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Editorial

Greetings from Gandhigram!

It is a great opportunity to read the contributions and see them in print form. As the executive editor, I am much pleased to get the active readers for learning the same experience I had. The JER from Gandhigram Rural Institute brings the thinking of young talented researchers of different disciplines. It permits the authors' authentic and prime research findings for publication twice in a year. It is peer reviewed and so the readers can trust its authenticity. The articles are finely drafted in a simple and lucid language.

They carry in them novel ideas and current knowledge. Upon sending them for peer review, I got excellent results from experts who have documented their recommendations as well as appreciations. My hearty congratulations to all the contributors.

Regards,

Senior Prof. G. Baskaran, Ph.D
Executive Editor
Journal of Extension & Research

JOURNAL OF EXTENSION AND RESEARCH

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The Harmonious Coexistence of Buddhism, Psychology, and Spirituality

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Abstract

Background: Buddhism and psychology have a long history of interaction. Counseling alternatives include Buddhism and positive psychology, which is the study of the mind. Aspects of mindfulness found in Buddhism and positive psychology contribute to the peace of mind that comes from spirituality.

Aim: The relationship between Buddhism, psychology, and spirituality is discussed in this article.

Conclusion: Today's society requires an understanding of the connections between Buddhism, psychology, and spirituality since so many individuals have emotional and interpersonal difficulties.

Buddhism, spirituality, and psychology all function independently to help people overcome issues with their relationships, economies, societies, and cultures. **Key Words:** Buddhism, Psychology, Spirituality, Mental Health, Religion, etc

Introduction: Modern psychology focuses on a wide range of subjects based on human behaviour and mental processes, from the brain to the cultural levels. Wilhelm Wundt, a physiologist, investigated response time in the 18th century using scientific methods. He concentrated on links between physiology and the study of human behaviour in his book 'Principles of Physiological Psychology'. According to structuralist theory, human consciousness may be divided into smaller components. In America, psychology was successful in the 18th century. The renowned American psychologist William James released his book, *'The Principles of Psychology'*. He became renowned as the founding father of American psychology after the release of this book. Functionalists place more emphasis on the function of consciousness and behaviour than on the parts that make up consciousness.

Buddhism and Psychology: The eminent psychotherapist James Jung and Carl Rogers emphasised the inclusion of spiritual elements in counselling psychology. Although psychologists' ideas and points of view on the subject vary, they all agree that the science of psychology improves human existence and promotes society. We are more curious to learn about our personalities and the causes of the things that happen to us. The terms 'spirituality' and 'Buddhism' have recently gained popular in the field of psychology. Buddhism's traditional teachings emphasise eradicating the root causes of misery in order to

increase pleasure in people. Positive psychology likewise emphasises the pursuit of pleasure, but Buddhism has done it explicitly.

Both Buddhism and positive psychology advocate for human wellbeing. Nevertheless. Both areas provide a wide range of options, and they both influence one another. Positive psychology advances with the aid of Buddhism, and Buddhism directs positive psychology. Styron (2013) and Walsh have suggested possible future lines of communication between Buddhism and positive psychology (2013). Buddhist students from colleges all around the world have been researching positive psychology scientifically. The most interesting and useful psychological discovery is that developing empathy is a terrific road to pleasure.

Buddhism incorporates therapeutic methods as well as analyses of human psychology, emotion, cognition, behaviour, and motivation. Buddhist psychology is a subset of Buddhism's larger ethical and philosophical framework, and as such, it uses psychological terms that have ethical connotations. There are many similarities and overlaps between Buddhism and contemporary psychology. Along with theories of perception and subconscious mental influences, this involves a descriptive phenomenology of mental states, emotions, and behaviours. Psychotherapists like Erich Fromm have discovered the

possibility for change, healing, and discovering existential significance in Buddhist enlightenment experiences (like kensho). Buddhist instructors like Jack Kornfield consider Western psychology as supplying supplementary practises for Buddhists, whilst some modern mental-health professionals like Jon Kabat-Zinn find old Buddhist techniques such as the cultivation of mindfulness of empirically therapeutic value.

Psychology of Religion: Nearly simultaneously with the establishment of psychology as a discipline in the 18th century by eminent psychologists such Wilhelm Wundt, William James, Stanley Hall, Sigmund Freud, Carl Gustav Jung, and Gordon Allport, studies on the psychology of religion also began. The emergence of J. B. Watson's behaviourist theories, however, led to a sharp decline in study on the psychology of religion after a few early studies during this time, and there were very few significant investigations for many years. The psychology of religion: An empirical study of the development of religious awareness, written by Edwin Diller Starbuck, a pupil of William James and Stanley Hall, is where the phrase 'psychology of religion' first appeared (Starbuck, 1899). The findings of questionnaire surveys Starbuck made of religious phenomena are provided in this book. In these surveys, he inquired of respondents about their age at conversion, the reason for conversion, and their mental and physical health at the time they took up a new religion. It proved that religious experiences and

sentiments could be measured using psychological techniques and questionnaires. In recent years, the terms 'spirituality' and 'mindfulness' have gained popularity in the study of religion and psychology. In contrast to just being free from illness or infirmity, "Health is a dynamic condition of complete physical, mental, spiritual, and social well-being" (Ministry of Health, Labour and Welfare, 1999).

Spirituality: Spirituality does not entail being immune to sickness, but a religious person tends to deal with illness rapidly and heals more quickly than the average person. The idea of spirituality is widespread. It consists of all-pervasive energies that we refer to as God. The globe and our future are under its grasp. It focuses on how to achieve life's goal, purpose, and meaning. Spirituality is widespread throughout all civilizations. Everyone's spirituality is different. It is a holy area of human existence. Many traits, including love, honesty, patience, tolerance, compassion, detachment, faith, and hope, are emphasised in spirituality. Some research indicate that certain parts of the brain may be involved in the fulfilment of spiritual experiences.

The realisation that there is something more than oneself, something that goes beyond the physical experiences of being a human, signifying the divine of which we are a part, is what is referred to as spirituality. A universal theme that incorporates

love, compassion, life beyond death, knowledge, and truth is realising the reality of spirituality. Spirituality promotes one's awareness of God, connection to love, positive receptivity to God's presence, and transcending meaningfulness. Through spiritual growth, one must improve the process of counselling and psychotherapy. (Spirituality and Mental Health, Patnaik, 2021)

India is where Buddhism first appeared 2,500 years ago, making it one of the biggest faiths in the world. Buddhists hold that enlightenment, or nirvana, may be attained via meditation, physical and spiritual effort, and good deeds. They also hold that human existence is one of suffering and that these are the only means to escape it. According to studies, spirituality can promote mental health by fostering constructive religious coping, a sense of belonging and support, and constructive beliefs. According to several research, spirituality and religion may be detrimental to mental health due to their conflicting religious tenets. The use of spiritual elements in therapy has shown beneficial results. People with mental illnesses and members of the general population both rely on spirituality. (Spirituality and Mental Health, 2010; KOENIG)

Mental Health: Mental health and spirituality are intertwined. These methods aid in coping with substance misuse, sadness, and anxiety. Spirituality enhances social support and promotes

wellness. Additionally, it explains the meaning of life and the point of being, especially under difficult circumstances. Spirituality doesn't always take away suffering, especially when it becomes too severe. People are unable to activate their spiritual resources at this point in order to become better. So that spiritual practises and beliefs might aid clients in developing healthy coping mechanisms, professionals may incorporate spirituality into treatment. (Spirituality and Mental Health, 2010; KOENIG)

Psychologists are developing a variety of spiritually oriented therapies, such as anger management courses for divorcees. They assist sexual assault victims in overcoming their spiritual obstacles. Additionally, it aids drug users and women with eating problems in reestablishing contact with their higher self-system. (Okpalaenwe2016) According to studies, spirituality aids people in managing the stress of daily living. Adults' daily spiritual experiences have aided in their improvement of optimism and coping with negative. According to research, elderly women express greater thanks to God than older men, and this thankfulness has a positive impact on their health.

In order to investigate the human mind and behaviour, functionalists employed techniques including direct observation and experimentation. The dominance of behaviourism, a different school of thinking, caused a significant transformation

in psychology. Different from past theoretical stances was behaviourism. It disapproved of placing equal focus on the conscious and unconscious minds. According to behaviourism, conditioning, which takes place as a result of environmental interactions, is how behaviour is taught. Sigmund Freud, an Austrian physician, revolutionised psychology by putting out a theory of personality that emphasised the significance of the unconscious mind.

Conclusion: Psychology, spirituality, and religion are sometimes considered as competing disciplines. Positive psychology focuses on changing negative thoughts to more positive views to improve quality of life. It also focuses on strong and intensive present-moment awareness. Positive psychology aims to inspire people to identify and nurture their character strengths rather than dwell on their failures. Buddhism, psychology, and spirituality have a lot in common in terms of advantages, fundamental ideas, and practical applications. People all throughout the world will profit from the integration of these three sectors. Depending on their significance, these fields should be incorporated into the materials and applications.

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**Profile of phytochemical composition and lycopene in
Fresh and Cabinet Dried *Lycopersicon esculentum*
(Tomato) fruit proportions**

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ABSTRACT

Tomato is one of the popular and most consumed vegetables in the world. Tomatoes constitute an important agricultural crop and are an integral part of the human diet. Tomatoes have been traditionally credited as rich sources of carotenoids and vitamins; particularly β - carotene, pro vitamin A and ascorbic acid. The present work aims to explore the phytochemical composition and antioxidant activity of fresh and cabinet dried *Lycopersicon esculentum* (Tomato) fruit proportions (skin, pulp and seed). Preliminary qualitative phytochemical analysis was carried out by the standard procedure to identify the secondary metabolites like alkaloids, flavonoids, quinons, phlobatannin, phenol, saponin, tannin, terpenoids and steroids with different solvent extracts. Quantitative phytochemical test such as Alkaloids, Flavonoids and Total Phenol were also done. Preliminary qualitative phytochemical analysis was carried out by standard

procedures to identify the secondary metabolites like alkaloids, flavonoids, saponins, phenols, glycosides, carbohydrates, tannins, steroids and terpenoids present in the methnolic extracts of fresh and dried tomatoes. UV spectrometry was used to do Lycopene analysis. From this study it can be concluded that fresh tomato contains number of phytochemicals.

Key Words: Lycopene, Biosynthesized, Phytochemistry, Phytochemical, Antioxidant

I. Introduction

Tomato (*Lycopersicon esculentum* Mill) which belongs to the family Solanaceae is one of the three important annual fruit vegetables of the tropical region which originated in South and Central America (Jules, 2001). Tomato is one of the popular and most consumed vegetable in the world. It is tasty and easily digestible and its bright colour stimulates appetite. Like other vegetable, tomato plays a very important role in human diets; because it supplies some of the nutrient deficient in other food materials e.g. tomato fruits are rich in minerals and vitamin (Biwasi, 1999). Tomato ranks third in priority after potato and onion in India ranks second after potato in the world. India ranks second in the area as well as in production of Tomato. The major tomato growing countries are China, USA, Italy, Turkey, India and Egypt. Total area under tomato is 4582438 thousand ha with

production of 150513813 thousand tons and with productivity of 32.8 tons/ha. There is a sizeable increase in acreage and production of tomato in India. There is an increase from 596.0 thousand ha in 2006-07 to 865.0 thousand ha in 2010-11, while in terms of production it has increased from 10055.0 to 16826.0 thousand tons. (Indian Horticulture Database 2011). Tomatoes are considered as a major source of carotenoids in the human diet. From a total of about 40 carotenoids present in the human diet in human blood is only 25 carotenoids which are present due to their selective intake of the digestive tract. Of these, the majority of carotenoids are present just in fresh and processed tomatoes. The most important carotenoids for humans include lycopene, lutein, zeaxanthin and β -cryptoxanthin (Shi and Maguer, 2000). Lycopene is a lipophilic carotenoid pigment present in tomatoes and other red fruits and vegetables. Higher amounts of lycopene are found in fruits such as of watermelon, guava and pink grapefruit (Shi *et al.*, 2002). In addition to liquid products, substantial markets have been developing for dried tomato products. Some of these, such as sun-dried tomatoes, have been used as ingredients for salads and other dishes. There has also been a demand for fully dried tomato powders, for use in formulated products or supplements. These have the advantage of being easier to store, may be subject to less thermal damage, and have relatively good shelf life. Powders can be produced from surplus fruit or fruits that do not meet appearance

standards but are otherwise of good quality. In addition, juicing and related processes may leave a peel-rich pomace that can be converted to powders with high nutrient, phytochemical, and fiber contents (Valle et al. 2006). The aim of this work was to analyze the phytochemical constituents and determine lycopene content of Fresh and Cabinet dried Tomato samples.

II. Materials and Methods

2.1 Collection and preparation of sample

The fresh and healthy tomato fruits were collected from Dindigul market and washed thoroughly 2-3 times with running tap water and once with sterile distilled water, the surface moisture content was removed by placing the fruits at room temperature for 1 hour.

Later the skin, pulp and seeds in tomato was separated and ground with pestle and motor with methanol for phytochemical and lycopene analysis. For dried samples skin, pulp and seeds in tomato was separated and placed in trays and the temperature was maintained at 60⁰. After the heat treatment ground with domestic mixer and it was stored in air tight containers.

Alkaloids: Mayer's Test: To the extracted sample, a drop of Mayer's reagent was added along the sides of the test tube. A white precipitate indicates the test as positive.

Flavonoids: Alkaline reagent test: Two ml of aqueous solution of the extract was treated with 1 ml of 10% ammonium

hydroxide solution. Yellow fluorescence indicated the presence of flavonoids.

Saponins: 2 ml of the extract was diluted with 3 ml of distilled water and again diluted by adding 5 ml of distilled water and shaken. After 15 min, two layer of foam indicated the presence of saponins.

Phenols: Ferric chloride test: 2 gm of the sample was dissolved in 2ml of distilled water. To this, few drops of neutral 5% ferric chloride solution was added. A dark green colour indicates the presence of phenolic compounds.

Glycosides: 2 gm of plant extract was hydrolysed with concentrated hydrochloric acid for hours on a water bath, filtered and the hydrolysate was subjected to the following test. Sample was dissolved in 1ml water and then aqueous 10% sodium hydroxide was added. Formation of a yellow colour indicated the presence of glycosides.

Tannins: 2 gm of extract and one ml of water and 1-2 drops of ferric chloride solution was added. Blue colour was observed for gallic tannins and green black for catecholictannins.

Steroids: Libermann-Burchard reaction: 2g of the extract was treated with 0.5 ml of acetic anhydride and 0.5ml of chloroform. Then concentrated sulphuric acid was added slowly and green bluish colour for steroids was observed.

Terpenoids: 2 gm of extract was treated with 0.5 ml of acetic anhydride and 0.5 ml of chloroform. Concentrated sulphuric acid

was added slowly along the sides of the test tube. Red violet colour was observed for terpenoids.

2.2 Quantitative Phytochemical Analysis

Quantitative phytochemical analysis of fresh and dried samples was done. Alkaloids, Flavanoids and Total phenol were quantified with the standard procedures. Alkaloids determination by using Harborne (1973) method 5g of the sample was weighed into a 250 ml beaker and 200 ml of 10% acetic acid in ethanol was added and covered and allowed to stand for 4 h. This was filtered and the extract was concentrated on a water bath to one quarter of the original volume. Concentrated ammonium hydroxide was added drop wise to the extract until the precipitation was complete. The whole solution was allowed to settle and the precipitated was collected and washed with dilute ammonium hydroxide and then filtered. The residue is the alkaloid, which was dried and weighed. Flavanoid determination by the method of Bohm and Kocipai- Abyazan (1994) 9-10g of the plant sample was extracted repeatedly with 100 ml of 80% aqueous methanol at room temperature. The whole solution was filtered through whatman filter paper No 42 (125 mm). The filtrate was later transferred into a crucible and evaporated into dryness over a water bath and weighed to a constant weight.

