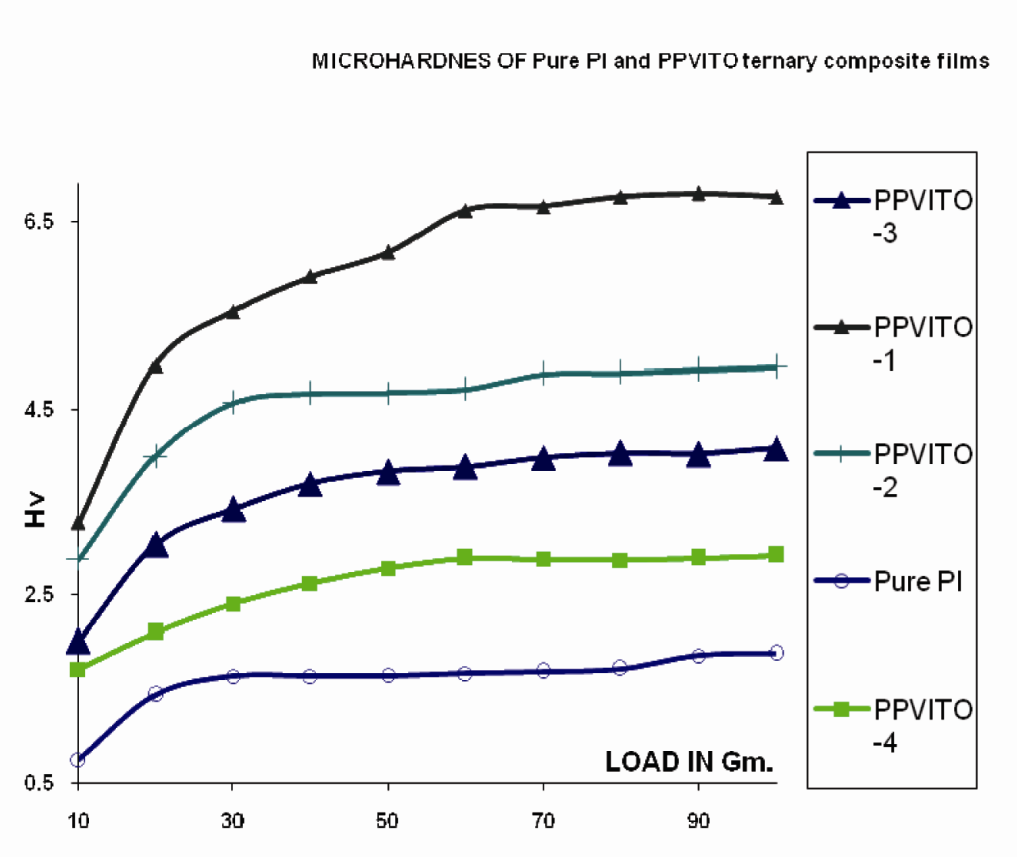

Figure 1. Variation of H_v with load for pure PI and PPVITO ternary composite thin films.

The values of n_1 and n_2 for pure and their ternary composite having calculated wt% ratio listed in table 3. From Meyer's law [11-12] it is evident that the value of H_v increases continuously with load when n is greater than 2, (n>2). The value of n (n_2) approaches to 2 in saturation region, where H_v becomes independent of load. Hence the logarithmic index number, n, can be considered as a measure of strain hardening.

Samples	Slope	
	Low load region	High load region
Pure PPI	2.82	2.5
PPVITO-1	2.80	2.00
PPVITO-2	3.02	2.02
PPVITO-3	2.99	2.31
PPVITO-4	3.01	1.31

Table 3. Different calculated values of (n) for pure PI and PPVITO ternary composite thin films in the two load regions are shown.

Tensile properties are basically characterized by measuring yield stress and corresponding elongation at break as a function of polymer composition. Tensile modulus is the key indicator of the stiffness or rigidity of the material and quantifies the resistance of the specimens to mechanical deformation in the limit of infinitesimally small deformation. Modulus of any material is approximately proportional to the strength of the link between the atoms in a material and to the number of links per unit cross-section area. Figures 2-4 shows the profile of micromechanical strength for pure and PPVITO ternary composite thin films. The PPVITO films have been found to have higher tensile strength in comparison to pure PI films. It can be inferred that the blending provided by the ITO crystallite particle to PI/PVDF compound matrix in ternary system has significantly affected the tensile strength and tensile modulus. Moreover, increase in elongation has also been observed, which might be due to presence of ITO crystallite particle in ternary blend providing flexibility to ternary system with increases strength.

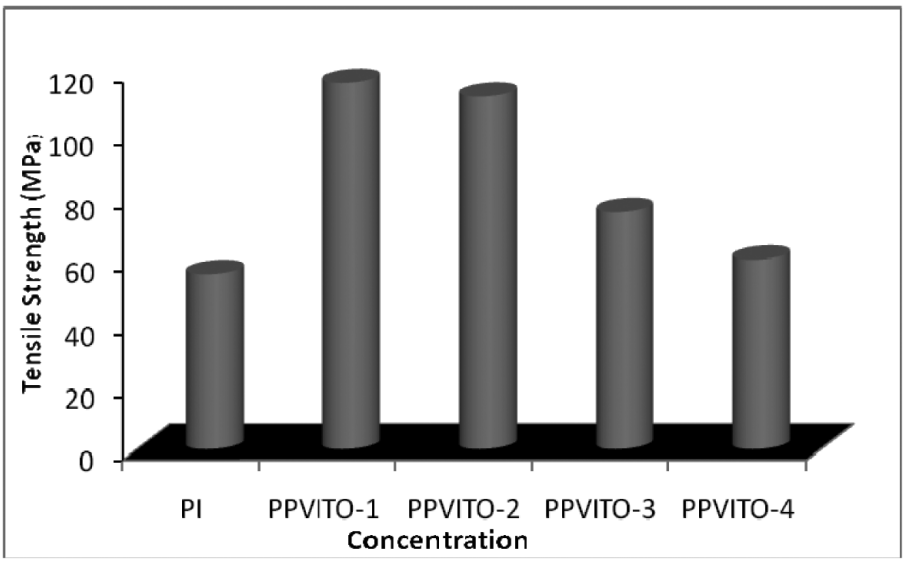

Figure 2. Bar graph of tensile strength for PI and PPVITO ternary composite thin films.

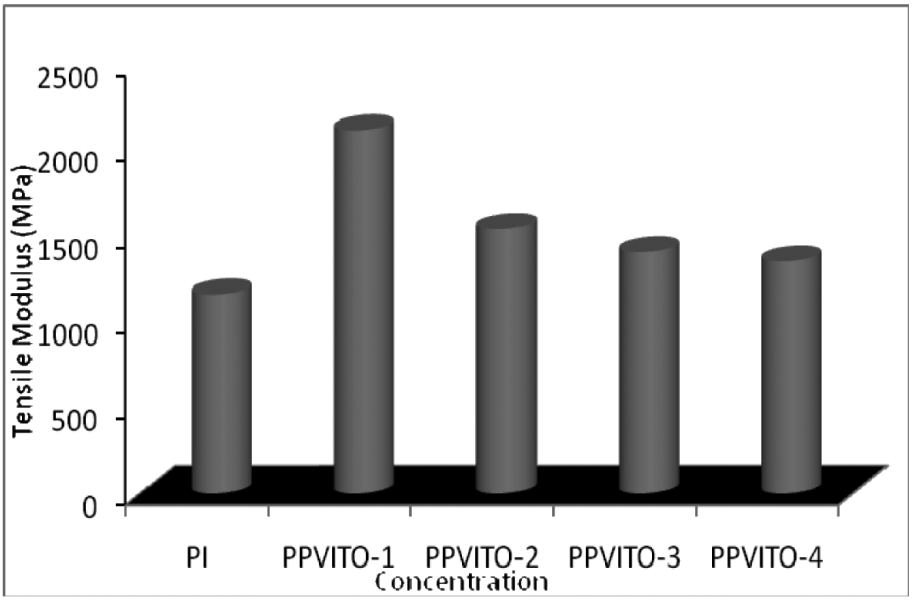

Figure 3. Bar graph of tensile modulus for PI and PPVITO ternary composite thin films.

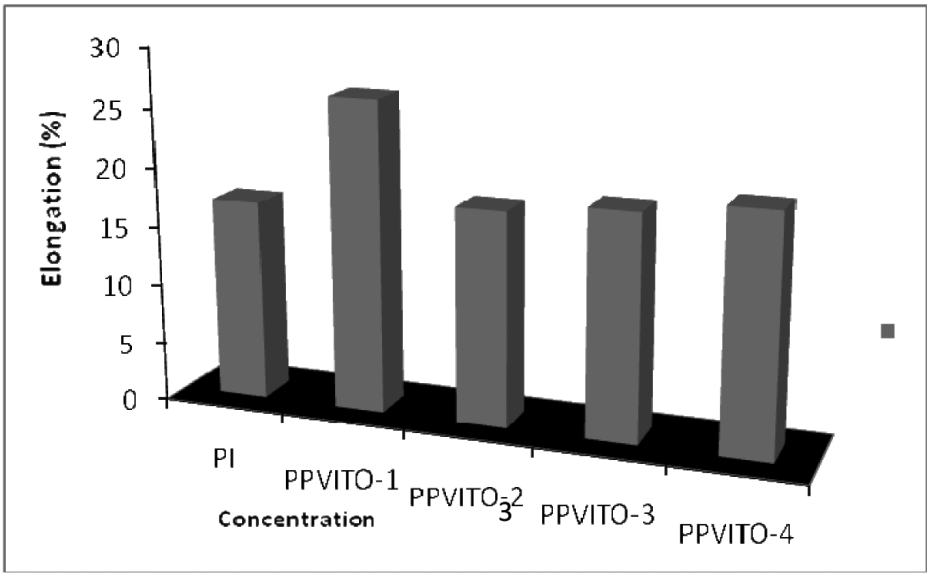

Figure 4. Bar graph of elongation for PI and PPVITO ternary composite thin films.

Conclusion

The structuring of PVDF/ ITO particle within the PI matrix is explained. The unusual synergistic macroscopic properties realized in micro modified in-situ generated blend of PAA/ PVDF have forced to perceive the formation of ITO particles and the resultant product as PVDF/ ITO/ PI ternary composite thin films. The micromechanical studies enable us to understand the issues related to the processing and structure property relationship between PVDF / ITO/ PI ternary composite thin films. The ternary composite thin films have improved

hardening in comparison to pure PI film and PPVITO-1 found to have maximum hardening. ITO gets embedded within the compound matrix of PVDF and PI in micrometer regime hence reinforcing the host material (PI) resulting into the enhancement of micromechanical properties of developed ternary composite thin films. The improved properties of the ternary composite thin films such as water absorption and micromechanical might be the demanding material for wide spectrum of application in modern technology.

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The Abyss of Culture & Self-Identity: A Study of Indian Women Novelist's Women Characters

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Abstract:

India is a land of many religions, different territories and variety of traditions. It has unique culture exhibiting its uniqueness. Literature as a means of expression of thoughts and feelings, ideas, values, views gets influenced because of culture.. The affectation process between ***Culture & Literature*** as far as female characters of Indian literature are concerned, has been the main focus of study here. As culture is inevitable part of every woman character by Indian women writers, the difference lies in their bringing these characters into existence i.e. their individuality will be dealt in a dissimilar way. However representing the ***Indian Woman*** always with her Indian sensibility & Indianness confronting the society is the attempt made by each one of them and that's why the study brings forward many shades of the woman characters by Indian women writers revealing their perceptions about Indian society & identifying their positions as an individuals and trying to assert their ***Self- Identity*** in an age- long biased culture where woman has a secondary position and needs to struggle for her rights as an individual.

Keywords: Indian Women characters, Culture, Self-Identity

As per the definition of the word in Oxford Dictionary of English Words, "Culture is defined as a set of ideas, customs & social behavior of a particular society. "

India as a country has its own dimensions. Its history of architecture, festivals, customs, traditions, rituals, beliefs together bind its personality for the world. India is not a country similar to others but it has its distinct peculiarities. The great Indian culture is one of them. Culture in India doesn't mean just a concept but it exists as an authority to control the behavioral code of every Indian. Culture has been worshipped in India since long & no one will be able to deny the power it exerts on the life style of India. Since its 5000 yrs old, it has been highly respected in India & every Indian is quite proud of it. They consider culture to be a vital force as well as the crucial factor of their life.

Here ancient festivals are carried out with vigor, enthusiasm today even, the traditional splendor is revered highly & tried to be continued in the same manners. On one side India keeps on glorifying its culture & traditions with positive tint ,but on the other side no one still is ashamed of its ill practices like Animal sacrifices, Devdasi Pratha, Widowhood, Dowry & Honourkilling, Bride burning, Female foeticide carried out on the pretext of culture.

If they sublimate their culture in one way, contradictorily they are still following certain blind beliefs in the name of Culture. Casteism, Sexuality, the Institution of Marriage and the social status are the four fronts which suffer the most from cultural point of view. Self –Identity as a term is defined by the experts as the recognition of one's potential & qualities as an individual, especially in relation to the social context.

When we apply the term to Indian socio-cultural norms we realize that Indian customs & traditions restrict the individuality of an Indian whether male or female. They cannot even think about any protest as the outcome is being an outcaste or being murdered. Class disparity also won't allow people here to come together as social position is highly respected& when

the matter comes to women it becomes worse, where they are prohibited to bypass the cultural norms. Family restrictions, caste system, marital responsibilities hinder their self expression. So on one side if you have Indian culture full of idealism, the other side is quite harmful endangering the person's healthy physical &psychological growth .It is the cultural stigma which stagnant them deep within the trap /mire of traditions & social norms.

Literature is that branch of knowledge which holds the reflection of society. Obviously Indian English Literature always has the backdrop of this socio-cultural milieu. The typical Indian society & its culture inevitably govern all the characters as well as situations in the Indian writings. Indian women writers whether earlier or contemporary raised many issues considering the Indianness of a woman in India; because in India a woman is taught to be an Indian woman first from the very childhood itself. Her childhood, her wearing, her manners, her desires everything is controlled by her family members as per the rutes set by Indian society for a woman. She needs to prove herself in becoming true, ideal, sacrificing & surrendering women like Sita, Savitri, & Draupadi itself. In today's world even she has to pass the tests so as to be approved by society & her caste. Nowhere she is dealt as an individual (A week before, news has flashed of a girl who has been asked to give virginity test before the Jaat Panchayat..)

Same concern has been dealt by Indian women writers. They talked about the conflict between Indian women and their culture, their society, their family members etc. Kamala Markandaya, Anita Desai & Shashi Deshpande's women characters also have been shown to come to terms with the society facing the cultural odds & fulfilling the social demands , but they smell the revolutionary spirit among them. Where sometimes they defy while sometimes accept the socio- cultural norms as their destiny & overcome the battle positively drawing out a solution on their own.

If we analyze their characters we find that the Indian culture has set such norms for women in India which suppress their desires & pent up feelings. While balancing tradition & womanhood in India, they get exploded and sometimes revolt against the cultural norms. At times, they prefer death as Giribala &Vidhibala instead of living a life offered by the society which they must not rebel

Women Characters by Rama Mehta

Rama Mehta's ***Inside the Haveli*** (1977) presets the story of the protagonist ***Geeta*** and her fight to establish an authentic identity.