Total phenol determination

Determination of total phenolic content Folin–Ciocalteu procedure given by Yu et al., (2002) was used to estimate the

total phenolic contents in the methanol extract of the plants. Following this method, 0.1 ml of fractions was diluted to 1 ml with distilled water. To this solution 0.5 ml of Folin–Ciocalteu reagent (2N, 1:1) and 1.5 ml of 20% sodium carbonate solution was added. The mixture was incubated for 2 h at room temperature. The volume was raised to 10 ml with distilled water and the absorbance of blue colored mixture was measured at 765 nm. The amount of total phenol was calculated as mg GAE/g from calibration curve of Gallic acid standard solution.

Lycopene analysis

Lycopene analysis was done with fresh and dried samples of tomato, Added 0.1mg of sample in test tube added 8.0 ml of hexane: ethanol: acetone (2:1:1) vortex the test tube immediately, then incubate out of bright light and the test tube stand to atleast 10 minutes. Added 1.0 ml water to each sample and vortex again. Samples stand for 10 minutes to allow phases to separate. Determination of lycopene in A503 of the upper layers of the test tube.

Calculation of lycopene levels. Lycopene levels in the hexane extracts were calculated according to: Lycopene (mg/kg fresh wt.) = $A_{503} \times 17.17 \times V$ Where V is the volume of mixed solvent added.

III. Results and Discussion

Table-3.1
Qualitative Phytochemical composition of Fresh
Tomato proportions

Solvent	Proportions	Alkaloids	Flavonoids	Phenol	Saponin	Tannin	Terpenoids	Quinons	Phlobatannin	Steroids
Methanol	Skin	+	+	+	+	+	-	+	+	+
		+	+	+	+	+	+	+	+	+
		+	+	+	+	+	+	+	+	+
	Pulp	+	-	+	+	--	+	--	+	--
		+	+	+	+	-	+	-	+	-
		+	+	+	+		+		+	
	Seed	+	+	--	+	+	+	+	--	+
		+	+	-	+	+	+	+	-	+
		+	+		+	+	+	+		+
Ethanol	Skin	+	+	+	+	+	+	--	+	+
		+	+	+	+	+	+	-	+	+
		+	+	+	+	+	+		+	+
	Pulp	+	+	+	+	--	--	--	+	--
		+	+	+	+	-	-	-	+	-
		+	+	+	+				+	
	Seed	+	--	+	+	--	--	--	--	--

		+	-	+	+	-	-	-	-	-
		+		+	+					
Chloroform	Skin	+	--	+	+	+	--	--	+	+
		+	-	+	+	+	-	-	+	+
		+		+	+	+			+	+
	Pulp	--	--	+	+	--	--	--	--	+
		-	-	+	+	-	-	-	-	+
				+	+					+
	Seed	--	--	--	+	--	+	--	+	+
		-	-	-	+	-	+	-	+	+
					+		+		+	+
Acetone	Skin	--	+	--	--	--	--	--	+	+
		-	+	-	-	-	-	-	+	+
			+						+	+
	Pulp	+	+	--	+	+	+	--	--	--
		+	+	-	+	+	+	-	-	-
		+	+		+	+	+			
	Seed	+	--	+	+	--	+	--	+	--
		+	-	+	+	-	+	-	+	-
		+		+	+		+		+	
Petroleum Ether	Skin	+	+	+	+	+	--	--	+	+
		+	+	+	+	+	-	-	+	+
		+	+	+	+	+			+	+
	Pulp	+	+	+	--	+	--	--	--	--
		+	+	+	-	+	-	-	-	-

		+	+	+		+				
	Seed	+	+	+	+	+	+	+	- -	+
		+	+	+	+	+	+	+	-	+
		+	+	+	+	+	+	+		+

- Absence + Presence

Table 3.1 depicts the presence of alkaloids, flavonoids, phenol, saponin, tannin, terpenoids, quinons, phlobtannin and steroid was present in methanol extract of fresh fruit proportions. Tomato pulp revealed that the presence of alkaloids, flavonoids, phenol and saponin except of tannin, quinons and steroids. Tomato seed reported that the presence of alkaloids, flavonoid, saponin, tannin, terpenoids, quinons and steroid except phlobtannin. Tomato skin has observed with all the phytochemicals.

The presence of phytochemicals in the ethanol extracts of tomato fruit proportions shows that the skin contains alkaloids, flavonoids, phenol, saponin, tannin, terpenoids, quinons, phlobtannin and steroid; Pulp contains alkaloids, flavonoids, saponin, tannin, terpenoids, and steroid: Seed contains alkaloids, Phenol and saponin.

Chloroform extract of fresh tomato skin was contains alkaloids, phenol, saponin, tannin, phlobtannin and steroid. Flavonoids, terpenoids and quinons are not present in the tomato skin. pulp comprising phenol, saponins and steroids. Seed had saponin, phlobtannin and steroid.

The presence of phytochemicals in the acetone extracts of tomato fruit proportions shows that the skin contains flavonoids, phlobtannin and steroid. Pulp had alkaloids, flavonoids, saponin, tannin and terpenoids. Alkaloids, phenol, saponin, terpenoids, quinons are phlobtannin present in tomato seed.

In petroleum ether extracts of fresh tomato skin shows that the presence of alkaloids, flavonoids, phenol, saponin, tannin, phlobtannin and steroid. Absence of terpenoids and quinons. Pulp reveals that the presence of alkaloids, flavonoids, phenol and tannin and absence of saponin, terpenoids, quinons, phlobtannin and steroid. When compared with skin and pulp its seed had all the phytochemicals except phlobtannin.

Table – 3.2
Qualitative Phytochemical composition of Dried
Tomato proportions

Solvent	Proportions	Alkaloids	Flavonoids	Phenol	Saponin	Tannin	Terpenoids	Quinons	Phlobatannin	Steroids
Methanol	Skin	+	+	-	+	-	-	-	-	-
		+	+	+	+	-	-	-	-	-
		+	+	+	+	-	-	-	-	-
	Pulp	+	+	+	+	-	+	-	+	-

		+	+	+	+	-	+	-	+	-
		+	+	+	+	-	+	-	+	-
	Seed	+	+	+	+	-	-	-	-	-
		+	+	+	+	-	-	-	-	-
		+	+	+	+	-	-	-	-	-
		+	+	+	+	-	-	-	-	-
Ethanol	Skin	+	--	--	-	-	-	+	-	-
		+	-	-	-	-	-	+	-	-
		+			-	-	-	+	-	-
	Pulp	--	+	--	-	+	+	-	-	+
		-	+	-	-	+	+	-	-	+
			+		-	+	+	-	-	+
	Seed	+	+	--	-	-	-	-	+	-
		+	+	-	-	-	-	-	+	-
		+	+		-	-	-	-	+	-
Chloroform	Skin	+	--	--	-	+	+	+	+	+
		+	-	-	-	+	+	+	+	+
		+			-	+	+	+	+	+
	Pulp	+	+	--	-	+	+	-	-	+
		+	+	-	-	+	+	-	-	+
		+	+		-	+	+	-	-	+
	Seed	+	+	--	+	+	+	+	+	+
		+	+	-	+	+	+	+	+	+
		+	+		+	+	+	+	+	+
Acetone	Skin	--	+	--	-	-	-	-	+	+
		-	+	-	-	-	-	-	+	+

			+		-	-	-	-	+	+	
	Pulp	+	--	--	+	+	-	-	-	-	
		+	-	-	+	+	-	-	-	-	
		+			+	+	-	-	-	-	
	Seed	+	--	+	-	-	+	-	+	-	
		+	-	+	-	-	+	-	+	-	
		+		+	-	-	+	-	+	-	
	Petroleum Ether	Skin	+	--	--	-	-	-	-	+	+
			+	-	-	-	-	-	-	+	+
			+			-	-	-	-	+	+
		Pulp	+	+	--	-	-	-	-	-	-
			+	+	-	-	-	-	-	-	-
+			+		-	-	-	-	-	-	
Seed		+	+	--	-	-	+	+	-	-	
		+	+	-	-	-	+	+	-	-	
		+	+		-	-	+	+	-	-	

Methanol extracts of dried tomato skin had alkaloids, flavonoids, phenol and saponin except tannin, terpenoids, quinons, phlobtannin and steroid. Pulp reported that the presence of alkaloids, flavonoids, phenol, saponin, terpenoids and phlobtannin and absence of tannin, quinons, and steroid. Seed contain of alkaloids, flavonoids, phenol and saponin.

Ethanol extracts of dried tomato skin had alkaloids and quinons. Pulp contains flavonoids, tannin, terpenoids and steroid.

Seed shows that the presence of alkaloids, flavonoids and phlobtannin.

Chloroform extract revealed that the presence of alkaloids tannin, terpenoids, quinons, phlobtannin and steroid were present in tomato skin. Alkaloids, flavonoids, tannin, terpenoids and steroid were present in tomato pulp. Alkaloids, flavonoids, saponin, tannin, terpenoids, quinons, phlobtannin and steroid were present in seed except phenol.

Acetone extracts of dried tomato skin was found that the presence of following phytochemicals flavonoids, phlobtannin and steroid. Alkaloids, saponin and tannin present in pulp. Seed shows that the presence of following phytochemicals such as alkaloids, phenol, terpenoids and phlobtannin.

Chloroform extracts of dried tomato skin reveals that the presence of alkaloids, phlobtannin and steroid. Pulp had alkaloids and flavonoids. Seed was containing alkaloids, flavonoids, terpenoids and quinons.

Table – 3.3
Quantitative Phytochemical composition of Fresh
and Dried Tomato Proportions

Fresh/Dried	Proportions	Alkaloids	Total Phenol	Flavanoids
Fresh	Skin	82.12 \pm 1.52	41.65 \pm 0.81	46.02 \pm 1.15

	Pulp	80.88 \pm 1.48	76.17 \pm 0.45	81.97 \pm 1.32
	Seed	45.96 \pm 1.56	9.60 \pm 0.77	7.31 \pm 0.15
Dried	Skin	66.17 \pm 0.65	24.40 \pm 0.83	56.74 \pm 4.17
	Pulp	53.7 \pm 5.69	72.40 \pm 0.14	59.39 \pm 0.44
	Seed	78.37 \pm 0.2 5	6.62 \pm 0.49	13.58 \pm 0.45

Table-3.3 depicts the phytochemical constituents present in fresh tomatoes in methanol extracts. When compared to tomato seed and pulp tomato skin contains rich sources of alkaloids flavonoids, Phenols, glycosides, tannins, steroids and aminoacids followed by tomato pulp and seed.

Table-3.4

Lycopene analysis of Fresh and Cabinet Dried Tomato samples

Tomato	Portions	Lycopene content 100mg/ml
Fresh sample	Skin	42.52 μ g
	Pulp	31.80 μ g
	Seed	1.02 μ g

Cabinet Dried sample	Skin	97.37 μ g
	Pulp	52.06 μ g
	Seed	0.21 μ g

Table -3.4 shows the lycopene content of fresh and cabinet dried tomato samples. Cabinet dried sample contain high lycopene content compared with the fresh samples of skin (97.37), Pulp (52.06), Seed (0.21).

IV. Conclusion

The dried tomato skin powder has greater initial lycopene, which was retained after drying below 60°C. These powders also had somewhat better flow ability than tomato pulp powders. This conclusion is as a result of the abundant phytochemical constituents present in fresh tomato's skin, seed and pulp. Heat treatment leads to an increase in the content of Lycopene that can be attributed to better availability of these components in the human body.

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**CONSTRUCTION OF MAN AND MANHOOD: A
STUDY OF MASCULINITIES IN AMBAI'S SELECT
SHORT STORIES**

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Abstract

C.S. Lakshmi popularly known as Ambai is famed for her stories that offer insights into women's lives in the contemporary Indian scenario. Many studies have been done on her writings, discussing the feministic underpinnings by considering women as marginalised. Though her stories mainly deal with the plight of women, she has also vividly portrayed male characters and the construction of the masculine self. Her stories have extensively contributed to evaluate and critically analyze the social construction of masculinity and men's characteristics. This paper looks at her stories with the lens of

masculinity studies. Furthermore, the study explores the different traits of masculinity, construction of gender roles, and how the male ego emerges as a strong foundation of the masculine self in the select stories.

Keywords: Masculinity, Male Ego, Gender Roles, Masculine self, Masculine Traits.

Ambai has always been viewed as a feminist writer, who spoke for the womenfolk of her country. All her stories talk about the nuances of a woman's life. At the same time, she constructs her plots interwoven with male characters with equal detailing and providing of backstories as that of her female characters. With her omnipresent and omnipotent style of narration, she lets the reader know also the thoughts of the male characters. She has written eight short story collections and two detective fictions. The recent Sahitya Akademi award for her latest short story collection *Civappuk Kazhuththudan Oru Pachcchaip Paravai* (A Red-Necked Green Bird) was long due for her. Her contribution to the compendium of women's writing from south India is remarkable. She runs an organization called SPARROW (Sound and Picture Archives of Research on Women) as director from Mumbai. Her writing span is spread across four decades. One can understand the evolution of women and men characters and their dissent in her stories, by placing them on a chronological scale. She has also woven the factors of

masculinities, male-female ego clashes, patriarchy-matriarchy dichotomy, etc. into her stories. Motherhood and music are prevalent among her stories, yet manhood and construction of masculinities are factors that are worth studying and analyzing in her stories.

Through her stories, Ambai has presented with utmost accuracy, the subtle inner feelings and thoughtflow of men. She has also talked about innovative things like the construction of fluid-gender, cyborgs, artificial intelligence, postmodern computers and networks etc. Toxic masculinity, violence against women, hegemonic masculinity, internalization of patriarchy, normalizing the constructed gender norms, societal dictation, impact of patriarchal ego in a family setup, ingrained misogyny were all dealt with in her stories. While her contemporaries like Mahasweta Devi and Shashi Deshpande focussed on the societal problems, and the bigger issues to be spoken about, Ambai considered speaking about the domestic lives of people, especially women needed more attention and she concentrated on them more. Her opinions, insights, and politics are interwoven subtly into her stories. Excluding southern India, Mumbai and Delhi were often used as settings for her stories, making her stories metro or cosmopolitan. She created a female detective character called Sudha Gupta, who can be compared on par with Agatha Christie's Miss. Marple.

From the selected stories for study, it is understood that Ambai has provided chances to approach and understand the story from a male's perspective, to perceive the plot from his side. Unlike the typical feminist authors, she has not only allowed the women to speak, but also enabled the male characters to clearly express their emotions. She has tried her best to make her male characters not to be minor characters, but characters that are actively a part of the main story. Taking the characteristic traits of men in her stories, one could possibly define the salient features of Indian man or masculinity. She points out how masculinity is constructed and how the hollow structure of gender is stable or fixed in the Indian minds that have not yet come out of the colonial mindset.

Ambai does not stop with emphasizing on the problems, issues and situations, she also presents choices, answers and solutions through the characters of her stories. She normalizes people who take decisions against the common societal norms and expectations. Thenmozhi is one such example. Beyond the dichotomy of power and suppression, she foregrounds that there are problems for women that are beyond men. By portraying snippets from lives of women, who have overcome the gender barriers, she questions the psychological perceptions associated with it and refines as well as redefines it and she presents her women as characters with political correctness. In short, she is an author ahead of her times. She also paves way for the logical

acceptance of the fact that wrongs or mistakes can also be on the side of women. From the start of her writings to till now, she makes sure that most of her protagonists are between the ages of 20-40. With four decades of stories, she reaches a wider audience of all sorts and types. It makes her an unavoidable, undeniable presence in the Indian literary scenario. Through her stories, Ambai has presented with utmost accuracy, the subtle inner feelings and thoughtflow of men.

In this contemporary era, masculinity and its perceptions, definitions are constantly evolving. At a time, when the concepts of man, manhood, masculinity are defined and redefined again and again, a study like this gains much significance. The objective of the study is to position masculinity in contemporary Indian writing, the role of male ego in women's writings and how gender is being constructed at various levels and dimensions. The study reveals what are the traits and characteristics of a typical male. What does it take to the society to satiate or accept and recognize the male ego? Has time really come to redefine gender in its totality? The time is apt to see through the evolution of masculinity studies as a research area or approach.

The increased crime rates against women and girl children have shown that there are men who do such crime as well as there are men who are against such crimes and are feminist allies. These diversified men who are considered to be the sole

beneficiaries of the patriarchal society and who sustain the patriarchal system are an essential subject to be studied in detail. Such study of men or the concept of masculinity refers to the culturally, historically and socially constructed norms of behavior, beliefs, expression and social interaction for men. The study on masculinity started as a scientific method when Freud explained the basic personality traits that are considered to be masculine are formed in the unconscious mind from an early developmental age itself.

Raewyn Connell, University Professor in the University of Sydney, further developed the concept and proposed that masculinity is embedded and embodied with plurality. On the basis of relational and social construction, she introduced hegemonic, subordinated, complicit and marginalized masculinities, and also argued that different types of masculine selves can be traced into a single man at a time. Hegemonic masculinity enjoys the position of an ideal masculine self that dominates and marginalizes others in a gendered system. As Antonio Gramsci stressed on the consent of the oppressed while defining hegemony in his book *Prison Notebooks*, hegemonic masculinity also makes it appear to be normal and necessary to dominate women and other men with their consent. Connell also adds that such masculinity represents a currently accepted type of personality with an emphasis on “a historically mobile relation.” (77) When the social construction tends to change, the

attributed traits of an ideal masculinity will also change in order to sustain dominance over women and other men. For instance, in the 1980s and 1990s, men were considered to be the sole breadwinners of the family and this enabled them to have power over family through economy. But later, when globalization was introduced, the labor market changed, and women were largely hired which paved way for the economic independence of women. So such changes may challenge the old traits and construct a new masculinity that grips the hegemonic function. All types of masculinities are relational and defined with connection to one another.

Subordinate masculinity is attributed with traits, beliefs, and attitudes that are deviated from the meaning of what it means to be masculine in a given society that results in cultural, social and political stigmatization and marginalization. Subordinate masculinity is socially constructed and may differ with every culture. Connell focuses on the domination of heterosexual men over homosexual men as an example of subordinated masculinity. In a patriarchal society, the gender ladder keeps homosexuals at the bottom among men and corresponds to the traits that are equated with femininity. Subordination does not only talk about the homosexual men but also some heterosexual men. Heterosexual men with behaviors similar to feminine are also subordinated under hegemonic masculinity.

Complicit masculinity realizes the patriarchal benefits, and enjoys it without any risk of being a dominant masculine person. They will not explicitly advocate or criticize the forms of masculinity that serve them profit. The amount of men who are actually hegemonic is less than those who benefit from it. Complicit masculinity men will receive higher pay, more opportunities, and valuable positions being a man, just because the hegemonic masculinity had already justified the men's dominant position in the society with consent. They can be called "slacker versions of hegemonic masculinity" (Connell 79).

Masculinity is not a condensed, static entity but dynamic and fluid. The spheres of race, ethnicity and class are in constant touch with gender. Marginalized masculinities thrive through not just specific gender configurations but also in an exchange with external forces. These exchanges exist between the group of hegemonic masculinity and the men belonging to subordinated classes, ethnic and racial minorities. Connell puts it as, "the relations between the masculinities in dominant and subordinated classes or ethnic groups". (80) Marginalization of a particular group's masculinity is directly linked to the authorization of the dominant masculinity of the society. The non-conforming nature of marginalized masculinity becomes a threat to the hegemonic one which is already validated as an ideal one. Thus "Marginalization is always relative to the

authorization of the hegemonic masculinity of the dominant group". (80)

Masculinities are interrelated with hierarchical order. Furthermore, sociological studies revealed colonial, protest, rural, urban, metrosexual, spornosexual masculinities and more. Such ideas from the field help to understand the construction and enactment of manhood in any given time period and culture. Gender studies have always concentrated only on women centric issues. But the crux of gender studies is that it starts questioning the patriarchal construct, by deconstructing the patriarchy and analyzing men's legitimacy of the socio, political and economic advantages. Thus the multiplicity of masculinities necessitates a multi-methodological approach which acknowledges the manifold definitions and dynamics of masculinity. Such a mixture among men from homosexuals to unassertive heterosexuals to dominant or aggressive or toxic masculinity draws attention to the point that understanding of how man practices manhood in different ways is central to decode gender politics and gender relations.

The primary objective of this study is to highlight and bring out the varied construction of masculinities in the stories of Ambai. In the short story *Civappuk Kazhuthudan Oru Pachaip Paravai*, the character Vasanthan is a man who works from home in an advertising agency and volunteers in the nearby

hospital run by missionary. His character is portrayed as a man with principles. He argues in his advertising company that he will not work on the advertisements that sell fairness creams for women and he further questions the association of beauty with fairness and points out the racist and colonial mindset of the advertisements.

From the initial days of his marriage life, Vasanthan worries much about his childlessness. He sometimes gets drunk and expresses his yearning for a baby to the chief doctor. Vasanthan would say, “hasn’t a single sperm worked in fifteen years?” (Ambai, *Civappuk* 46) Male infertility in the society is often mistaken as impotency. He complains of his inability to give birth which shows that he is being vulnerable to his own emasculation. Even though he is the one who deeply feels that he is unable to prove his virility, paternity which in turn questions his manhood, the fertility treatment is done to the women. The chief doctor also prescribes some medicines to Vasanthan’s wife only. It clearly indicates that the society is not ready to accept the emasculation of a man. That is the reason the society puts women under pressure to undergo the fertility treatment irrespective of whose medical condition causes this infertility.

Mythili, Vasanthan’s wife, is hailing from an upper middle class family. She is not much bothered about being childless. But on the other hand, for Vasanthan “It appears that

it's not just his longing, but in a way or the other, a matter of his masculine pride" (Ambai, *Civappuk* 52) Begetting a child is not just a matter of becoming a parent. It is a matter of pride and respect. He yearns for a baby, so that he can feel complete as man.

Vasanthan brings a newborn infant from hospital. Mythili asks "Vasanth, you could've asked me? I'm forty years old and you are forty five. Can we be able to take care of this infant?" (Ambai, *Civappuk* 46) Raising and looking after a child is considered to be the duty of women. But when adopting a child, Vasanthan did not consult with his wife and imposed his decision as an act of exercising his power over her as a man. Not considering the opinions of women in decision making is attributed to the hegemonic masculinity where a man exercises his power over women and other men in the family or group.

On the other hand, Mythili too was happy with the child. But Thenmozhi, Vasanthan's daughter is found to have hearing impairment. He was broken when the test results came. But he insisted on fixing a hearing aid and trained Thenmozhi to talk, instead of using sign languages. He was very conscious that his daughter should talk, not using sign languages. Thenmozhi too will read the lips of others and respond to them when Vasanthan is with her. But when he is not around, she will use sign languages, especially during playing with her friends.

Vasanthan's exertion of his hegemonic masculine power is visible in forcing his daughter to speak. She too obeys him. Hence, in several instances, Vasanthan's character is depicted as a hegemonic masculinity.

Later on when Thenmozhi is grown up, Vasanthan started to stay in home, lessening his advertisement works, and happily engaging in the household works. "Month after month, he happily bought groceries, supervised the household maintenance and managed the accounts" (Ambai, *Civappuk* 57) At this point, he is contrived as a complicit masculine self by being a feminist ally, doing all the household chores. But he still retains the position of ultimate deciding authority. Even he chooses what should be cooked every day. This idea of taking decisions solely is carried all the way to his deciding of a cochlear implant surgery for his daughter. He wishes to carry out that surgery even after she has totally accepted her hearing impairment and started to lead a normal life with it.

Vasanthan was shocked and furious when Thenmozhi conflicts with him in terms of doing a cochlear implantation surgery. She says, "Santh, This is my life. So I'm the one who has to decide, ain't I?" (Ambai, *Civappuk* 58) He is unable to accept that his daughter is not obeying him and decides on her own. So he is angered and exerts all his anger towards Mythili. Here Mythili seems to be an easy object to showcase his

masculine authority and he overpowers her. This non-conformity to his decisions is interpreted as a threat to his masculine self. He is somehow very agitated and tries to make them conform to his decisions by showing his anger in subtle manner every time. Sometimes he does not cook and engages himself in an office work. Sometimes he is not affectionate to Thenmozhi.

In order to explain Vasanthan's feelings of being not listened to, Ambai provides an instance. Vasanthan used to stand near the window for listening the calling of a coppersmith barbet bird. One day Thenmozhi and Mythili saw him crying silently. When asked about, he says, "The calling of the bird is stuck in its throat." (Ambai, *Civappuk* 59) Crying is considered as a feminine act. Men are advised not to cry at any cost. Vasanthan resembles himself with the bird and the calling of the bird correlates to his masculinity. His masculine self is being questioned by his own wife and daughter. Both, the bird's calling and his masculinity are threatened. To console himself, he cries and it shows that Vasanthan is a complicit masculine person where he enjoys the authoritative power of being a man and also fears that his power may be taken aback.

The masculine gender stress of not meeting the society's expectations of masculine makes Vasanthan angry. As Thenmozhi removed hearing aid most of the time at home, she would communicate to her parents by reading their lips. But

Vasanthan started to avoid looking at her while talking which makes it immensely difficult for her. He would upset Mythili by reminiscing his first love telling, “If at all I married her, my life would have been different” (Ambai, *Civappuk* 68). Thenmozhi used to tell a joke ridiculing the necessity of hearing. Earlier Vasanthan would also laugh along with Mythili, but once he thought of the cochlear implant surgery, he would respond annoyed, “Enough... Enough... There is nothing to laugh in it” (60)

Mythili thought of this behavioural change as a result of growing old. She reminded of similar aggravated responses from her father as well. Once, her father was suffering from diarrhoea. Her mother in a joking way asked him is he ill? Her father retorted her mother with annoyed answer. “Should I inform you even whenever I use the loo?” (Ambai, *Civappuk* 60-61) In a man’s perspective, joking on a man is seen as degrading his masculine self-respect. Since his masculine pride is being ridiculed he reacts in an unexpected way. This happens with both Vasanthan and Mythili's father. Vasanthan who used to laugh at Thenmozhi's joke earlier, reacts differently at a later stage, because the joke directly ridiculed his masculine pride of making his daughter to hear others. At the same time, he was hinted that Thenmozhi is not willing to undergo the surgery.

Since his masculine ego is damaged by his own family who did not conform to his decision, Vasanthan denounced his family, left home and started to live in silence far away from them, not even informing his whereabouts. This act of denouncing the family does not seem to be quite a hegemonic masculine feature. A hegemonic masculine person would control the family and exercise his power over them and make them accept his decision. But Vasanthan, a complicit masculine person who is not used to show off his hegemonic traits, can only satisfy his masculine ego by leaving the family. On the other hand, it is a kind of punishment to them. This can also be interpreted as a way of expressing his anger on the family.

On the same grounds, Ambai's *Unpublished Manuscript* subtly elucidates a variety of masculine traits with two characters namely Ramasamy and Muthukumaran. On one hand, Ramasamy falls under their category of feminist masculinity. Peter F. Murphy observes in the *International Encyclopedia of Men and Masculinities* that "Feminist masculinities embrace the core idea that the personal is political...Women's equality is one crucial aspect of this quest. Another important component is a feminist interrogation of men and masculinities" (204). Ramasamy, who runs a printing press and publishing house, is a man of principles. He is firmly gripped to certain ethics and morals of his own. On an occasion, his friend, a champion of women's rights, came to publish a manuscript that argued that

remarriage is the only way to revitalize the life of widows. He further requested idealistic young men to remarry widows as an act of sacrifice. Ramasamy, after reading his manuscript, responded him,

“what is so revolutionary in saying that a widow can live a decent life only by marrying a fellow? We must help her to educate herself and find a job...But when you say that some man must come and give her a new life, it looks as if you are suggesting that we must always keep her under the control of a man. It’s as if you are saying she can only shelter in his shadow. If she wants to, then let her marry. Let her marry someone whom she really likes. But why do you make out that he is giving her a new life? Why do you suggest that the man is making some sort of sacrifice?” (Ambai *Kaattil* 88)

Ramasamy, a man of manners and morals, is a staunch feminist. His feminist masculinity is crystallized at several occasions. He himself remarried a widow, educated her on his own. After the death of his wife, he himself cooked and managed the family. His relatives would complain about his daughter Tirumagal, who was then pursuing her masters, of not knowing to cook. He would patiently respond them, “My girl must study first. Cooking isn’t such a big deal. When she is hungry, she’ll cook for herself” (Ambai *Kaattil* 90)

On the other hand, Muthukumaran, Tirumagal's husband, oscillates from being hegemonic to complicit to toxic and subordinated one at times, throughout the course of the story. He is expecting Tirumagal, a working woman who also takes care of her father's press and publications, to cook and serve food to him. He feels that he is not "being treated as a husband ought to be" (Ambai *Kaattil* 93). This possibly poses a query of what exactly is an ideal way to treat a husband. An unemployed poet, whose full time job is writing poems and publishing, is neither the sole breadwinner of the family, nor caretaker of the household chores, nor respects his wife. So what makes him to feel like he is not being rightly treated as a husband? Irrespective of his earnings, power, position, societal recognition, his employment and economic status, he thinks a husband deserves wife's attention and service at all cost. He expects to be treated as an ideal man and is trying to establish himself as a hegemonic masculine person by adhering Tirumagal and himself to the traditional gender role configurations. To insist the gender role, he reproaches her, "What keeps you so busy that you can't even feed a man who comes home hungry?" (93). When his wife requests him to do the household chores, he accuses her, "Are you a woman?"(94), as if women should not make men to do these works. At the end of the day, "he would retract all of it. He'd lay his head at her feet in penitence and refuse to get up unless she forgave him" (94) He expresses a

complicit masculine trait, suddenly submitting himself to his wife and apologizing. By being complicit, he retains his position in the house and continues to dominate.

On another quarrel between them, Muthukumaran shows the traits of toxic masculinity. Terry Kupers, Professor Emeritus with the Clinical Psychology Program, points out that “Toxic masculinity is the constellation of socially regressive male traits that serve to foster domination, the devaluation of women, homophobia, and wanton violence” (714) Muthukumaran insists his wife to call him by the traditionally designated name for husband in Tamil culture. When the quarrel goes out of hand, “He put his hand against her stomach and shoved her away. ‘Don’t you call me by name, *di*. Are you a woman? Don’t you dare call me Muthu. Call me *Athaan*. Talk to me with respect...” (Ambai *Kaattil* 95) After every such incident of physical attack on his wife, he would apologize. He constantly swings from being hegemonic to complicit, to toxic.

After sometime, Tirumagal was astonished to receive his manuscript of another collection of poems for publication. She read it on the same day itself and was dumbfounded to see abundant violence with images of women, as an underlying thread. A penis transforms into a knife and cuts a woman apart. “Nipples being torn off, blood gushing out. Howling wolves and screaming, grunting pigs tumbling out of a womb. A penis

turning into stone, thrusting into and shattering a *yoni*” (Ambai *Kaattil* 96) These expressions of violence against women from Muthukumaran through his language indicate his ingrained misogyny, intolerance towards women and normalized violence over epistemic and linguistic planes.