All the women characters in the novel are looked down upon in the haveli which is a symbol of typical Indian traditions. Geeta, the heroine of the novel, when enters this world of Haveli feels stifled& suffocated because of the subjugation and suppression women are inflicted with by other males and females in the Haveli. As a modern, educated, Mumbai based woman she gets term between her modern views and traditional values of the Haveli.

However, by practice and her relentless efforts she succeeds in making the Haveli free of some of its outworn practices and outmoded concepts and similarly starts respecting the best in the family tradition. Thus the novel successfully depicts the discontented self of Geeta, who has waged a war against the patriarchy & social conventions. Nonetheless she rescues the Haveli & her own self, somehow, from the orthodox customs and sets some new trends of transformation eventually and there lies her victory as an individual.

Women Characters by Indira Goswami

With her brilliant character portrayals Indira Goswami wants us to think about age old orthodox norms &asks how a woman can break the shackles of patriarchy & achieve her self-

fulfillment. She has always shown concern for women issues in the context of Indian culture. Foremost among them are attitude to Girl-child, Child-marriage and Widowhood. A strong protest against the orthodox & conservative culture of Hindu society is expressed through her works demanding a respectable and free position to women in Indian society.

Women Characters by Manju Kapoor

Female Sexuality & Maternity both are deeply enticed together. Motherhood & women's sexuality are the patriarchal dominant norms of female identity. A woman must be a wife & a mother. So patriarchy rejects any space for a women's an individual.

Manju Kapoor's women make us take a second look at the idea of all woman meant to get married & be submissive to their husbands Her women are modern , revolt against the age old traditions, deal with problems of marriage & struggle for their survival . Today even women are more discriminated, biased in the lieu of their sex . Hers are the characters who try to assert & carve their own identity in their all man's world.

Characters of Shobha De

Shobha De is the first to explore the urban grown up women belonging to higher strata of society. She has analysed the possibility of total independence for an Indian woman by passing the patriarchal constraints & giving vent to her biological instincts. Her women are modern, elite & highly educated of upper class but trapped in the marriage cage for the sake of money & honour. It is marriage & family which restricts their social position & suppress them so as not to become a free bird experiencing life as per their wish

Women Characters by Mahashweta Devi:

The afflictions of Dalits and low castes are properly put forward by Mahashweta Devi through her stories of Rudali, Draupadi & Other Breast stories. It emphasizes the fact that women in concern i. e low –caste women suffer from triple oppression of caste, class& gender.

By drawing on subaltern characters, Devi gives the experiences of the subalterns and raise s the issues of dirty politics of sub alternisation, genderization & marginalization. She doesn't romanticize but gives the real picture of tribal women who are fighting against oppression, imperialism & patriarchy. Her tribal women challenge the system & try to overcome the fear of victimization

Conclusion:

The study gives a full-fledged view of the women characters in concern. They are studied externally as well as internally. The factors affecting and controlling their lives have been taken into consideration. The way they start confronting their lives ,struggle hard to break the shackles ,assert their voices make them united whole Indian woman who loves and respects her family yet seeks her own space in simultaneously not disturbing others lives. She cares for her family members and is ready to give her whole life to them only she needs is a respectable consideration of her own self, all of them have only one demand though the expression may be different that they should also be caressed ,loved ,adored as well as given a freedom to live their life on their own terms, but whenever her closed ones, society trample down her territory of existence ,she refutes all the roles ensured to her and emphasizes the fact that she is a human being with her own desires, dreams, ambitions, hopes & expectations and if society or anybody else rejects it to her she will attain her selfhood at any cost.

The women characters by the selected women writers in the present study are quite different as the don't accept death submissively though situations become worst for them except in case of Giribala & Vidhibala. For them lack of education ,the society at that time

may be held responsible to make them do so .

At the same time though a tribal & brutally raped Draupadi appears quite a new woman accepting the cruel reality & fighting her battle on her own. Aasharani, Amruta, Ishita & Shagun are the modern educated ones still suffer the disgraces inflicted by the society. But finally emerge as winning spirits having acquired the most coveted after a long inner as well as outer struggle to break the shell of parameters imposed upon them to be ideal.

All the characters though quite differently treated by quite different writers yet they show the emergence of a new woman who is not at all an epitome of any goddess or incarnation ,but a simple human being with all human instincts as every man has. She expects not to be biased but understood aptly and given an opportunity to live her life her own way with all its odds & evens. The broad mindset of Indian society is the desired milieu; however she also announces her open defiance of the old rotten rituals and customs who degrade her from equality to slavery & harassment.

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A Suggestive Mechanism of Reduction of Cr(VI) with V(II)

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Abstract

Trivalent chromium Cr(III) is naturally occuring enviromently pervasive and traced ion in man and animal.Hexavalent chromium Cr(VI) is a known inhaletion,irritatent and associated with respiratory cancer.When reduced Cr(VI) gives Cr(III) as usual reduction product with fraction of Cr(II), is also observed particularlly with strong reducing agent in an inert atmosphere.Both Cr(II) and V(II) have been used for reduction of Cr(VI).Various methods are adopted particularlly potentiometric titration and polarography.

Key words: Trivalent, Inhaletion, Titration.

Cr(III) is an essential microelement that can be toxic in large doses (100 mg/L) (Khawaja, 1998). The toxicity of chromium compounds depends on the oxidation state of the metal. Cr(VI) is anthropogenic from a number of commercial and industrial sources. It readily penetrates biological membranes and has been identified by as an industrial toxic. Both Cr(III) and Cr(VI) have hight chronic toxicity to aquatic life.

In aqueous solution Cr(VI) exists mainly as ions $Cr_2O_7^{2-}$ and $HCrO_7^-$ in equilibrium with each other as:

$Cr_2O_7^{2-} + H_2O \rightarrow 2HCrO_7^-$.

However, other alternatives like H_2CrO_4, $H_2Cr_2O_7$, $HCr_2O_7^-$, CrO_4^{2-} are also possible and may exist under suitable conditions. An increase in acid strength is found to favour the formation of the dimer while in basic solution the monomer predominates. Normally the bichromate ion ($HCrO_4^-$) is found in considerable quantities and quite frequently it acts as the active oxidant (4). According to Carrington (5) chromate ion along with vanadate ion is an example of closed shell ions for no d electrons are left over in them and this makes them strong electron acceptors.

When reduced Cr(VI) gives Cr(III) as the usual reduction product though formation of Cr(II) is also observed with particularly strong reducing agents and in an inert atmosphere. The reduction as such involves acceptance of three electrons and according to the principle of one equivalent changes (6,7,8) should proceed in separate steps through intermediates. These intermediates may correspond to oxidation states like Cr(V) and Cr(IV) and numerousreferences of both of them are available in the literature (9,10,11) of these two states, Cr(V) is presumed to have a transitory existence only.

Both Cr(II) and V(II) have been used for the reduction of Cr(VI). In the titration with Cr(II) the electrode potentials are found to stabilize extremely slowly in spite of the fact that the visible reaction is quite fast. So it is reported to be impracticable (12). The reduction with V(II) has been studied (13) in sulphuric acid medium and two inflexions obtained, the first corresponding to oxidation of V(II) to V(IV) with reduction of Cr(VI) to Cr(III). The second

corresponded to the reduction of V(IV) formed in the first step to V(III). In the present study the reduction of Cr(VI) has been followed with V(II) in hycrochloric acid medium to examine the possibility of oxidation of V(II) to any state higher than V(IV) as well as to get some indications of intermediate steps in the reduction of Cr(VI).

An M/50 solution of Potassium dichromate was prepared in air-free water and used as the stock solution. The reaction of Cr(VI) and V(II) was found to be sufficiently fast to permit direct titration which is the solvated electron mechanism of the action of a strong oxidizing agent. No doubt formation of free radical by this mechanism requires too high a potential (Calc. 2.8 V) still it cannot be ignored as a possibility. The production of CrO_3 free radical in acidic solutions also cannot be ruled out and may be responsible for the attack on Au.