Such intrinsic epistemic violence renders firm action between him and Tirumagal when he accuses her of not publishing his manuscript and she substantiates explaining the editorial board’s decision is yet to be finalized. When the argument reaches its peak, he speaks ill of her father. Without hesitating a moment, she kicks him between the legs and goes to pick her baby. At that time he hits her hard and admits her to the psychiatric hospital. In total, he was very aggressive at times, then begs for forgiveness, but very obedient to Ramasamy. He revered him and never spoke to him once he started having misunderstandings with Tirumagal. The hierarchical relationship between these two men made Muthukumaran a subordinate masculine person. As Connell claims that different types of masculine traits will be expressed from a man emphasizing on the changing nature of these traits. (81) Muthukumaran is a perfect epitome of that who shows hegemonic, complicit, toxic as well as subordinated features of masculinity.

On the contrary to the male characters in the story, Ambai has characterized Tirumagal as a person of female

masculinity. After getting discharged from the hospital, she moves to a faraway city and works as a professor in a University. She runs the family all by herself, takes care of her daughter, and fulfills the role of a man in the family. In the light of Judith Butler's Performative theory that puts forward gender as a social construct and not as a natural one, Judith Halberstam, American cultural theorist classifies female masculinity as traditionally masculine attributes of character or appearance occurring in biological women (Gardiner 203-204). To add more, in the case of Tirumagal, she even behaves in a violent way by kicking Muthukumaran in a dispute. Using violence against a partner is associated with the male hegemonic masculinity. She exhibits these masculine traits and performs the acts of manhood.

Ambai paints a vivid picture of the current socio, political, economic, and cultural life. She has established the male-female dichotomy in her stories. Without one, the other cannot be studied. They are binaries. Here the 'othered' gender is male. The stories and the issues dealt in them are still relevant and contemporary for the 21st century readers. Despite the time factor, the social scenario has not changed much. Closely observing the representations of men from literature and popular culture reveal their attitude, etiquettes and thinking patterns. The essential crux of feminism or any theory that studies the marginalized is not placing the peripheral in the center. But to delineate the margins and destruct the center so that there will be

an endless dialogue between different things. So, studying men and their pursuit of manhood needs much attention.

The relationships between men with men and men with women are in constant flux. The stream of manhood that flows in/through different men has much more historical and cultural underpinnings in it. Manhood is manufactured in every family with ethnic, casteist, gender and class consciousness. Masculinity interacts with society and perpetuates its domination. In a society like ours, educating the nature of masculinity and its social and mental hazards must be considered for the larger part of gender sensitisation. Aamir Khan in an interview about his film “Taare Zameen Par”, stresses on the need of gender sensitisation to boys at an early age. He further adds that, in a patriarchal society like ours, “Unless we re-look at and hopefully re-define what a man is, things are not going to change” (Times n.p.) Hence, the images of masculinity as well as femininity have to be mediated in order to generate a genderless space for the future. In this light, this study of masculinity and its transformations unveils the long believed myths of manhood and questions that have to be addressed to create a better gender neutral society. This paper not only addresses how so far masculinity has been caricatured in literature but also it attempts to point at the direction at which the posterity should progress towards.

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**Constructive Identity: A Phenomenological Reading of
Gabriel Okara's
"Once Upon A Time"**

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Abstract

Everyday experience is an important aspect of one's life because; it creates an identity not for a particular individual but for a society. Society stays conscious in terms of cultural, social and philosophical. One such discourse is presented in Okara's writings. A man of vision and revolutionist who shed his footprints in the celebrated poem "Once Upon A Time" to celebrate endlessly. It is a need of an hour to address this particular poem in the context of individual experience. When something is eternal inside it also reflects and shapes the outside writer's world too. This article tries to delineate the phenomenological experience of the poet.

Key terms: Identity, Culture, Society, Construct, Resistance and phenomenology.

Gabriel Imomotimi Okara (1921-2019) is a revolutionary Nigerian writer. His exceptional work, *The Voice* (1964), discussed the crisis between tradition and modernity. The philosophical mundane collection “The Fisherman’s Invocation” (1978) narrated the relationship between nature and humans, where humans struggle to make meaning in their lives (Ijaw people). The maturity of the writing comes out in his final part of writing, one collection is, “The Dreamer, His Vision” (2005) portrays the emotional bond between individual and culture. His primary concern is to document the live perceptions that he has experienced throughout his lifetime like a British William Wordsworth. Wordsworth is known for his lively and phenomenological experience that one can see in *Daffodils*, *Tintern Abbey* and *The Prelude*. These seminal works address “What he had seen rather what he had imagined.” Similar he (Okara) had written what he had seen and experienced through his life. His works are philosophical in nature at the same time, he presents conscious experience to seek the nature of reality.

Okara’s blend of Ijaw and English language created him a unique one among other gigantic Nigerian writers like Chinua Achebe, Wole Soyinka, J.P. Clark and Ngugi Wa Thiong’o. He mostly stressed the anxiety between tradition and modern culture. The use of ordinary dialect made him universal along with day-to-day symbols and images one witness in their day-to-day life. His beauty is visible through his poetry in which he

transmits complex emotions into an ordinary one. This ordinary poem observes the phenomenological perspective in every line. It appears as if he is conversed with his son but he converses with every one of his Ijaw people saying that from then to now all of us (Ijaw's) are the same does not wish to be separated either physically or psychologically. The entire community spent time in eternal bliss; the people never betrayed one another. They laughed with complete surrender to one another. He further says that people's love is indissoluble, this has to pass on and on no one changed or altered from then to now. He writes:

Once upon a time, son,
they used to laugh with their hearts
and laugh with their eyes:
but now they only laugh with their teeth,
while their ice-block-cold eyes
search behind my shadow.

Okara's philosophical tone is to enlighten the people from dark to light. He can realise and imbibe the temper of his fellow beings that he never wishes to fade away. He perhaps informs his people not to be heartless because of the situation and environment, he also informs people to think and do the unfilled things. He felt that something is lack in mind of the people but it does not mean that something is not attainable. His

perception is simple in terms of lexical but the ideology is sharp. However, he stresses further that the world is rapid to make people feel bare. He alarms, his people to be cautious in certain situations. He marks:

There was a time indeed
they used to shake hands with their
hearts:
but that's gone, son.
Now they shake hands without hearts
while their left hands' search
my empty pockets.

Okara, in this stanza, feels not to be alienated because his prophecy is phenomenological. He felt that the landscape had undergone a tremendous one. He felt alienated due to migrations, where his people move from one place to the other, where they become the true other forgetting their true colour. He, himself tried to move somewhere that feels his home but fortunately, his landscape made to realise the right home is, where his heart feels only one thing that his land is his home. He puts:

'Feel at home!' 'Come again':
they say, and when I come
again and feel
at home, once, twice,

there will be no thrice-
for then I find doors shut on me.

Okara stands anonymously in this stanza to show his people the right path. Of course, people have much responsibility to lead their families he never wanted to escape from it but he wishes that the temporary face should not be everlasting. He stresses rationally that every parent has a different role to play in society but apart from that, every parent has a responsibility to look back at their culture and society. Further, he remarks that immortality comes to his people only after something that one should do to his/her people to live/follow (smile) on without end. He inscribes:

So I have learned many things, son.
I have learned to wear many faces
like dresses – homeface,
officeface, streetface, hostface,
cocktailface, with all their conforming
smiles
like a fixed portrait smile.

In this stanza, Okara presents the double identity, that his identity is recovered. He feels relished from the bottom of his heart, in which he acknowledges that something weird is

vanished. He can visualise the scene that everywhere is green in his heart. His roots stand still because his body can feel the rational self in him. He knew that the renaissance of his identity, culture, and society was phenomenological. His transformation is sensuous because he feels the smell of his raw mud. His inner experience is impeccable because he witnessed the space being liberated. The conscious experience of his surroundings is mesmerising there are no assumptions perhaps only possibilities. He states:

And I have learned too
to laugh with only my teeth
and shake hands without my heart.
I have also learned to say, 'Goodbye',
when I mean 'Good-riddance':
to say 'Glad to meet you',
without being glad; and to say 'It's been
nice talking to you', after being bored

Okara believed that everything has a time to change but the inner space never wishes to change if it is occupied by nostalgic thoughts. Even the homesickness appears meaningful when the unknown is owning one's land which is not theirs which makes even the own land alienated but the temperature of the body makes him/her realise that the country is theirs.

Through this stanza the poet made his people and country remake in terms of identity and the way of life. The poet kindles everyone to shine though for others the land appears dark outside but the truth is that the land is rich. He engraves:

But believe me, son.

I want to be what I used to be
when I was like you. I want
to unlearn all these muting things.

Most of all, I want to relearn
how to laugh, for my laugh in the mirror
shows only my teeth like a snake's bare
fangs!

In the final part of the poem, he asks his people to live (smile) which never ends from now on. He means that someone moved out but something left valuable to show that the pain that our people have undergone is immeasurable by hands or words. But the forefathers resisted them from the clutches of the tyranny. The poet observed the physical and psychological nuances of his forefathers that made him/her have an eternal smile (identity).

So show me, son,
how to laugh; show me how

I used to laugh and smile
once upon a time when I was like you.

Okara's brilliant use of the English language made the world look back at Nigeria and what they have lost. He is exceptional in his pen that he declared his emotions distinctively through his poem "Once Upon A Time". It is a masterpiece of his that makes everyone contemplate their countries. His observation of everyday life is faultless in the poem.

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Nai Talim: An Application of Experiential Learning Activity to Enhance Academic Achievement among Prospective Teachers

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ABSTRACT

"The principal idea is to impart the whole education of the body, mind and soul through the handicraft that is taught to the children." - Mahatma Gandhi

Nai Talim : Gandhi's Philosophy of Education, knowledge cannot be separated from work. The three pillars of Gandhi's pedagogy were its focus on the lifelong character of education, its social character and its form as a holistic process (Kumari, S.2016). Education is the most powerful tool to inculcate the value of dignity of labor among youth and to develop various skills. Nai Talim is the ultimate way of learning with skill acquisition, gaining knowledge and learning with practical application Vinoba (1959). Nai Talim based activity is used to improve the academic achievement of prospective teachers. The aim of the present paper is to study Nai Talim in enhancing Academic Achievement among prospective teachers. Research design applied is Exploratory Sequential Design (Mixed method). The one group pre-test, and post-test

design are applied for the present study. The total sample size of sixty two prospective teachers participated and explored in Nai Talim experimentation. Result of the study reveals that Nai Talim based activity develops academic achievement among prospective teachers.

KeyWords: Nai Talim, Experiential Learning, Academic Achievement,

INTRODUCTION:

The foundation of Nai Talim is on the theory that work and knowledge are integrated. Nai Talim is a holistic approach for nurturing mind, body and soul by making creative craft, art, community participation activities as the centre of learning (Dasgupta, P. 2015). In the present century education must be innovative and it should help students to flourish, participate and demonstrate process to improve the global economy. In present situation “success” means to access, synthesize and to cooperate across differences to solve problem and to create new knowledge through the use of eco-friendly modern technology. Nai Talim system could be a vital alternative for development of sustainable society highlights the possibilities of reframing the mainstream education around basic tenets of Nai Talim interms of school curriculum, Pedagogic and

assessment practices co-scholastic activities, school climate, school management and innovations(Bhave, Vinoba(1959))



Fig.1. Approaches of Nai Talim (Mallika Kalita, 2019)

Hands on learning is acquired through action i.e., by doing, experience, discovery and exploration. Education must be progressive and must have experiential component in lesson. In progressive educational system quality of experiment is essential. The progressive educational system has strong foundation of philosophy that privilege experiences that are fruitful and creative.

REVIEW OF RELATED STUDIES

Laura Colucci Gray and Elena Camino (2018) studied on "Transformative education: the opportunities of science teaching and learning for a sustainable global citizenship". In this contribution, authors discuss the relevance of Gandhi's idea of Sarvodaya - professing self-reliance and interdependence for the development of Indian villages – to revisit the theoretical premises and practices of science education for sustainability. Gandhi's' reflections on the nature of Western science and technology are put into dialogue with the insights of contemporary theorists in the field of the epistemology of science to extract the basis for a transformative pedagogy in science education. The key dimensions of community learning, dialogue, the multiplicity of perspectives and creativity in practical work set the basis for an education which sustains the cognitive, social and spiritual development of all students. Examples of activities conducted in a variety of teaching contexts are described with a view to extending Gandhi's insights to current discussions about science education for sustainability and social justice.

Sarla Nirankari (2015) in the study of “Gandhiji”'s Views about “Education and Teacher” and opined that Modern education is hugely influenced by the great educationist Mahatma Gandhi. “His concept of basic education in terming led by Satyagraha, self-reliance, practice a implementation of truth and nonviolence has increased the viability of his educational philosophy. The

object of higher institutions, which Gandhiji seems to look up on as the keystones of the new education is to train teachers. These institutions will be more than school so colleges; they might rather be called convents, where the sacred fire of India will be concentrated in order afterward to radiate throughout the world. The rules that Gandhiji prescribes for the school of Satyagraha Ashram or place of discipline, at Ahmadabad his model institution, concern the teachers more than the pupils, and bind the former by monastic vows. He opined that teachers should be the role model for the students. If teachers are concerned about the true following Gandhiji's philosophy the student's world will in voluntarily get better".

SIGNIFICANCE OF THE STUDY

Nai Talim (Craft and Productive work based learning activities) is an approach which provides an opportunity to acquire knowledge, attitude and skills through direct experience activities, reflect on teaching experience and able to transform knowledge into functional experience in day to day life situation (Panse Ramesh, 2007). Nai Talim learning method promotes different activities where students can reflect, develop knowledge, skills and attitude and apply to new situations in daily life. Learning must be based on skills. It should transform the learning into useful products and performance that constitutes skills and knowledge. Learning takes place as a result

of experiences in day to day life. To enhance quality education, learning climate must be appropriate to meet individual differences (Swami D.N, 2010). The Craft and productive work based learning activities integrated with physical science pedagogy curriculum will have significant impact on Academic Achievement and sustainable development of Prospective teachers. Hence investigators made an attempt *to provide* Nai Talim: An Application of Experiential Learning Activity to Enhance Academic Achievement among Prospective Teachers.

OBJECTIVE OF THE STUDY

- To analyse the effectiveness of Nai Talim in enhancing Academic Achievement on pedagogy of Physical Science towards sustainable development among Prospective teachers.

HYPOTHESIS OF THE STUDY

- There is no significant difference between the mean scores of the pre test and post test of physical science Prospective Teachers in their Academic Achievement.

Method: Mixed Method.

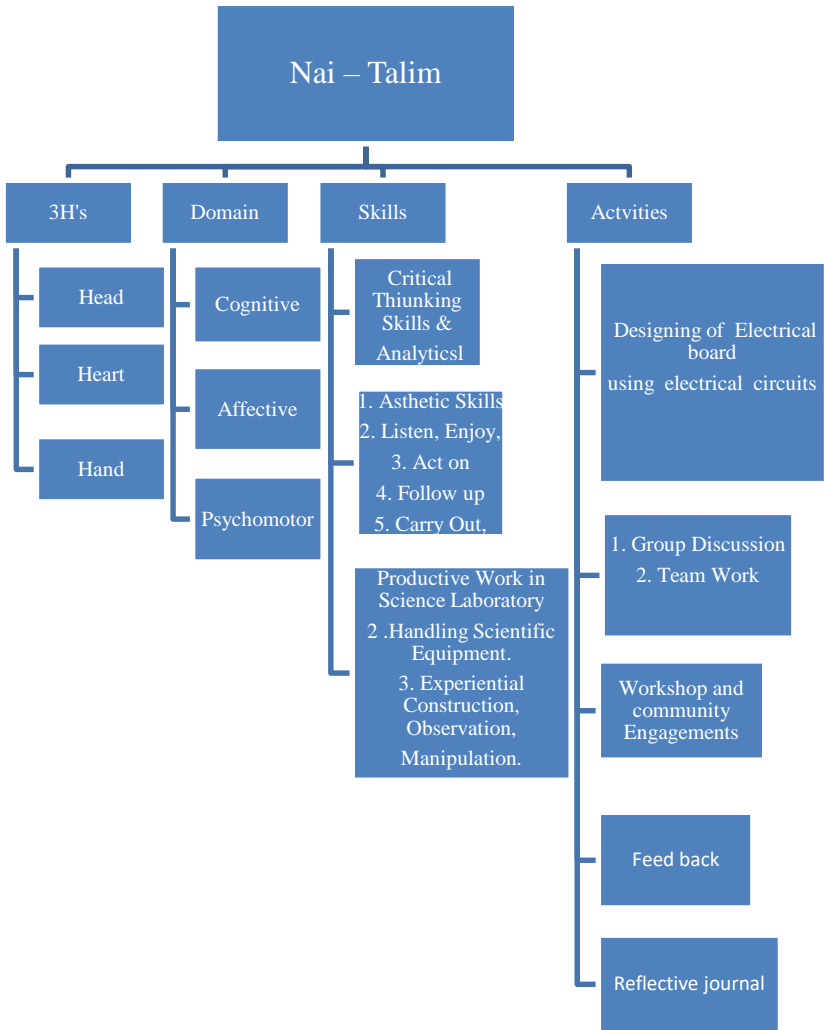
Design : The Exploratory Sequential Design is used (Single group pre-test and Post-test design)

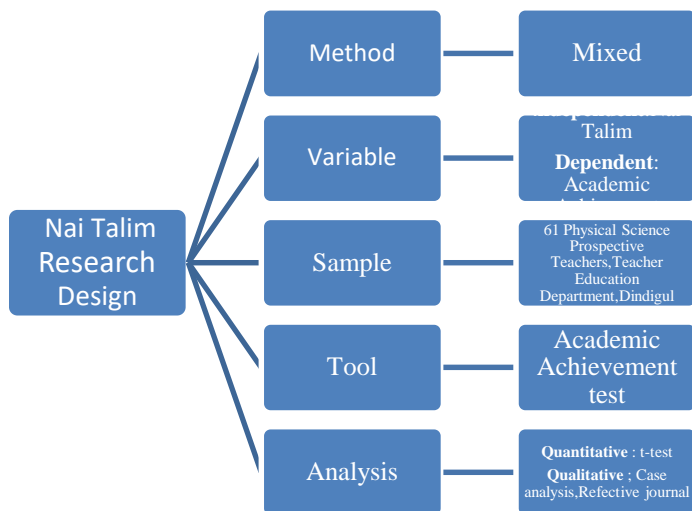
Sample Size: The sample size of sixty one Physical Science Prospective teachers belongs of Department of Teacher Education, Dindigul District.

Intervention: Nai Talim based Lab activity.

Tool: The Academic Achievement test consisting 50 questions.

Nai Talim Framework for Lab based Activity:



Nai Talim Research Design :**Aim of the application of Experiential Learning Activity**

- To Study the scientific properties of electrical and electronic Gadgets
- To design Electrical circuits.

Materials Required

1. Jumper wires. 2. Arduino Mega 3. Soldering tools
4. Electrical tape. 5. Temperature sensor 6. Humidity sensor.

Procedure

DHT 11 sensor used to measure temperature, humidity and voltage. DHT II sensor gives out the digital output .The humidity is inversely proportional to the temperature. The

increase in temperature causes decrease in humidity. The Arduino board works between 5V to 12V therefore it can measure voltages upto 5V. open source electric circuit to measure temperature, voltage, humidity collectively which is an innovative and creative outcome of the Nai Talim activity .

Result: The designed electrical board is used to measure temperature, humidity and voltage simultaneously.

Steps for Nai Talim Activity:

Nai Talim: An Application of Experiential Learning Activity.



Glimpses of Nai Talim Activity:



Result:

Table 1: Pre test and Post test scores of Academic Achievement of Prospective Teachers

Group	N	Mean	SD	df	t – value	p - value
Pre test	62	55.74	6.444	60	16.058	0.000
Post test	62	74.23	8.391			

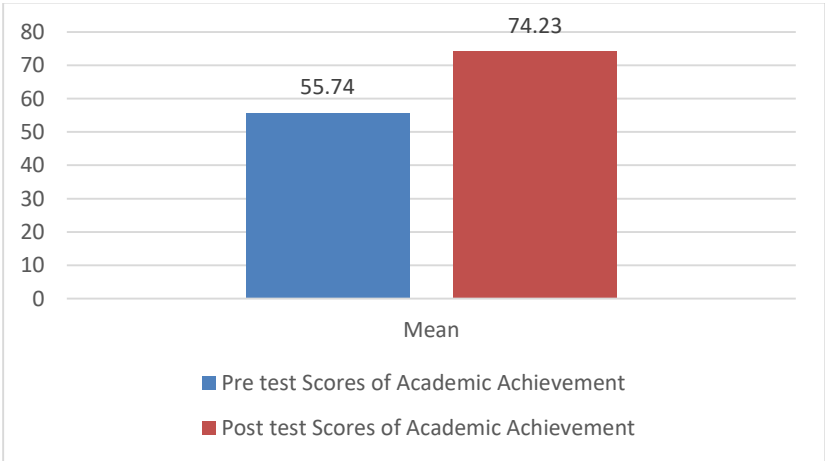


Fig: pre test and post test scores of Academic Achievement of Prospective Teachers

The above table and figure show that, pre and post test mean scores of academic achievement 55.74 and 74.23 respectively with a standard deviation of 6.444 and 8.391 respectively. The post test mean scores are higher than the pre

test scores of academic achievement. The calculated t value ($t=16.058$) is greater than the table value at 0.05 level with $df=60$. Hence, the null hypothesis “there is no significant difference between mean score of pre and post test academic achievement” is rejected. Therefore, it may be concluded that, the prospective teachers post test academic achievement score is higher than the pre test.

Nai Talim hands on learning enhances the prospective teacher academic achievement in pedagogy of physical science. The prospective teacher interest toward science is influenced by hands on learning. Result of the study reveals that prospective teacher academic achievement in pedagogy of physical science is shaped by the Nai Talim activity. In absence of Nai Talim hand on activity the prospective teachers feel that pedagogy of physical science is difficult subject, boring and not much interesting.

CONCLUSION:

Appliance of Nai Talim learning in Pedagogy of physical science curriculum can be used effectively. Nai Talim strategies in teaching science can be effectively used in school and college level. Organizing Nai Talim activity helps Prospective teacher to have experience and become interested in Pedagogy of physical science. We have analyzed that Gandhiji's Nai Talim mode has come to the definition of

Experiential Learning Activities. It is the basis for selecting and organizing the type of experiential activities which helps prospective teachers to have interesting experience and become positive approach in teaching science. Nai Talim is being revisited by the educationists particularly science educators to seek out a solution for sustainable development. It has an in built strategy of craft based pedagogy which can be employed as a prelude for science teaching and learning to faster required knowledge, skills and values in the students to become aware and sensitive towards the knowledge of various occupations including agriculture, gardening, spinning , metal work and wood work. Learners are exposed to four stages like: concrete experience, abstract conceptualization reflective observation and active experimentation during the process of Nai Talim learning activities. Well organized learning activities will be able to teach students the skills to apply knowledge into practice, motivation, positive learning and students are interested in learning. Inculcate the value of dignity of labour among prospective teachers and develop professional skills thus transforming all to skilled man – power.

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TUNABLE FUSION TECHNIQUE FOR BRAIN TUMOUR IMAGE ENHANCEMENT

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Abstract

The proposed work is to develop a method for enhancing the tumour portion in brain scans using image fusion technique. In medical field, magnetic resonance imaging (MRI) technique is used to brain tumour analysis with multimodal MRI images such as Flair, T2, T1 and T1c. In the proposed work, these multimodal MRI images are fused using a pseudo colouring process. Then the grayscale of the pseudo colouring image is produced by tunable gray scale transformation. MRI BRATS dataset are used for the experiment study. The evaluation parameters are used to observe the fused image performance against every single MRI modality.

Keywords: Tunable Fusion, pseudo colouring, grayscale transformation, Brain Tumour, Image Enhancement.

1. Introduction

Medical image fusion is processed by combining the features of different images and provides all the features in one image [1]. The input images are captured through different sensing devices under multiple parametric settings. It is impossible to focus on all features in a single image. Therefore, image fusion methods composite the different images, known as fused images, with relevant information. The fusion process improves the class of the image with good contrast. The additional information provided by the fused image will be used for medical diagnosis.

In Medical diagnosis, various techniques are followed by the doctors to avoid the medical problems through the images of the human body. Implementing multi-sensor and multi-modality image fusion techniques for better displays data used for medical diagnosis. It helps to gather the relevant information for the treatment because they are invisible to the human eye. This information from the fused images gives healthy support to the doctors when the treatment is made for the patient.

Image Fusion methods categorized as spatial and frequency domain-based fusion [2]. In spatial domain fusion, the algorithms are openly implemented in the intensity value of the source image, whereas frequency domain fusion is implemented using a specific frequency transform. Apart from this, medical

image fusion techniques are categorized into three levels: Pixel, Feature and Decision -based techniques.

The pixel-based techniques are processed directly in the pixels of the images. The Feature level image fusion focuses on the source image's objects. It will extract the features such as lines, corners, edges, and objects [3]. It is mainly applied in pre-processing techniques for image segmentation or change detection. The decision-based technique is performed in the resultant image from the different image fusion algorithms [4]. The target is to integrate the collection of outputs from different algorithms to finalize the better fusion output. Voting methods or statistical methods are used to make the decisions. In the proposed method, we use the pixel-based method to fuse the multimodalities of MRI brain tumour images, which are T1, T1C, T2, and Flair.

Pixel Based Image fusion mostly plays a role in remote sensing, medical imaging, computer vision, etc [5]. It directly merges the input features to produce the fused output image with more reliable for optical perception and in processing that fused image in the computer. Pixel-based fusion is more straightforward and effective when compared to feature-based and decision-based techniques. After applied this fusion process in multiple images, the resultant fused image will be more informative. Pixel Level image fusion system contains six stages

[6]: Imaging, Image Registration, Pre-processing, Fusion Rule, Post-processing and Resultant image as shown in Figure 1.

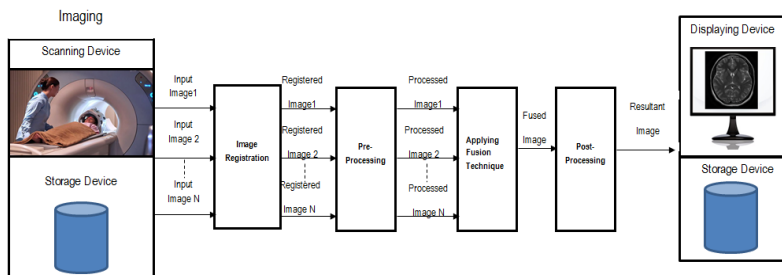


Figure 1: Pixel-Based Fusion Design

Among other methods in pixel-level fusion, averaging method is the simplest one. When original images of X and Y are combined and produce images as fused one F , the output image F has the mean value of each pixel taken from two source images [7].

$$F(p, q) = \sum_{p=1}^n \sum_{q=1}^m (X(p, q) + Y(p, q)) / 2 \quad (1)$$

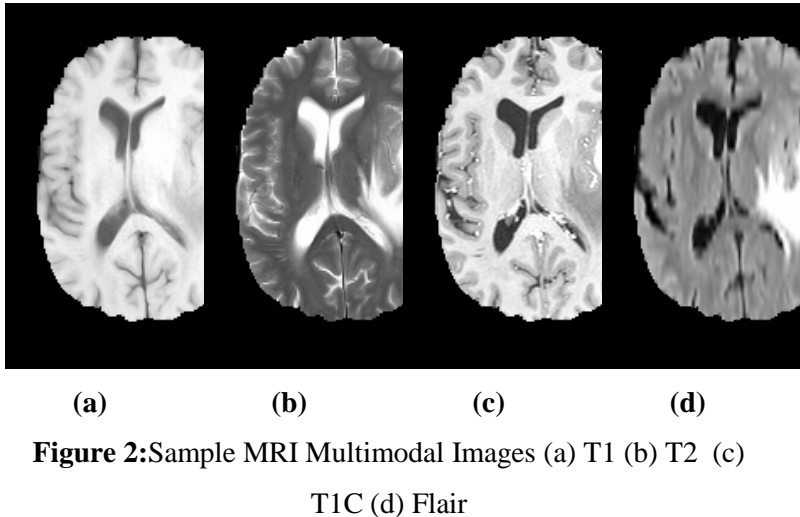
The sum of pixel values of two or more images is calculated and separated by the given number of source images that produce the resultant image. This method focused on all the regions in the images. The primary benefit of this method is fast execution.

A collection of unwanted or abnormal cells in the brain is termed as brain tumour. MRI is an imaging technique used in medical diagnosis for a brain tumour. In treatments for brain tumour patients, doctors used this technique to capture the patient's brain images. The structure of the brain tumour portion can be viewed ideally by the MRI scans. Different modalities can be captured by MRI, which are T1-Weighted (T1), T2-Weighted (T2), T1- Contrast Enhancement (T1C), and Flair [8]. A sample MRI multimodal image set is shown in Figure.2.

The brain tissues such as White Matter (WM), Gray Matter (GM) along with Cerebrospinal Fluid (CSF) has different intensity characteristics in each modality. WM appears as light gray and GM appears bright in T1 image [9]. In T2 image, WM appears as dark gray. CSF appears black in T1 and white in T2 image. The background of the image (air), fibrous tissue is appearing dark in both T1 and T2 sequence. T1C is a post-contrast brain tumour image. The Flair sequence is a converted T2- weighted with dark WM.

Most brain tumours appear as hypo-intense relative to normal brain tissue on T1 images and hyper-intense on T2 images. Therefore, T2 images are commonly used for providing an initial assessment, identifying tumour types, and distinguishing tumours from non-tumour tissues. In T1C, the tumour portion appears as GM and other portions appear as WM. In Flair, the tumour portion appears with increased contrast. The

brain tumour image provided with more information by combining these modalities.



In the proposed work, the multimodality MRI brain images are directed to three channels of colour models and merged by the fusion rule. The pseudo coloured image is again converted into gray image using a tunable gray scale transformation based on the kind of brain tumour abnormality detection. The fused image characteristics are validated both visually and quantitatively using the well-known fusion evaluation parameters. The proposed tunable fusion technique (TFT) gives better results both in quality and quantity.

The rest of the paper is organized as follows: Section 2 presents the related works, Section 3 presents the

methodology with the steps used in the proposed technique, Section 4 presents the materials and metrics, Section 5 presents the results and discussion and finally Section 6 contains the conclusions and future work.

2. Literature Survey

Amer Mohamed, et.al, [10] suggested a new method using a convolution neural network for image fusion. They compared the image fusion methods with different datasets from the center for cancer imaging (TCIA). The experiment result of CNN with Euclidean distance algorithms gave the accurate result. The evaluation parameter PSNR is applied for the quantitative measure. They compared their result with other published work and showed a higher value for the performance.

Rajinikanth, V. et.al, [11] proposed a work with computer-assisted technique (CAT) to extract the tumour portion in the MRI brain scans. They used the hybrid approach by combining each modality to segment the brain tumour portion. The pre-processing works were done with DWT-PCA-based image fusion and Tri-level thresholding methods. This proposed CAT is evaluated by similarity measures to prove the efficiency of the methods.