The acid concentration over which the reaction could be studied varied from N/20 to 3N. At acid concentration greater than 3N, reduction of Cr(VI) by HCl itself could be easily detected by holding a starch iodide paper just above the acidified dichromate solution.

As V(II) solution was added to the acidified dichromate solution no significant change in colour could be observed except that the original orange colour slowly faded to light yellow and a sharp potential fall was observed when the colour became straw yellow. This solution after being almost neutralized on addition of copper sulfate solution gave a yellow precipitate which is typical of vanadate. Also when the solution was made alkaline with ammonium hydroxide a greenish gel like precipitate was obtained. This clearly indicates that vanadium and chromium at this stage are present in the system as V(V) and Cr(III) respectively.

Further addition of V(II) produced a green colour which changed to blue as more and more of V(II) was added. This blue colour lasted till the end of the experiment for solution of acid concentration greater than N/2. But at lower acid concentrations addition of V(II) in the last stage of titration produced a brown colour.

The amount of V(II) added from the disappearance of yellow colour to the appearance of blue in between which the solution remained green increased as the acid concentration of the reaction mixture decreased.

Polarographic reduction of Cr(VI) was followed in neutral KCl solutions. These could not be studied in HCl solutions as the curves obtained did not show any wave. Instead there was a continuous rise in current when applied potentials became more negative than -1.25 V. in solutions 0.1N in KCl and 10^{-3} M in $K_2Cr_2O_7$ one obtained the curve A. This shows a hump like maxima at -0.45v. Gelatin had practically no effect on the nature of these maxima and so possibly it is due to some unusual factors. But in solutions 1N in KCl (curve C) this maxima gave way to a typical wave though the nature of the rest of the curve remained practically unaffected by this change in concentration of the supporting electrolyte. In the complete curve altogether four waves were obtained. The half wave potentials of these were found to be -0.45, -1.0, -1.6 and -1.8 volts (SCE) respectively. The first of these perhaps originated due to change in surface films as indicated by change in its nature by changing the composition of the electrolyte while the others correspond to reduction of Cr(VI) to Cr(III), Cr(II) and Cr(0) respectively.

The experimental findings are tabulated as follows:
Reduction of Cr(VI) with V(II)
Cell: 20 ml N/100 potassium dichromate in X N HCl
Burette: Y N Vanadous chloride.
Indicator electrode= Platinum electrode.
One gm mole $K_2Cr_2O_7$ = Z gm mole V(II).

Curve no.	X	Y	Z		
			I	**II**	**III**
A	3.03	0.24	1.92	3.00	6.06
B	2.05	0.235	1.88	2.94	5.88
C	1.03	0.245	1.11	3.06	6.12
D	0.48	0.25	1.00	3.00	6.00
E	0.103	0.225	1.13	3.04	5.97
F	0.048	0.215	0.645	2.97	6.13

An examination of the graphs of emf versus volume of reagent show that with the addition of V(II) there is a rise in the potential of the system and this continues till a sharp fall occurs at a point corresponding to the addition of one mole of V(II) for every mole of Cr(VI) originally taken. The reaction responsible for this can be written as :

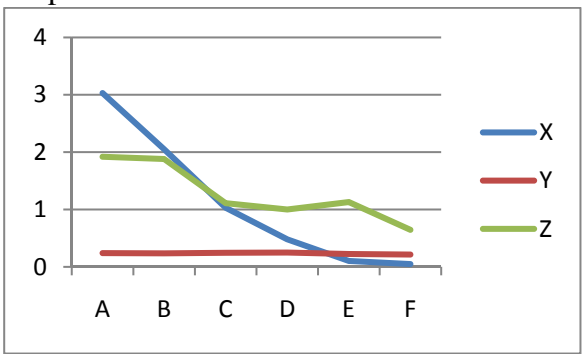
Cr (VI) + V (II) → Cr (III) + V (V)

and fits well with the results of chemical tests done for identifying

the species present at this stage and described earlier. Presence of Cr(III) is further indicated by the green colour that appears immediately after this stage on further addition of V(II) and that of V(V) by the blue colour which shows that the vabadium so far is present in some higher oxidation states (most probably V(V) and is getting reduced to V(IV) (Blue) on addition of V(II)).

The behavior of this first inflexion with change in acidity was quite interesting. In solution less than N/2 in acid the fall in potential was observed from the very beginning but the formation of V(V) was supported by chemical tests under all the conditions studied.

Graph Number 1



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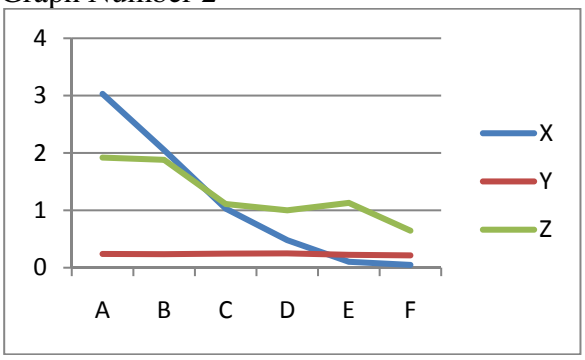
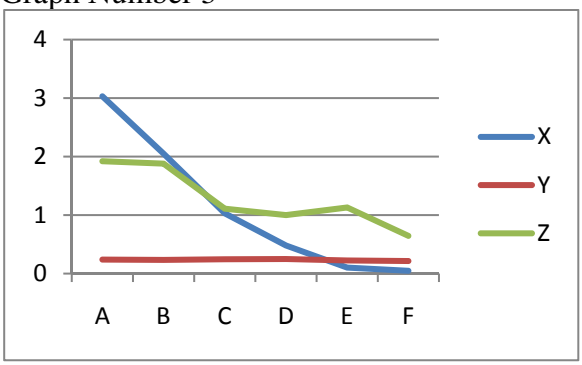


Graph Number 3



In addition to this not well defined inflexion two more inflexions were obtained. The first of these corresponded to consumption of three moles of V(II) for every two moles of Cr(VI) taken. the solution at this stage was found to be blue under all the conditions. As chromium is already present in the system as Cr(III) and this cannot be further reduced by V(II) on thermodynamic consideration, this inflexion must result from the reduction of V(V) to V(IV). The overall reaction up to this stage can be written as:

$2Cr\ (VI) + 3V\ (II) \rightarrow 2Cr\ (III) + 3V(IV)$

The third and final inflexion that was observed corresponded to consumption of yet another three moles of V(II) and must result from the reduction of V(IV) to V(III), the only reducible specie now present in the system. the overall reaction can be written as:

$Cr\ (VI) + 3V\ (II) \rightarrow Cr\ (III) + 3V(III)$

Both these latter inflexions were quite sharp in solutions more than N/2 HCl and the size of the inflexions changed but little with the change in acid concentration of the medium.

Considering the known structures of different reactants involved the reaction sequence can be written as follows:

The first inflexion is most probably due to the reaction

$Cr\ (VI) + V\ (II) \rightarrow Cr\ (III) + V(V)$

The reaction as written is an example of a complementary reaction and may be expected to proceed as such in a single step but the large number of electrons involved makes it quantum mechanically improbable. Hence it must proceed in separate steps.

Additional support to this view comes from the rising portion of the curve at this stage which shows formation of particles more oxidizing than the starting oxidizing agent. As the standard potentials of the couples Cr(V)/Cr(III) (1.75 V), Cr(IV)/Cr(III) (1.5 V) are more

oxidizing than that of the couple Cr(VI) /Cr(III) (1.36 V) the rising portion of the curve indicates presence of either or both of the particles Cr(V) and Cr(IV).