Rani, V.A et.al, [12] proposed a work for multimodal hybrid image fusion with MRI and CT images of the brain. The

fusion process is established by empirical mode decomposition and discrete wavelets transform algorithm. Then resultant fused provided all the information with no distortion. The quantitative analysis was made to estimate the quality of the fused image, which gave a better result.

Polinati S et.al, [13] proposed a method to fuse the different modalities. The modalities are MRI, PET, and SPECT. They implemented Empirical Wavelet Transformation (EWT) and Local Energy Maxima (LEM) to merge the images. In this proposed method, the edges are preserved by the EWT. The comparison is made with other methods to examine the performance of proposed method. Fusion process using EWT and LEM gave better results in performance evaluation.

El-Hosny, H. M et.al, [14] discussed several techniques of medical image fusion. They developed hybrid fusion techniques to increase the depth of the image. Hybrid fusion implemented by Additive Wavelet Transform and Dual-Tree Complex Wavelet Transform produced the image with better visualization, high quality and low processing time.

Patel, J. M et.al, [15] proposed a method using Multi-Resolution DWT and Multiscaling Discrete Ripplet Transformation for image fusion. They used the modalities like CT and MRI. The fused image of these modalities gave the excellent quality of the image. The results were evaluated by the

metrics like PSNR and MSE, which shows better result for the proposed method.

3. Methodology

The proposed pixel-level, pseudo-colour based TFT is a two-phased algorithm as given below and its flowchart is shown in Figure 3.

Input: Input the multimodal brain tumour images
T1, T1c, T2, Flair

Phase I: Apply a pseudo colouring process by assigning the suitable MRI images with each colour channel. Here Flair as Red channel, T1C as Green channel, T2 as Blue channel.

Phase II: Apply gray-scale transformation

Output: Output is fused gray image

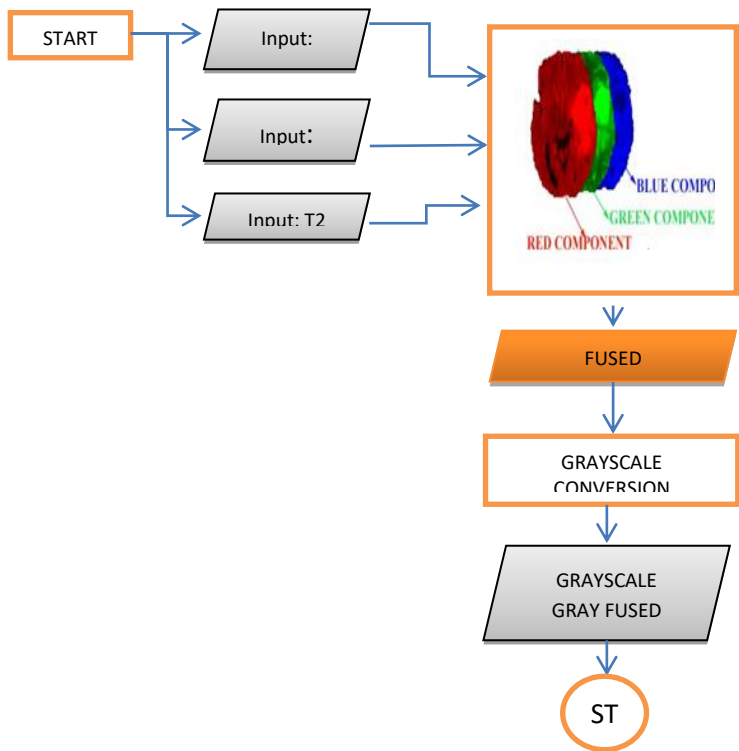


Figure 3: Flowchart of Proposed TFT

The multimodal images produced by MRI technique such as Flair, T2, T1 and T1C are in gray-scale images in general. These images plays major role is brain tumour and its substructures detection using MRI scans. Hence these gray images are suitable to assign to respective three colour channels of RGB model in pseudo colouring process. The selection of multimodal MRI images for three colour channels are based on rules associated with brain tumour image characteristics. In

phase 1, the association rules are tunable for assigning the multimodal images to colour channels and thus producing the pseudo colour image as shown in Figure 4(a). The colour channels and their respective pseudo colour image for the sample MRI multimodal images given in Figure 2 is shown in Figure 5(a) – (d).

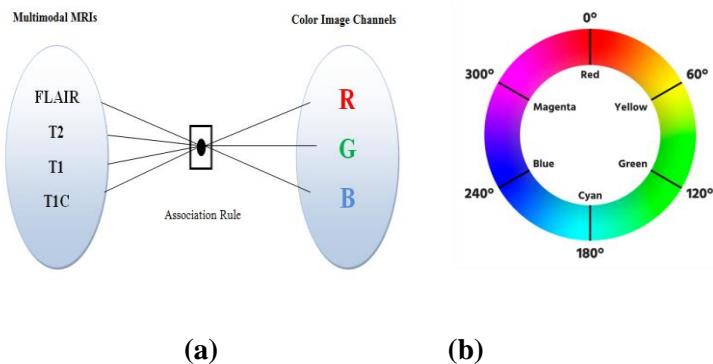


Figure 4: (a) Tunable Pseudo Colouring Process (b) Computer Colour Wheel

Then, in phase-II, the fused colour image is converted into gray image using gray-scale transformation based on the following RGB weight assignments.

$$\text{RGB-Weights} = [x, y, z] \quad (2)$$

The gray-scale transformation for the above weights is defined as,

$$\text{Gray} = Rx + Gy + Bz$$

(3)

The values of x, y and z are fixed based on the tumour portion colour appeared in the pseudo colour image. Based on tumour colour knowledge, the values of x, y and z are normalised using the computer colour wheel as given in Figure 4(b) and the respective gray scale fused image is produced as given in Figure 5(e).

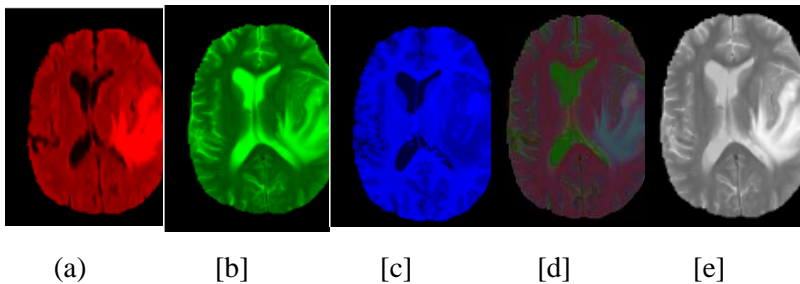


Figure 5: Results of proposed work (a) Flair – Red
(b) T1C - Green (c) T2 – Blue (d) Fused Colour Image
(e) Fused Gray Image

4. Material and Metrics:

A large dataset of brain tumour scan images is contained in the BraTs database [16]. This is the publicly available dataset. Several image processing algorithms for brain tumour analysis are developed using this dataset. MRI brain tumour multimodal slices from the BRATS are used in our experiment. The experimental system of this process used the configurations: Intel Pentium Processor, 4 GB RAM, Windows 8, 64 bit, Python 3.8. The proposed method is validated with the evaluation parameters such as Standard Deviation (SD), Entropy (EN), Mean Absolute Error (MAE) and Normalized Cross Correlation (NCC).

Standard Deviation (SD) is a statistical measurement which is used to estimate the level of gray values in the image. If the SD is high then the result will be better [17]. It is defined as,

$$SD = \sum_{i=1}^X \sum_{j=1}^Y (f(i, j) - \bar{F})^2)^{1/2} \quad (4)$$

Here, $f(i, j)$ is the intensity value of the image and average value of an image is denoted by \bar{F} .

Entropy (EN) is to calculate the volume of information and the gray level distribution of the fused image [18]. It is defined as,

$$EN = -\sum_{m=0}^L P(x) \log_2 P(x) \quad (5)$$

Here gray level of an image is indicated by L. $P(x)$ denotes L's probability density. The higher Entropy value indicates that the image has more information.

Mean absolute error (MAE) is a metric to find the absolute error between the original pixel value and the fused pixel value and defined as,

$$MAE = \frac{1}{X^2} \sum_{p=1}^R \sum_{q=1}^C u(p, q) - v(p, q) \quad (6)$$

where $u(p, q)$ is the fused image pixel value, and $v(p, q)$ is the original image pixel value [19].

Normalized cross correlation (NCC) is a metric to calculate the similarities among reference image and fused image [20] and defined as,

$$NCC = \frac{\sum_{i=1}^m \sum_{j=1}^n (A_{ij} * B_{ij})}{\sum_{i=1}^m \sum_{j=1}^n (A_{ij})^2} \quad (7)$$

5. Results and Discussions

The proposed brain image enhancement is done using the tunable image fusion technique. The performance of the fused image is validated by qualitative and quantitative metrics.

The qualitative analysis is done by the visual comparison between the binary forms of original and fused images. Figure 6 shows binary images of multimodal input images, fused binary image and gold standard binary image. The visual comparison between these images shows that fused binary image is comparable with gold standard tumour image and explores the tumour portion with better visual quality.

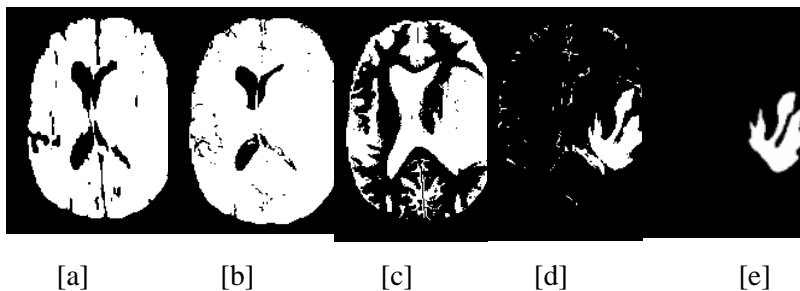


Figure 6: Binary Images (a) Flair (b) T1C (c) T2

(d) Fused Image (e) Gold Standard

The quantitative analysis is done with evaluation parameters defined from equation (4) to (7). The EN and SD

values of source images: Flair, T1C, T2 and fused image are listed in Table 1. The EN value of fused image is higher than other images that shows that the fused image has more information than other single images. The SD value of fused image is lower than others. This shows that the fused image has more relevant information.

Table 1. Entropy and Standard deviation

Metric	Flair	T1c	T2	Fused
EN	4.493087	4.546812	4.525391	7.969643
SD	82.763757	103.553163	76.737506	25.209459

In the proposed work, NCC is calculated in three combinations of modalities: Flair with fused, T1C with fused and T2 with fused and listed in Table 2, we found that the fused image is positively correlated with all the modalities.

Table 2. Normalized Cross Correlation between each modality and fused image

Modalities	Normalized Cross Correlation
Flair and Fused	0.295639

T1C and Fused	0.225916
T2 and Fused	0.338188

MAE is applied between each modalities and fused image. The MAE results are inferred in Figure 7. The value of MAE is higher since the tumour portion is brighter in the fused image with good contrast when compared to other modalities. Higher value of MAE in fused image denotes that the fused image is better in quality.

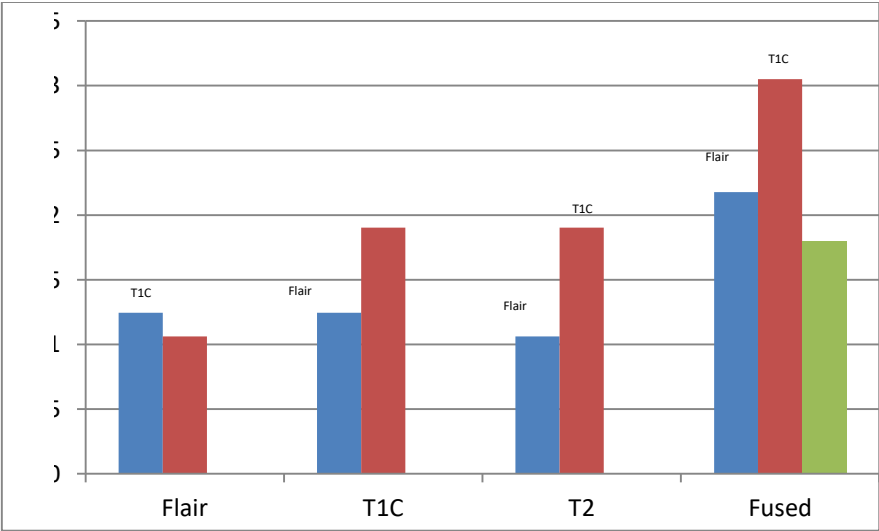


Figure 7: Mean Absolute Error between each modality

MAE is applied between the combination of T1C, Flair and T2. The average value of these three combinations results are calculated as Average Mean Absolute Error (AMAE) and listed in Table 4. Then AMAE of fused with Flair, T1 and T1C is calculated and given in Table 4. The value of AMAE for the combinations of other modalities with fused image is higher since the fused image is better quality when compared to other modalities.

Table 4. Mean Absolute Error between each modality with Combination

Modalities	Mean Absolute Error	Average Mean Absolute Error
Flair and T1C Image	0.124375	0.140351
Flair and T2 Image	0.106284	
T1C and T2 Image	0.190394	
Flair and Fused	0.217843	0.234378
T1C and Fused	0.305096	
T2 and Fused	0.180195	

Conclusion:

The proposed work combines multimodalities of MRI brain tumour images to provide the fused brain tumour image. The proposed method gives a resultant fused image with high quality and a better visual effect of the tumour portion in the image. The evaluation metrics used here are Entropy, Standard Deviation, Mean Absolute Error and Normalized Cross Correlation which give better results for fused images when compared to other modalities. In the future, we are planned to implement the other methods of image fusion techniques to get accurate results for MRI of human brain tumour analysis.

Conflict of Interest:

The author of this article has no conflict of interest.

Ethical Statements:

This article does not contain any studies with human participants or animals performed by any of the authors.

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Role of Ethnic communities in conservation of Sacred Grooves

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Abstract

Sacred grooves are the remnants of forest areas where the ethnic, indigenous forest dwelling tribal communities live. They consider such areas as pristine and hold immense ecological and cultural value. Certain unwritten rules, regulations and practices are strictly followed by the ethnic communities which run through several generations to protect and conserve the sacred grooves and their ecosystem. The study area is the foot hills and the slopes of the Velliangiri Hills of the The Nilgiri Biosphere Reserve. This study has been taken to find out the role and contribution of such ethnic communities in the conservation of sacred grooves.

Key words: sacred grooves, ethnic, rituals, taboos, conservation.

Introduction

The Indigenous forest dwelling tribal communities live in harmony with nature and have a tradition of conservation of ecosystems where they inhabit. Such representations are the present day sacred forest areas what we call it as “sacred grooves”. They are situated in tribal dominated areas. These sacred grooves are remnants of virgin forests with rich biodiversity. These areas are protected by the local ethnic groups who are endogamous for many centuries which reflect their traditional, cultural and religious beliefs. Each and every groove has its own leading deity along with guardian deities¹. Contemporary India is an agglomeration of over 40,000 endogamous groups². There are myths, legends, taboos and folklores which are integrated with the practices of that particular community. This study has been taken to evaluate the role and contribution of such ethnic communities in the conservation of sacred grooves.

Study Area

The study area is the foot hills and the slopes of the holy mountain Velliangiri Hills which is a part of the world heritage site ‘The Nilgiri Biosphere Reserve’, located in Western Ghats in Tamil Nadu State where the tribal people Malasar inhabit. This

mountain range which is popularly known as South Kailash is situated near Coimbatore. It forms a major range in this biosphere reserve, revered for its medicinal plants³. The study area has typical tropical climate and is situated in the elevation of 300 MSL with an annual rainfall about 150 mm⁴.