Presuming this the reaction sequence can be written as:

Cr (VI)+ V (II) → Cr (V) + V(III) ……..(1)

Cr (V) + V (II) → Cr (IV) +V(III) ……..(2)

Cr (V) + V (III) → Cr (IV)+ V(IV) ……..(3)

Cr (VI)+ Cr (IV) → 2Cr (V) ……..(4)

Cr (V)+ V (IV) → Cr (IV) + V(V) ……..(5)

Cr (IV) + V (IV)→ Cr (III) + V(V) ……..(6)

of these step (1) initiates the reaction sequence giving Cr(V) which may further react either with V(III) (now accumulating in the system) or with V(II) (being added to the system). in both these cases one gets Cr(IV) (steps 2,3). Cr(IV) being very unstable can then react with Cr(VI) present in the system in large quantities to give Cr(V) (step 4). Cr(IV) is also regenerated in step (5) and the end products are Cr(III) and V(V).

The observation that the first inflexion shifts with fall in acid concentration towards lesser consumption of V(II) may arise from more than one reason. These oxidations are reversible ones and the fall is acidity may not let them proceed to completion. The equation for the overall reaction can be written as:

$Cr_2O_7^{2-}$ +2V^{2+} +6H^+ H_2O → 2Cr^{3+}+ 2 $[V(OH)_4]^+$

and from this it is clear that fall in H^+ concentration according to law of mass action is likely to lead to incomplete reaction.

The other seems to be that the fall in acid concentration changes the formal potentials of the intermediates in such a way that the rising tendency of the potential is more than neutralized and a sudden fall occurs.

Any logical presentation of the possible path like inner or outer sphere complexes, atom or electron transfer etc for these reactions is not possible as the chemistry of the intermediates Cr(V) and Cr(IV) and their nature in solution is not known. But the observations definitely indicate that under the conditions studied the oxidation of V(II) proceeds to V(V) and not to V(IV) only as reported earlier (13).

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Effect of Selected Yogasnas and Pranamayam on Strength and Efficiency In Softball Players

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Abstract

The effect of Yogasnas and Pranamayam on the mind is said to have immediate effects. Skill in any game is pre-requisite for top performance of a player, simultaneously; it becomes highly impossible for any player to achieve such level of performance without physical and mental fitness. Professional players are turning to yoga as a way to improve their mental and physical performance. The present study focus on the effect of selected Yogasanas and pranayam on Strength and Efficiency of Softball players post test as on playing ability in Softball. Data for the present study was collected from 20 female Softball player's aged between 18- 20 years studying in college. Single experimental group design was used for the study. five weeks Yogasanas and pranayam training programme schedule was planned and given to the samples and pre and post training records of Softball playing ability was measured and compared using student's 't' one tailed test. Results revealed that practicing some selected Yogasanas and pranayam are effective to some extent in developing playing ability in Softball.

Keywords: Efficiency, Pranamayam, Softball players, Strength , Yogasnas.

Introduction

The old tradition Yoga since from 2500 year is now regarded in the western world as a holistic approach of healthy life and is classified by the national institute of health as a form of complementary and alternative for medicine. Regular practice of yoga promotes Strength, Endurance, Flexibility and facilitates characteristics of friendliness, compassion and greater self control, while cultivating a sense of calmness and well being. Yoga is a form of mind body fitness that involves a combination of muscular activity and an internally directed mindful focus on awareness of the self, the breathe and energy. Yogasanas and pranayam practices enhance muscular strength and body flexibility, promote and improve respiratory and cardiovascular function, reduce stress, anxiety, promote recovery from and treatment of addiction, depression, and chronic pain, improve sleep patterns and enhance overall wellbeing and quality of life. Professional athletes are turning to yoga as a way to improve their mental and physical performance. Skill in any game is pre requisite to exhibit top performance of a player, simultaneously; it becomes highly impossible for any player to achieve such level of performance without having a concrete base of fitness. Softball is the fastest game in the world. Softball is more often a game of quick bursts of speed from side to side and fluent forward and backward movements on playing surface. Various relaxation techniques are also recently being applied among athletes in competitive sports to improve overall performance ability. It was therefore an attempt from the researcher to see the impact of yoga training program on playing ability in Softball. Purpose of the study was to know the playing ability

of Softball players with effect of selected Yogasanas and pranayam training program.

Methodology

To fulfill the purpose of the study 20 female Softball players aged between 18 to 20 years studying in College were selected. The experimental design for the present study was a single group design considering an experimental group. Various asanas such as Naukasanas, Sarvangasana, Halasana, Shalabhasan, Ardhamachhindrasan, Trikonasan, Padmasan, Bhujangasana, Dwipadhastan and Dhanurasan etc. was administered on samples for eight weeks. Duration of practice of asana per day was around 50 minutes with 15 minutes Pranayam. Pre test and post test to find out the playing ability was administered on samples. Tools used for collection of data pre and post was AAPHERD sport skill battery test.

Results and discussion

The pre-test and post –test scores were compared by using student's't' one tailed test.

TABLE NO. 1

Showing significant difference between pre and post training scores of players in regards to speed soft ball throw.

	N	Mean	SD	df	't' calculated
Speed soft ball throw	20	3.3	11.43	19	1.29

Level of significance at .05 = 1.72

In the above shown table calculated't' is less than tabulated 't' at .05 level of significance. Hence selected yogasanas and pranayam has no effect on speed soft ball throw.

TABLE NO. 2

Showing significant difference between pre and post training scores of players in regards to pitching

	N	Mean	SD	df	't' calculated
Pitching test	20	95	537	19	0.85

In above shown table calculated 't' is less than tabulated 't' at .05 level of significance, hence it may be concluded that the selected yogasanas and pranayam has no effect on pitching capacity in softball.

TABLE NO. 3

Showing significant difference between pre and post training scores of players in regards to catching .

	N	Mean	SD	df	't' calculated
Catching test	20	5.92	41.82	19	12.66

As shown in table calculated 't' is more than tabulated 't' at .05 level of significance, hence it may be concluded that the selected yogasanas and pranayam has much effect on catching in softball.

TABLE NO. 4

Showing significant difference between pre and post training scores of players in regards to hitting.

	N	Mean	SD	df	't' calculated
Hitting test	20	74.08	447.95	19	18.94

In the above shown table calculated't' is more than tabulated 't' at .05 level of significance, hence it may be concluded that the selected yogasanas and pranayam for the present study has much effect on hitting in Softball.

On the basis of gathered data and statistical interpretation it is found that practicing some selected Yogasanas and Pranayam are effective in some extent in developing the playing ability of Softball players. Results revealed in the present study that practicing some selected Yogasanas and pranayam affects positively on catching and batting ability of players. But throwing and pitching ability was not affected. This may be due to the reason that these factors may be increased by daily practice, and if yogasanas and pranayam along with sill is practiced it may have further positive effect on performance.

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Impact of Intermittent Material Renewable Resources on Energy Storage Conversion, Management and Control

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Abstract

Energy storages are becoming indispensible for operation of DGs integrating renewable power sources. Advancement in technology now ensures power storage and delivery from few seconds to days/months. Optimized selection, sizing and setting of Energy Storage System (ESS) will be critical for design engineers. Effective implementation and usage of ESS in the distributed grid requires intelligent and flexible energy management strategies capable of handling the dynamics of distributed systems. Most energy management systems focus on grid power balance and SOC of ESS. Present research works focus on implementing energy management to minimize operating costs, manage uncertainties and reduce emissions. Application of optimization tools and techniques has enabled the development of flexible and effective energy management strategies. An effective dispatch and management strategy also needs to ensure efficient storage operation so as to enable its full life cycle usage. The challenge is to prioritize these objectives and evaluate a strategy most optimum for the considered application which can assure reliable power delivery without affecting system stability.