Methodology

A randomized sampling approach was utilized to choose the hamlets. A total enumeration method and the views of opinion leaders were employed for the selection of respondents, ensuring the inclusion of all individuals within the selected groups. This study used an in-depth interview to gather the needed data. Questionnaire with dichotomous questions were used to evaluate the prevalence of Aboriginal Knowledge regarding the sacred grooves and open ended questions were used to identify the methods of indigenous conservation.

Results and Discussion

Sacred grooves

There are more than 1,50,000 sacred groves in India. Most of them are situated in the Western Ghats, central and northeast India. These sacred grooves are known by different names in local ethnic terms such as Devaravana or Devarakadu in Karnataka, Law Lyngdoh or Law Kyntang in Meghalaya, Dev van in Himachal Pradesh, Sarna or Dev in Madhya Pradesh,

Sarnas in Bihar, Devrai or Deovani in Maharashtra, Orans in Rajasthan, Sarpakavu or Kavu in Kerala and in Tamil Nadu it is known as Kovilkaadu. In Jharkhand and Manipur they are known as Sarana and Lai umang respectively.⁵

Sacred groves are an essential part of India's cultural and natural heritage. They are important for biodiversity conservation, the preservation of traditional knowledge and practices, and the social and cultural life of local communities. Ancient sacred groves should be treated as possessing “Incomparable Values” according to the National Environment Policy of India.

Ethnic practices

These sacred groves are found all over India, from the Western Ghats to the Himalayas, and are an important part of the cultural and religious heritage of the country. They are typically located near temples, and are considered to be the abode of the local deities. They are also associated with traditional beliefs and practices that are deeply rooted in the local culture.

They are protected and managed by local people on religious grounds and traditional beliefs¹. Specific deities are worshipped in the sacred grooves to protect the local people from different natural disasters and calamities. In India most of the sacred grooves are situated in the Western Ghats, North

Eastern India and Central India. All together 448 groves have been reported from 28 districts of the State of Tamil Nadu⁶. In Coimbatore, the sacred grooves located in the Holy Velliangiri Hills are revered by the indigenous people Malasar. Many groups have their own unique practices in maintaining these sacred places.

Sacred grooves also play an important role in the cultural and social life of local communities. They are often the site of religious and cultural festivals, where people gather to celebrate and perform traditional rituals. They developed the habit of maintaining the biodiversity through judicious and need based utilization of scarce and highly valuable stalk of medicinal plants. All these lead to sustainability of their ecosystem ⁷.

For example, near Sangameshwar in Maharashtra, a sacred grove named Masrang sized 6.5-ha is situated on a private land. The grove has two open wells which are providing water throughout the year. The villagers of Masrang observe the taboos and restrictions associated with the grove to conserve it.

Conservation by the Tribal Community

The taboos, rituals and beliefs associated with the groves, supported by mystic folklore are the important factors which motivate the indigenous people to conserve the sacred groves in their flawless natural condition. According to the unwritten Constitution of the indigenous community, no one can

destroy or cut trees in these sacred groves. Collection of dried wood is also not allowed. These forests are called "virgin" because they are untouched by human activities, remaining in their natural state without any significant human intervention or exploitation. They are considered pristine and hold immense ecological and cultural value.

The tribal communities believe that any damage to the sacred grove, harm to the fauna living in that particular area or destroying any flora will be an invitation to the anger and wrath of the preceding local deity, resulting diseases and poor production or loss of agricultural crops. It is forbidden to take even parts of a dead tree and any violation will result in wrath of the guardian deities including snake gods. Everything whether living or non-living of the grove is protected. The ethnic community of the study area has a strong belief that if any one violates the rule either in the form of cutting and taking a tree or killing an animal in that sacred area or disrespecting the deity would lead to terrible death such as killing by a tiger, attack from a bison or an elephant. Hence indigenous people dare to break the customary rules of the sacred groves. Belief and taboos act as the powerful tools in conservation of the ecosystem. There is a general belief that biomass is not harvested from the sacred groves.

These beliefs and practices are often based on the idea that the grove is home to spirits, ancestors, and other supernatural beings that protect the local community and its environment.

In addition, the groves are often maintained by local communities who have a deep understanding of the local ecology and traditional knowledge about sustainable resource management. This means that the groves are not only important for biodiversity conservation but also for the preservation of traditional knowledge and practices.

The unwritten Constitution

The whole area is considered as sacred grove by the indigenous community in the study area ⁸. The following practices are strictly followed by the ethnic communities which run through several generations to protect and conserve the sacred grooves and their ecosystem.

1. No cutting of trees
2. No grazing
3. No collecting
4. No hunting
5. No harming of living beings
6. No disturbance
7. Protection of birds

8. No entry of women at times

It is strictly forbidden to uproot plants, pluck flowers, harm animals, remove any religious objects.

Modern scenario

Despite the importance of Sacred grooves, they are under threat from various human activities. The pressure on land for agriculture, logging, and mining is increasing, and many sacred groves have been destroyed or degraded.

In addition, the erosion of traditional knowledge and practices has led to a decline in the management of these groves. As a result, many groves are becoming increasingly vulnerable to threats such as invasive species, fire, and other forms of degradation.

Sacred groves have been protected by traditional methods of conservation. Modern conservation approaches are too broad-based and area-specific, ignoring the role of local communities. They emphasise regional and global perspectives than on traditional conservation practices. This conflict has further contributed to the decline of sacred groves.

Conclusion

To protect and conserve Sacred grooves, it is essential to involve local communities in their management and

conservation. This includes supporting traditional knowledge and practices, providing resources and training for sustainable resource management, and raising awareness about the importance of these groves for biodiversity conservation and cultural heritage.

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Exploring Loneliness among the Elderly in Care Homes: The Influence of Age and Gender

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Abstract

Aging is a natural phase of life that presents various challenges, with loneliness becoming a prominent issue among the elderly. This study focuses on the extent and nature of loneliness in older adults living in care homes, examining how age and gender influence their experiences. A quantitative approach was used to survey 100 elderly residents in care homes. The findings indicate distinct loneliness patterns based on age and gender, with older age groups and women reporting higher levels of loneliness. The study reveals that loneliness intensifies with advancing age, amplifying its emotional impact higher in women than men.

Keywords: Loneliness, Health, Emotional well-being, coping mechanism

1. INTRODUCTION

Loneliness is a complex and subjective emotional state characterized by a sense of social and emotional isolation, where an individual perceives disconnect between their desired and actual social relationships. It goes beyond mere physical solitude, encompassing feelings of emptiness, alienation, and a lack of meaningful connections with others. Loneliness can be transient or chronic, affecting individuals of all ages but often becoming more prevalent and impactful in the elderly population (Peplau and Perlman 1982).

1.1 Factors Influencing Loneliness

Individual factors, such as health conditions, cognitive abilities, personality traits, and coping mechanisms, can significantly influence a person's vulnerability to loneliness (Cacioppo and Cacioppo 2014). Physical health issues or cognitive decline may limit social participation, leading to an increased feeling of isolation. Social factors also play a critical role; the quality of personal relationships, the strength of social support networks, and the degree of community involvement are essential (Holt-Lunstad et al. 2010). A lack of close, supportive connections or social isolation can heavily contribute to loneliness. Environmental factors, including the living environment, access to resources, and broader societal

conditions, are equally important. Residing in a place with limited social opportunities or economic challenges can raise the likelihood of loneliness.

Loneliness can be understood through its key components. Emotional loneliness involves the absence of close, meaningful relationships, leading to feelings of disconnection and a lack of empathy or companionship. Social loneliness refers to a perceived lack of social networks or companionship, causing individuals to feel isolated from social activities and disconnected from their community. Existential loneliness, a deeper sense of disconnection, reflects a feeling of being cut off from life's meaning and purpose, often accompanied by a search for belonging and significance. These components highlight the various dimensions through which loneliness can affect individuals (Victor et al. 2018).

1.2 Loneliness in Elderly

As human beings, our evolutionary history as hunter-gatherers highlights the crucial role of strong social bonds within close-knit groups for survival in challenging environments. Throughout our lives, high-quality social connections remain essential for our mental, physical, and overall well-being. However, when individuals experience social isolation and loneliness, it can have severe consequences on their health and

longevity (Cacioppo and Cacioppo 2014; Holt-Lunstad et al. 2010). In older age, these feelings of isolation and loneliness become particularly concerning, as they significantly increase the risk of various health conditions, including cardiovascular disease, stroke, diabetes, cognitive decline, dementia, depression, anxiety, and even suicide (National Institute on Aging 2021; Victor et al. 2018). Moreover, these conditions can lead to a shorter lifespan and reduced quality of life (Cohen-Mansfield and Parpura-Gill 2007). Older adults are particularly vulnerable to feelings of isolation and loneliness due to various life transitions and disruptive events they may experience. Retirement, the loss of a spouse, partner, or friends, migration of children to different locations, joining children in a new place, and experiencing disability or loss of mobility are some factors that contribute to their heightened risk of social isolation and its associated negative effects (Holt-Lunstad et al. 2010).

Table: 1

Old Age Census Report 2011

	Age	Male	Female	Total
India	60-69 years	31,646,075	32,472,615	64,118,690
	70-79 years	14,142,102	14,299,243	28,441,345
	Above 80 years	5,283,695	6,005,310	11,289,005

Kerala	60-69 years	1,144,368	1,272,437	2,416,805
	70-79 years	534,879	699,860	1,234,739
	Above 80 years	204,348	377,501	541,849

2. REVIEW OF LITERATURE

2.1 Ageing and Loneliness

The process of aging is a natural and inevitable aspect of human life, encompassing various stages that commence at birth and persist throughout an individual's lifetime. As individuals reach the final phase of their life span, they often engage in self-reflection, drawing from past achievements, and embarking on the culmination of their life journey. Successfully navigating the transformations that come with old age requires flexibility and the acquisition of new coping mechanisms to address the challenges characteristic of this stage (Warnick 1995).

According to The et al. 2014, as individual's age, they tend to experience higher levels of loneliness. Additionally, Kozloski, Mcclintock and Yang 2013 reported that the elderly are particularly vulnerable to loneliness due to life changes following retirement. Almashoor and Nikmat (2015) further supported this by stating that reduced social interaction and limited social support increase the risk of loneliness among the elderly. Moreover, research conducted by Mutafulungwa (2009)

found that elderly individuals living in nursing homes are at a higher risk of loneliness. As individuals age, they go through the process of aging, which has been categorized into various age groups, including young old (60-69 years), middle old (70-79 years), and very old (85+ years). Studies have consistently found that those aged 80 years and over tend to experience higher levels of loneliness compared to the 65 to 79 age group (Neto 2014). Therefore, advancing age is a significant factor associated with the development of loneliness among the elderly.

Despite the natural and inevitable nature of aging, there are pressing issues that older individuals face, such as loneliness, which can significantly impact their well-being and quality of life. As societal structures shift towards nuclear families and as children may be preoccupied with their own lives, sometimes leading to the relocation of elderly parents to care homes. Consequently, there is a need to investigate the level of loneliness experienced by elderly individuals residing with their families compared to those living in care homes.

3. RESEARCH METHODOLOGY

3.1 Objective of the study

- To identify the level of loneliness among elderly individuals living in care homes.

- To examine the relationship between loneliness and age in elderly individuals.
- To explore the significant differences between gender and loneliness in elderly individuals.

3.2 Hypothesis

H1: There is a significant relationship between age and loneliness among elderly individuals living in care homes.

H2: There is no significant difference in loneliness levels between male and female elderly individuals in care homes.

3.3 Research Design and Method used in the Study

A quasi-experimental design was employed to explore various factors contributing to their emotional well-being. The primary aim of the study was to identify the status of loneliness among elderly individuals living in care homes. The study included elderly participants aged 60 and above, excluding those with conditions such as Alzheimer's or severe mental illnesses. A sample size of 200 participants was evenly split between those living in care homes and those residing with families in Kerala, India. Stratified random sampling was employed. Data collection was conducted using a questionnaire that included both open- and close-ended questions. The UCLA Loneliness Scale Version 3 was adapted for this study, with simplified language and a translation into the local language to ensure accessibility (Russell et al. 1980). The reliability and validity of the data were also

checked. Data was collected through questionnaires, with interviews conducted for bedridden participants. The collected data were then entered into SPSS for statistical analysis, with descriptive statistics and T-test for Pearson correlations used to identify significant relationships and guide further interventions for improving elderly care policies.

4. DATA ANALYSIS AND INTERPRETATION

Validity and Reliability: KMO and Bartlett’s test for sample adequacy of loneliness scale: To determine whether a set of data is appropriate for analysis, the adequacy of sampling is tested through KMO, the strength of the relationship among variable is assessed through Bartlett’s of Sphericity (Noor 2016). Reliability is the measure of internal consistency of the constructs in the study. A construct is reliable if the Alpha value is greater than .70 (Hair et al. 2013).

Table 2

Reliability & Validity of the Loneliness Scale

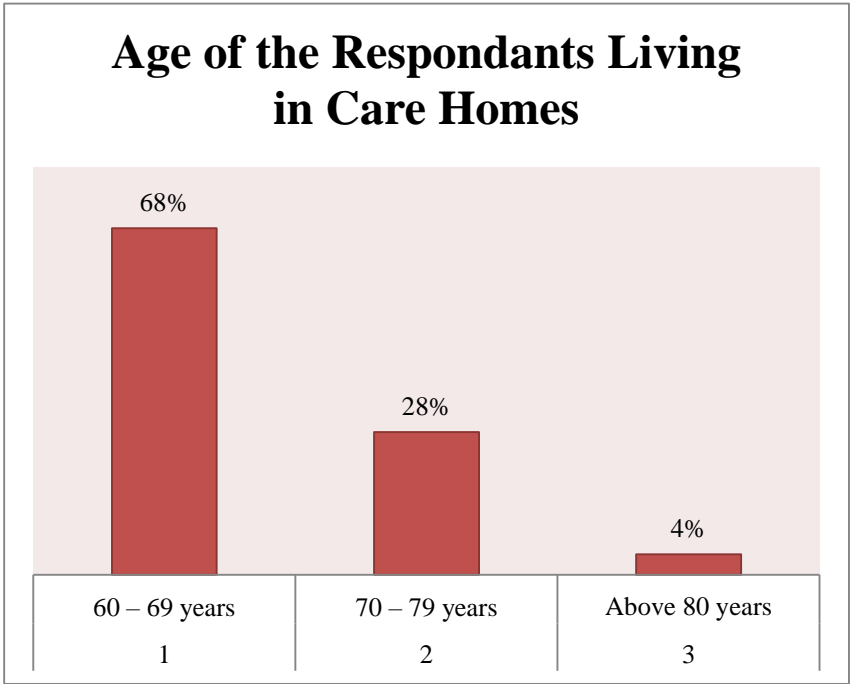
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.872
Reliability (α)	20 items	0.817
Bartlett's Test of Sphericity	Approx. Chi-Square	1546.007
	df	190
	Sig.	.000

The above table 4 showed that, the KMO value for the Scale for measuring the loneliness 0.872 with the significance of

Bartlett’s test Sphericity at 0.05 per cent significant level. Thus the KMO value indicated that the data was adequate for the analysis. Items reliability was assessed using Cronbach’s Alpha. Here the results revealed that the authentic loneliness scale Cronbach’s $\alpha = .71$ with 20 items were found adequate. Therefore the internal consistency of the items on this study is consistent with the reliability.

Table: 3

Age of the respondents



The total participant pool spans an age range of 60 to 86 years in care homes, 100 valid responses are included in the analysis. Here, the mean age (M) is around 67.12 years, accompanied by a Standard Deviation (SD) of 6.14. Majority of the elderly respondents belongs in the age group of 60 to 69 years; 62 per cent from living in families and 68 per cent from living in care homes. A very small percentage of respondents are aged above 80 years, comprising 10 percent from those living in families and an even smaller 4 percent from care homes.