Keywords: - Energy Storage, ESS and Management

Introduction

Power and energy systems research emphasizes all aspects of electrical energy, innovation in energy generation and distribution, grid intelligence, renewable resources, electric transportation, and efficient devices and buildings. This Research addresses machines and systems for the conversion, delivery, and use of energy in electrical form. The activity ranges from controls and reliability for large utility systems and micro grids to energy-harvesting devices for micro sensors. Electrical energy continues to be the foundation of the modern economy. The growth of solar energy, wind energy, and other resources, combined with trends such as electric and hybrid vehicles and airplanes, will a have profound impact on global society. The demand on various sources of energy especially renewable energy sources have significantly increased in the 21st century. However, such demand of such escalation and technology implementation is accompanied with some issues.

Electrical power generation is changing dramatically across the world because of the need to reduce greenhouse gas emissions and to introduce mixed energy sources. The power network faces great challenges in transmission and distribution to meet demand with unpredictable daily and seasonal variations. Electricity is not usually stored per se. Energy storage technologies instead convert electricity to other energy forms (gravitational, pneumatic, kinetic, chemical), with a characteristic turnaround efficiency usually driven by the simplicity or complexity of conversion and reconversion between electricity and the stored energy form. For example, it can be 90-95% efficient to convert electricity to kinetic energy and back again by speeding up or slowing down a spinning flywheel. Storing electricity by compressing and later re-expanding air is usually less efficient (75%), since

rapid compression heats up a gas, increasing its pressure, making further compression difficult. The electric energy lost in energy storage drives up the overall cost of generating reliable electricity from wind or solar power. Another cost of energy storage is the capital investment required for the energy storage system. These costs are driven by the weight of material or volume of containment vessels needed to store a given amount of energy, termed energy density (kWh/kg or kWh/liter), again characteristic of each energy storage form.

Electricity systems require the energy supply to match the fluctuating demand of energy on a second by second basis. Renewable energy systems usage is increasing worldwide, yet, power industries do not depend solely on them due to the intermittent supply. Renewable energy systems intermittency is mainly due to the unavailability of the natural phenomena that causes the generation of the energy throughout the day. Additionally, RES cannot be easily regulated or dispatched to the energy supply chains because they produce high energy generation when not needed. A main solution to this problem is to deploy energy storage systems (ESS) allowing the storage of the electrical energy. Electrical Energy Storage (EES) is recognized as underpinning technologies to have great potential in meeting these challenges, whereby energy is stored in a certain state, according to the technology used, and is converted to electrical energy when needed. However, the wide variety of options and complex characteristic matrices make it difficult to appraise a specific EES technology for a particular application. This paper intends to mitigate this problem by providing a comprehensive and clear picture of the state-of-the-art technologies available, and where they would be suited for integration into a power generation and distribution system. This research is an overview of the operation principles, technical and economic performance features and the current research and development of important EES technologies, sorted into six main categories based on the types of energy stored. Energy Storage (ES) is defined as the conversion of electric energy into a form in which it can be stored until converted back to electrical energy. Recently, several power utilities are leaning towards RES in addition to conventional power generation methods [1-5]. According to efficient energy storage has various benefits to power utilities:

Electrical power generation is changing dramatically across the world because of the need to reduce greenhouse gas emissions and to introduce mixed energy sources. The power network faces great challenges in transmission and distribution to meet demand with unpredictable daily and seasonal variations. Electrical Energy Storage (EES) is recognized as underpinning technologies to have great potential in meeting these challenges, whereby energy is stored in a certain state, according to the technology used, and is converted to electrical energy when needed. However, the wide variety of options and complex characteristic matrices make it difficult to appraise a specific EES technology for a particular application. This paper intends to mitigate this problem by providing a comprehensive and clear picture of the state-of-the-art technologies available, and where they would be suited for integration into a power generation and distribution system. The research starts with an overview of the operation principles, technical and economic performance features and the current research and development of important EES technologies, sorted into six main categories based on the types of energy stored. In view of the projected global energy demand and increasing levels of greenhouse gases and pollutants (NO_x, SO_x, fine particulates), there is a well-established need for new energy technologies which provide clean and environmentally friendly solutions to meet end user requirements. It has been clear for decades that renewable energy sources such as wind and solar would play some role in the modern grid with

predictions varying on the levels of penetration and the effect that these renewable power sources would have on the stability of national grids. The role that renewable energy will play in the future energy mix is now becoming more obvious as this sector matures.

EES technology refers to the process of converting energy from one form (mainly electrical energy) to a storable form and reserving it in various mediums; then the stored energy can be converted back into electrical energy when needed [4] and [5]. EES can have multiple attractive value propositions (functions) to power network operation and load balancing, such as: (i) helping in meeting peak electrical load demands, (ii) providing time varying energy management, (iii) alleviating the intermittence of renewable source power generation, (iv) improving power quality/reliability, (v) meeting remote and vehicle load needs, (vi) supporting the realization of smart grids, (vii) helping with the management of distributed/standby power generation, (viii) reducing electrical energy import during peak demand periods.

In many scenarios, demand for EES and selection of appropriate EES technologies have been considered to be important and challenging in countries with a relatively small network size and inertia. For example, the UK electric power network currently has a capacity of Pumped Hydroelectric Storage (PHS) at 27.6 GW h [6]. Although PHS facilities have been built worldwide as a mature and commercially available technology, it is considered that the potential for further major PHS schemes is restricted in the UK [6]. Therefore, it is of great importance that suitable EES technologies in addition to PHS are explored. Derived from the study of recent publications various EES technologies with potentials address the challenges faced by the UK energy systems [1-20]. Many countries potentially need to address similar challenges which can be solved or improved by suitable EES technologies.

Statement of problem/ research objective

Defining the overview on operations, control and management on energy storage conversion

Natural resource scheduling and commitment of key function

Fundamental notions role and formulation study focused on measurement, requirement, observability, bad data identification, analysis and processing.

Furthermore, ESS energy discharge rate plays a major role in the embedment of the energy storage systems with the RES to current power grids. This leads into classifying ESS based on their different discharge rate:

Systems to supply energy for a fraction of a second to more than a second to address power storage

Systems to supply energy for more than a few minutes to several hours and days for load levelling and energy management

Experimental section when selecting any ESS for renewable energy systems application, several characteristics must be taken into considered: Power (MW) and Storage capacity (MWh), Discharging Time, Response Time, Efficiency, Lifetime and Cost.

Proposed research work is attempt to presents an overview of emerging natural renewal energy storage technologies along with a discussion some of the key technical challenges, management and control.

Research Methodology

Implementing an energy infrastructure that uses more energy in its manufacture and deployment than it produces in its lifetime is not a viable pathway for the future. In fact, our current energy infrastructure has an energy payback ratio of about 0.3 meaning it converts

only 30% of the input energy (in the form of fossil fuel) into electricity. A sustainable energy system will have an energy payback ratio greater than one. There is, however, the persistent myth that it takes more energy to manufacture renewable than they produce in their lifetime. Renewable electricity is generally defined as derived from any energy resource that is replenished in timescales of days to decades. Renewable electricity can be directly derived from the sun, such as thermal, photoelectric and photochemical energy; indirectly from the sun, such as hydroelectric, wind and photosynthetic energy stored in biomass; or from natural processes in the environment, such as geothermal and tidal energy. Renewable power sources generally have lower environmental externalities than conventional power sources, particularly lower emissions of conventional pollutants and greenhouse gases.

For our own security we must reduce our dependence on foreign sources of energy. However, for our economy to grow we must obtain additional energy. Developing countries like us must also compete for this energy, because before we raise our standard of living and join the world's developed nations we must have additional energy source. Like a dark cloud hanging over all of this are the pollution and global climate change these fuels produce. As we use more coal, oil, and gas, we only exacerbate the problem.

Currently, this world is inhabited by more than 5 billion individuals and is powered ultimately by solar energy. The food we eat and the oxygen we breathe comes from photosynthesis. Can we use this energy from the sun that indirectly powers our bodies to provide the energy we need to run our society?

Sustainable in this context means capable of supplying a growing population with energy without destroying the environment within which it is used. It must also include the ethics of using the earth's resources, particularly fossil fuels. It is completely unethical for us to squander the finite non replaceable resources of the planet in a one-time use without any accountability to future generations and our environment. We must try to look ahead, envision a future society, give it a voice, and use this to point out those issues that would clearly affect future lives. To consume a resource without developing a replacement is clearly an issue that will affect future generations, which include:

- To modify an existing energy infrastructure or build a new energy infrastructure requires money and energy that must come from existing resources.
- Advanced renewable energy systems can provide long-term benefits to society namely, sustainability.
- Manufacturing renewable energy systems for the developing world provides an economic.

Global electricity generation has grown rapidly over the last decade. As of 2012, the annual gross production of electricity reached approximately 22,200 TW h, of which fossil fuels (including coal/peat, natural gas and oil) contribute around 70% of global electricity generation. To maintain the power network stability, the load balance has mainly been managed through fossil fuel power plants. To achieve the target of reducing CO_2 emissions, future electricity generation will progress with diminishing reliance on fossil fuels, growing use of renewable energy sources and with a greater respect for the environment. However, most renewable energy sources are intermittent in their nature, which presents a great challenge in energy generation and load balance maintenance to ensure power network stability and reliability. Great efforts have been made in searching for viable solutions, including Electrical Energy Storage (EES), load shifting through demand management, interconnection with external grids, etc. Amongst all the possible solutions, EES has been recognized as one of the most promising approaches.

Our approach

As very encouraging quantum efficiency has been achieved in multilayer molecular films, it is therefore, visualized to incorporate desired functional characters in ultrathin polyimide films and integrate these films with graded functionalities in single monolithic film. The primary aim was to investigate the incorporated functional characteristics of the individual ultrathin films and to understand the fundamental aspects associated with the conduction of charge through the multi-layer polymeric assembly and its probable application in flexible solar cell formation.

We had used polymer substrate as polyimide at its precursor poly (amic acid) stage. Thereafter, antireflective layer such as gallium arsenide (GaAs) and gallium indium phosphide ($GaInP_2$) in polyimide precursor to form polyimide film. Polyimide film comprising rhuthenium-bi-pyridyl, semiconductors as CdSe TiO_2 or CuS etc.. Furthermore, Carbon nanotubes and fullerene as charge transporting materials which was synthesized and characterized.

The synthesis of new photovoltaic materials; the combination of materials into new device architectures; studies of the effect of processing conditions and other factors on morphology and performance; and manipulation of materials at a molecular level, exploiting molecular self-assembly and modification of interfaces. During this period power conversion efficiencies of over 2% have been achieved in four distinct classes of device and Quantum Efficiency or QE of over 20% achieved in several others. QE is the ratio of electrons delivered to the external circuit per incident photon of a given wavelength, and is the figure of the merit in organic photovoltaics. High QE is necessary, though not sufficient condition for high photovoltaic efficiency. In organic devices, the value is still far from the values of 80-90% typical in inorganic solar cells. Several studies of issues relating to production, field performance, and stability of the materials used have been reported. Understanding of device function and the underlying physical processes remains limited, but progress has been made with the understanding of photocurrent generation and charge separation. Major breakthroughs in cell performance in terms of power conversion efficiencies of over 2% have now been achieved. Organic electronic materials are of interest for future applications in solar cells. The results for single layer organic materials have been disappointing, but high photocurrent quantum efficiencies can be achieved in composite systems including both electron donating and electron accepting components. The last two years have seen an unprecedented growth of interest in solar cells made from organic electronic materials. This is partly due to the rapid growth of the photovoltaic market, which has stimulated research into longer term, more innovative photovoltaic technologies, and partly to the development of organic electronic materials for display applications. Organic materials are attractive for photovoltaic primarily because of the prospect of high throughput manufacture using reel-to-reel or spray deposition. Additional attractions are the possibilities for ultra thin, flexible devices, which may be integrated into appliances or building materials, and tuning of colour through chemical structure. The functionalization with regards to light absorption especially in red is feasible due to incorporation of photo functional species in ultrathin polyimide films. In-situ generated nano phase structures (IGNPS) in polyimide have been produced and they in turn improve synergistically the core properties of the polyimides. This aspect is very significant as loss of core properties due to specific fictionalization is compensated due to the presence of IGNPS. The technological issues important for possible manufacturing of the devices in future have been addressed concurrently. The conversion of ultrathin

functionalized polyimide film into monolithic single film is contemplated and the technological solution for the same.

IGNPS Concept is emanated from earlier studies on "Blend Components in-situ generated by Micromodification of PI precursor". The synergism in Macroscopic properties due to micro level modification is rationalized by creation of IGNPS (functional synergist) in nano domains and the resultant properties are imbibed through inter-nano domain manifestation. The very formation of IGNPS in polyimide is the result of crosslinking (inter chain), loop formation (intra chain), Pendant, Electronic interaction etc. of polyimide macromolecules. Wide range of specific functionalities could be imparted to polyimide via IGNPS approach while their core properties are either retained or improvised. The polyimide nano composite comprising IGNPS may find wide applications and the concerted efforts are on in exploiting these applications.

A series of various metalloid incorporated polyimide thin composite films were prepared using an insitu generation approach. The composite films obtained were characterized with regard to their electrical properties to facilitate the study of morphology structural property relationships. The resultant products were found to exhibit an unusual synergistic change in macroscopic properties by micro modification realized by the formation of single monolithic films. The overall improvement in the properties of the composite films is attributed to the presence of crosslink network structure and dense packing of dispersed various metalliod particles within the PI matrix. The developed high temperature resistive conducting composite films developed are useful products for a wide spectrum of uses in solar cells with increase efficiency. The increased efficiency of solar cell is due to the conversion which will decrease the area in the monolithic film that must be covered to collect a fixed amount of energy. We had increase the conversion efficiency by designing cells to utilize specific areas (colors) of the solar spectrum and stacking them on top of one another in a series configuration. This solar cell consists of a gallium arsenide (GaAs) bottom cell connected to a gallium indium phosphide ($GaInP_2$) top cell via a tunnel diode interconnect. The top p/n $GaInP_2$ junction, with a bandgap of 1.83 eV, is designed to absorb the visible portion of the solar spectrum. The bottom p/n GaAs junction, with a 1.42-eV bandgap, absorbs the near-infrared portion of the spectrum, which is transmitted through the top junction. While single gap electrodes have solar conversion efficiency limit of 32%, tandem junction devices have an efficiency limit of 42%.[6] The maximum theoretical solar-to-electrical efficiency for the present combination of bandgaps is about 34%,[7] and more than 29% efficiency has been realized experimentally. Research work is currently under way to develop systems with four junctions, which have a theoretical efficiency of more than 50% and a realizable efficiency greater than 40%. One approach to deal with the high cost of these materials is to use them in a solar concentrating system, where most of the area of the expensive semiconductor is replaced by an inexpensive optical concentrator. The $GaInP_2$-GaAs system has been shown to operate at up to 1,000 times light concentration (with active cooling). To show the power of this approach, if we take a PV manufacturing plant that is producing 10 MW of PV material per year and the material is capable of 1,000 times concentration, with the use of an optical concentrator system, that plant now produces 10,000 MW (10 GW) of PV per year. While current research involves mainly single-crystal material, applying multi junction technology to thin-film devices would provide great efficiency and cost benefits.

The maturities of EES technologies are linked to the level of commercialization, the

technical risk and the related economic benefits. Compares the levels of technical maturity of the EES technologies reviewed in the paper. The technology maturity level for utility EES applications can be classified into five categories: (1) Developing (AA-CAES, PSB and solar fuel); (2) Demonstration (liquid air storage, Li-ion, VRB, ZnBr, super capacitor, SMES, fuel cell and TES); (3) Early Commercialized (over-ground small CAES and flywheel); (4) Commercialized (conventional CAES, NaS, NiCd and capacitor); (5) Mature (PHS & Lead–acid). It can be seen that several technologies are undergoing breakthroughs from one category evolving to another. The technologies in the developing stage are technically possible and have great potential for future EES projects. A complete economic analysis of EES technologies needs to consider not only the capital cost but also the O&M cost and the impact of the equipment lifetime. For instance, although the energy capital cost of lead–acid battery is relatively low, it may not be the best option for large-scale EES applications due to its relatively high O&M cost and short lifetime. The cost of EES is tending to decreases with the continuous effort in research and development, and some key technology breakthroughs can lead to dramatic changes in cost. Among the mature and commercialized techniques, PHS and CAES have lowest energy capital costs compared to all other technologies; NaS, VRB and Lead–acid battery have relatively high O&M cost. TES is in the low range in terms of energy capital cost; SMES and flywheel are suitable for high power and small-scale applications as they are cheap in terms of the power capital cost but expensive in terms of the energy capital cost. It should be noted that the capital cost of a specific EES system varies in terms of the timescale of EES construction, the location of the plant/facility and the size of the system.

Discussion

The aim of research work is to achieve a better understanding of with the vast availability of ESS technologies, RES would be easily integrated into the current power industries, yet, when comparing that ESS against each other, it is clear that most of these technologies have low efficiencies i.e.95% and for power industries hence directly neglected resulting in huge losses. Based on the comparison, it is noted that super capacitor and super conducting magnetic energy storage and flywheel energy storage are branded with best efficiencies, in addition, to faster response time, an important aspect for the rapidly changing intermittence in the RES. Finally, their lifetime is of an adequate lifespan to convince power industries to accept the RES penetration into their power grids. Since these ESS technologies are unrelated to the geothermal energy storage mechanism, the geothermal energy storage is not suitable for RES. Possibility of achievement:

Higher charging and discharging rate

Durability resulting in lower overall cost for a 20 year lifetime

Environmentally friendly, especially at disposal time

Temperature independent storage capacity

In general, the penetration of energy storage systems into current power grids is mainly affected by the cost of the storage systems. The huge initial cost of such RES defer them from being used on the short term yet, on the long term, the initial investment would result in more saving in a 20 years lifetime especially the grids that depend on batteries rather than a better, yet expensive alternative ESS. Additionally, the usage of fuel and the reduction in carbon footprints are of great help to the environment. Energy storage systems has been proved to solve these issues in the RES, and several ESSs have been studied to enhance the power generation from the potent RES that are likely to be used and expanded more in the

world of power generation in the near future.

It appears that in the short term (through approximately 2020), intermittent renewables will either depend upon the grid for back-up power or use batteries for energy storage. Flywheels could potentially store energy on a daily basis, especially if flywheel materials improve. In the farther future (perhaps 2040), much larger greenhouse gas emission reductions will become necessary, and with it the need for greater use of intermittent renewable and significant electricity storage. For very large amounts of electricity storage, the availability of geologic formations for compressed air energy storage (CAES) and raw materials for batteries, as well as the need for recycling them, could become limiting factors. If the costs of high strength materials, underground installation or safe containment of accidents limit the maximum deployment of flywheels as well, then electrolysis to produce hydrogen for routine storage for vast amounts of energy worldwide becomes attractive. The storage needs of a predominantly (intermittent) renewable electricity supply may ultimately be best met in the future by increasing levels of integration with a hydrogen (H2) fuelled transportation sector. In addition to reducing greenhouse gases from transportation, this long-term option could have unique energy security, electricity reliability, and market-efficiency benefits which may be foregone if H2 production, storage, and vehicle technologies are not developed and deployed in coordination with intermittent renewable. It is therefore important that hydrogen research and development efforts focus on technologies enabling efficient integration of future carbon-free transportation and electricity generation. Examples would include much higher-efficiency electrolysis and fuel cells, and reversible systems that can produce H2 from electricity as well as electricity using H2, potentially in homes or on vehicles. In addition, policy attention should be paid to future regulations covering distributed electricity generation, hydrogen vehicles, fuel stations, and electricity systems for buildings to insure economic and efficient interaction between all these critical components of a future energy system powered predominantly by well-integrated intermittent renewable. This research work provides an overview of the current development of various types of EES technologies, from the recent achievements in both the academic research community and industrial sectors. A comprehensive analysis is carried out based on the relevant technical and economic data, which leads to a number of tables and figures showing a detailed comparison of various EES technologies from different perspectives. Further discussion on EES power system application potentials is given based on the current characteristics of EES and the relevant application specifications. The overview has shown a synthesis of the state-of-the-art in important EES technologies, which can be used for supporting further research and development in this area and for assessing EES technologies for deployment.

The review identified that PHS plants have been deployed worldwide, mainly due to its technological maturity. Since PHS has relatively low power/energy densities it is mainly used in stationary large-scale EES. The Li-ion battery has relatively high power/energy densities and specific power/energy, which has resulted in the current broad range of development, particularly in small-scale EES applications. The cycle efficiencies of EES technologies have been continuously improved with time through development efforts leading to technology breakthroughs, and most commercialized techniques normally have medium-to-high cycle efficiencies. The energy capacity and the self-discharge of EES systems are the major factors in deciding the associated suitable storage duration. From the overview, it is clear that there is no suitable commercialized technology for seasonal energy storage at present. Several EES technologies, such as PHS, fuel cells and TES, have the potential to be

applied in this area. On the whole, the various applications with different network sizes will have different decision-making factors to consider when choosing suitable EES options for deployment. For the national regulator, the level of technological maturity, reliability and potential environmental impacts may be considered as the main decision-making factors and the cost-effectiveness may not be particularly important; for the end-user customers or local (private) networks, in addition to the above factors, the investment cost and the economic gain will also be dominant factors.

From this overview, it can be seen that the current technologies have wide ranging technological characteristics. With a suitable combination of different technologies, EES can meet most technical requirements for different power system and network operations. However, apart from PHS, most EES technologies are not cost-effective or mature enough for widespread implementation within the current large network operation regulation and energy market frame. On the other hand, the benefits brought to power system operation by utilizing EES technologies need further exploration. The capital and the maintenance cost of an EES system varies with the timescale of construction, the location of the facility, the size of the system, the material chosen for storing energy (such as PCMs in TES) and many other factors. Although a number of demonstration projects or EES trial stations were completed, the corresponding detailed techno-economic analysis, which can enhance the relevant database to practical EES experience, is still not sufficient. The widespread deployment of EES will depend on advances in relevant technologies, but it also relies on progress in further quantification and analysis of the benefits brought by EES.

Conclusion

Finally, within the context of the power system itself, it's important to recognize how interrelated energy efficiency is with grid reliability. In many areas of the US, transmission constraints have reached the point where they not only cost consumers billions of dollars in congestion charges, they threaten the integrity of the power system itself. Over the past twenty years, the situation has continued to deteriorate to the point where now the question of installing a new line is nearly moot in some locations. By the time it was completed, demand would long since have outstripped the ability of the local grid to meet it, so a short-term solution must be implemented in the interim. FACTS devices offer a good example of how efficiency and reliability improvements often go hand in hand. Unlike setting and building a new transmission line, FACTS devices can be implemented quickly (less than a year from purchase to completion in some cases). They immediately boost the transmission capacity of the given line while also providing voltage support and bolstering the local grid's ability to withstand disturbances. As the reliable supply of energy, especially electric energy, continues to grow in importance, the potential impact of energy efficiency cannot be overstated. With the array of technologies and methodologies now available, efficiency stands ready to play a much larger role in the energy equation.

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