Table: 4
Descriptive statistics of level of loneliness

Factors	Items of Loneliness	Living in Care Home	
		Mean	SD
L1	"In tune" with the people	2.4000	1.00000
L2	Feel that you lack companionship	3.7600	1.10206
L3	Feel that there is no one you can turn to	4.7000	1.15032
L4	Do you feel done	2.7100	.85629
L5	Part of a group of friends	2.9900	.89324
L6	You have a lot in commonalities with other	3.6000	.89893
L7	You sense distance from	3.4200	.86667

	others		
L8	You lack shared interests with others	3.9900	1.01000
L9	You fed outgoing and friendly	2.6300	1.04112
L10	Do you feel a sense of closeness with others?	2.5700	.81965
L11	You feel left out	3.9100	.88871
L12	Your relationships with others are not meaningful	2.6900	.96080
L13	That no one really knows you well	4.0800	1.07007
L14	Feel isolated from others	4.2000	1.09632
L15	You can find companionship when you want	2.2500	.74366
L16	Here are people who really understand you	2.4200	.86667
L17	Do you feel Shy	2.3400	1.14786
L18	Feel that people are around you but not with you	2.7700	.78951
L19	You feel you have	2.8500	1.16667

	someone to talk to		
L20	You feel you have someone to rely on	2.6500	.90314

Primary source

Here the table explores the loneliness among elderly individuals living in care homes across 20 different items measuring various aspects of loneliness.

High Levels of Loneliness and Isolation:

- Feeling of Isolation (L14): A mean score of 4.20 (SD = 1.10) indicates that many elderly individuals in care homes often feel isolated from others, representing one of the most significant indicators of loneliness.
- Lack of Companionship (L3): With a mean score of 4.70 (SD = 1.15), many participants feel there is no one they can turn to, which exacerbates their sense of social disconnection.
- Not Being Known Well (L13): A mean score of 4.08 (SD = 1.07) suggests a strong feeling that no one truly knows them well, contributing to emotional isolation.

Moderate Experiences of Loneliness:

- Lack of Shared Interests (L8): The mean score of 3.99 (SD = 1.01) reflects that many elderly feel they lack commonalities with others around them.
- Feeling Left Out (L11): A mean score of 3.91 (SD = 0.89) shows a significant portion feels excluded from social interactions in the care home.
- Feeling Distant from Others (L7): With a mean score of 3.42 (SD = 0.87), many elderly individuals feel emotionally distant from others, reinforcing their experience of loneliness.
- Lack of Companionship (L2): A high score of 3.76 (SD = 1.10) further highlights feelings of lacking companionship and deep loneliness.

Low Levels of Social Engagement:

- Lack of Closeness with Others (L10): A low mean score of 2.57 (SD = 0.82) reveals a limited sense of closeness or intimacy with others.
- Feeling Part of a Group (L5): The mean score of 2.99 (SD = 0.89) indicates that many elderly do not feel they are part of a social group, contributing to social disconnection.
- Outgoing and Friendly (L9): With a mean score of 2.63 (SD = 1.04), this suggests that most elderly do not feel

particularly outgoing or friendly, perhaps contributing to limited social interaction.

- Sense of Companionship (L15): A mean of 2.25 (SD = 0.74) reflects that most residents find it challenging to find companionship when desired.

Feelings of Understanding and Support:

- Lack of Understanding (L16): A low mean score of 2.42 (SD = 0.87) reflects the perception that there are few people who really understand them.
- Having Someone to Rely On (L20): A relatively low score of 2.65 (SD = 0.90) suggests many elderly individuals in care homes struggle to feel they have someone reliable to turn to for support.

The data reveals significant feelings of loneliness and social isolation among the elderly living in care homes. High scores for lacking companionship, isolation, and feeling misunderstood suggest that social relationships in care homes are often shallow and insufficient to meet the emotional needs of the residents. On the other hand, lower scores for feelings of closeness, belonging, and companionship reflect a generally weak social support network within care home settings. The results emphasises the need for greater social engagement and emotional support for the elderly in these settings to combat feelings of loneliness and isolation.

Table: 5**T test for Gender differences in Loneliness**

Loneliness	Gender	N	Mean	SD	Statistical Inference (df = 98)
L1	Male	42	2.9286	.89423	T= 0.242
	Female	58	2.8793	1.07732	P= 0.010
L2	Male	42	2.8810	.96783	T= 0.933
	Female	58	2.6724	1.19043	P= 0.008
L3	Male	42	2.6190	1.10326	T=-.597
	Female	58	2.7586	1.18928	P=0.410
L4	Male	42	2.6190	.76357	T=-.903
	Female	58	2.7759	.91849	P=0.317
L5	Male	42	2.9524	.82499	T=-.357
	Female	58	3.0172	.94575	P=0.199
L6	Male	42	2.5714	.83060	T= -.269
	Female	58	2.6207	.95196	P=0.290
L7	Male	42	2.4048	.82815	T=-.149
	Female	58	2.4310	.90053	P=0.430
L8	Male	42	3.0714	.83791	T=.684
	Female	58	2.9310	1.12175	P=0.016
L9	Male	42	2.3810	.98655	T=-2.069

	Female	58	2.8103	1.05060	P=0.715
L10	Male	42	2.5952	.70051	T= 0.261
	Female	58	2.5517	.90170	P=0.05
L11	Male	42	2.8333	.90841	T=-.732
	Female	58	2.9655	.87791	P=0.433
L12	Male	42	2.5476	1.01699	T=-1.265
	Female	58	2.7931	.91304	P=0.115
L13	Male	42	3.0952	1.05483	T=0.121
	Female	58	3.0690	1.09002	P=0.907
L14	Male	42	3.0000	1.08200	T=0.077
	Female	58	2.9828	1.11594	P=0.622
L15	Male	42	2.0952	.72615	T=-1.791
	Female	58	2.3621	.74217	P=0.265
L16	Male	42	2.4524	.80251	T=0.316
	Female	58	2.3966	.91651	P=0.258
L17	Male	42	2.1429	1.13849	T=-1.470
	Female	58	2.4828	1.14312	P=0.998
L18	Male	42	2.7143	.74197	T=-.599
	Female	58	2.8103	.82626	P=0.382
L19	Male	42	2.9524	1.08093	T=0.745
	Female	58	2.7759	1.22894	P=0.045
L20	Male	42	2.5714	.94075	T=-.739
	Female	58	2.7069	.87877	P=0.441

Primary source

The results of the t-tests reveal significant differences between men and women on several measures of social connection. For the variable L1 (In tune with people), women ($M = 2.88$, $SD = 1.08$) reported feeling less in tune with others compared to men ($M = 2.93$, $SD = 0.89$), and this difference was statistically significant ($p = 0.010$). Similarly, under the variable L2 (Lack of companionship), women ($M = 2.67$, $SD = 1.19$) felt lonelier than men ($M = 2.88$, $SD = 0.97$), with a significant difference ($p = 0.008$).

In terms of shared interests, the L8 (Lack of shared interests) variable shows that women ($M = 2.93$, $SD = 1.12$) reported fewer commonalities with others compared to men ($M = 3.07$, $SD = 0.84$), and this was also significant ($p = 0.016$). For L10 (Sense of closeness), a smaller but still significant difference was noted ($p = 0.05$), indicating a subtle variation between men and women in their sense of closeness with others.

Finally, in L19 (Having someone to talk to), men ($M = 2.95$, $SD = 1.08$) were more likely to report having someone to talk to than women ($M = 2.78$, $SD = 1.23$), with this difference reaching statistical significance ($p = 0.045$). These findings collectively highlight notable gender-based variations in social connectedness, with women tending to report less social integration compared to men across these dimensions.

In conclusion, the findings express that women tend to experience higher loneliness levels in certain areas compared to men.

5. DISCUSSION AND SUGGESTIONS

- To address loneliness among the elderly in care homes, strengthening social support systems is essential. This can be achieved by encouraging regular family contact through visits, phone calls, and digital platforms, while also organizing community events to foster interaction with residents.
- Emotional well-being can be improved by providing access to counseling, support groups, and regular mental health assessments, along with offering therapy where needed. Activity-based interventions, such as recreational programs involving art, music, and exercise, tailored to residents' interests and abilities, can engage them meaningfully. Also, encouraging residents to participate in volunteer work within the care home can provide a sense of purpose.
- Gender-sensitive approaches are crucial, to address loneliness. Age-specific interventions should also be considered, with activities tailored to different age groups based on their physical abilities and preferences. Integrating technology by offering digital literacy training and providing devices for virtual

communication can help residents stay connected with loved ones and the wider world.

- Enhancing the care home environment by involving residents in decision-making about routines and activities can foster a sense of control, while designing communal spaces encourages social interaction. Lastly, collaboration with social workers and NGOs to create outreach programs and regularly monitor residents' emotional health can help to promptly address loneliness and provide ongoing support.

6. CONCLUSION

Addressing loneliness among the elderly in care homes necessitates a multifaceted approach that prioritizes social support, emotional well-being, and active engagement. By fostering stronger connections with family and the community and enhancing mental health care, care homes can elevate the quality of life for their residents. Gender-sensitive and age-specific programs, coupled with technology for virtual connections, have proven effective in alleviating isolation. Moreover, creating a resident-centered environment and collaborating with social workers and NGOs for ongoing monitoring and outreach enables early identification and effective management of loneliness. These strategies collectively create a more inclusive and supportive care environment,

significantly enhancing the social and emotional well-being of the elderly.

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**Assessment of Garbage Management Practices at
Panchayats: A Micro Study of Bicholim Taluka,
North Goa District, Goa**

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Abstract

On the 150th anniversary of Mahatma Gandhi's birth, the Hon'ble Prime Minister, Shri Narendra Modi, launched the Swachh Bharat Mission, October 2, 2014, only with objective of establishing a clean India by October 2, 2019. The Swachh Bharat Campaign aimed to eliminate the taboo practice of open defecation across the country in the interests of safety, protection, and comfort, especially for women and children. It also aimed to raise general cleanliness standards through the collection, sorting, and transfer of both liquid and solid garbage to waste management facilities. The focus on rural cleanliness has resulted in positive results. According to the Swachh Bharat Mission Gramin (SBM-G) website, 473,331 villages, 472 districts, and 22 states have achieved ODF status (as on 26 September 2018). Yet, the ODF's credibility has indeed been called into question on multiple occasions. The research study on “Garbage

Management Practices at Panchayats” aims to monitor and analyze the processes and mechanisms adopted by the eighteen village panchayats of Bicholim Block / Taluka for garbage collection and segregation. Another objective is to study the current ODF status and document the on-ground implementation.

Key Words: Swachh Bharat Mission-Gramin, ODF status, garbage collection, segregation, cleanliness

Introduction

Panchayati Raj Institutions: In India, a village panchayat is the lowest level of government and administration in rural areas. It is responsible for the implementation of government schemes and programs at the grassroots level and the overall development of the village. The functioning of village panchayats is governed by the Panchayati Raj system, which is enshrined in the Constitution of India.

The hierarchy of the village panchayat system in India consists of three tiers:

Gram Panchayats: The Gram Panchayat is the smallest unit of the village panchayat system, in charge of administering a particular village or a group of villages. Representatives of the Village Panchayats are democratically chosen by the residents of the village. The Gram Panchayat is led by the Sarpanch.

Block Panchayats: The Block Panchayat is the third layer of government, following the Panchayats and the Divisional Panchayat. It is made up of a collection of Gram Panchayats inside a block or taluka. Representatives of the Village Panchayats within the block elect the representatives of the Block Panchayat. The Block Panchayat is led by the Panchayat President.

District Panchayats: The District Panchayat is the highest tier of the Panchayati Raj system and is responsible for the administration of a district. It consists of members elected from the Block Panchayats within the district. The Chairman is the head of the District Panchayat.

Goa and two other former Portuguese enclaves became the Union Territory of Goa, Daman and Diu, and Goa was organised into a single district in 1965. On 30th May, 1987 Goa attained Statehood while Daman and Diu became a separate Union Territory.

Goa State has been divided into two districts for administrative purposes, viz. North Goa District and South Goa District with headquarters at Panaji and Margao respectively. The North Goa District has five Talukas namely Pernem, Bicholim, Sattari, Bardez, and Tiswadi. The South Goa District has seven Talukas namely Salcete, Mormugao, Quepem, Sanguem, Dharbandora, Ponda and Canacona. Panaji is the capital city of the state.

Bicholim Taluka / Block:

There are 18 village panchayats, 22 revenue villages and 4 towns in Bicholim Taluka. As per the Census India 2011, Bicholim Taluka has 22414 households, population of 97955 of which 49931 are males and 48024 are females. The population of children between age 0-6 is 9849 which is 10.05% of total population. The sex-ratio of Bicholim Taluka is around 962 compared to 973 which is average of Goa state. The literacy rate of Bicholim Taluka is 80.27% out of which 84.23% males are literate and 76.15% females are literate. The total area of Bicholim is 238.79 sq.km with population density of 410 per sq.km. Out of total population, 56.94% of population lives in Urban area and 43.06% lives in Rural area.

For the purpose of research study the village panchayats of Bicholim Taluka / Block of North Goa District has been selected wherein the Panchayats role / approach on issues governing national priorities such as sanitation, visual cleanliness, waste management, maintaining Open Defecation Free (ODF) status at panchayats, etc. has been observed minutely through data collection and analyzing the information gathered through primary sources.

Framework of Panchayati Raj Institutions

The Ministry of Panchayati Raj, Government of India introduced Rashtriya Gram Swaraj Abhiyan (RGSA) as a

Centrally Sponsored Scheme (CSS) with an objective of capacity building of elected representatives and functionaries of Panchayati Raj Institutions (PRIs) with the focus areas of sensitization on following thematic aspects for its fruitful execution at grassroot level of panchayat system:

- 1.Recommendations of Finance Commission of India
- 2.Preparation of Gram Panchayat Development Plan (GPDP)
- 3.Phase wise implementation of Swachh Bharat Mission
- 4.Localization of Sustainable Development Goals (SDGs)
- 5.Achieving Good Governance through Village Development Committees (VDCs) at Panchayats

1. The Finance Commission of India is a legal organisation tasked with determining how financial resources should be distributed between both the Central Government and the State Governments, in addition to among the state governments themselves. The commission also offers suggestions on how resources should be allocated to local authorities such as village panchayats.

In the case of Goa, the most recent Finance Commission report was submitted in 2020. The report recommended that 2.5% of the State's net proceeds of taxes be allocated to village panchayats, which is an increase from the previous recommendation of 2%. The report also recommended the allocation of additional funds for specific purposes such as

solid waste management, maintenance of community toilets, and maintenance of open spaces.

The Finance Commission of India's recommendations are not binding, but they are generally followed by the Central and State Governments. The allocation of funds to village panchayats is an important aspect of ensuring the development and well-being of rural areas, and the recommendations of the Finance Commission play a significant role in this process.

2. The Goa Gram Panchayat Development Plan (GPDP) guidelines introduced by the Department of Panchayats, Government of Goa as per Central Government recommendations, which aims to improve the socio-economic conditions of the rural areas by empowering the local Gram Panchayats to plan and implement development programs according to the needs and priorities of the local communities.

Under the GPDP, each Gram Panchayat in Goa is required to prepare a comprehensive development plan that identifies the priority areas for development and proposes programs and projects to address these priorities. The plan is developed through a participatory process that involves consultation with the local communities and other stakeholders.

The GPDP covers a wide range of areas, including infrastructure development, health and education, water supply and sanitation, agriculture and allied activities, tourism, and environmental conservation. The plan also includes provisions for capacity building of the Gram Panchayat members and officials to effectively plan and implement the development programs.

The GPDP is implemented through a decentralized process that involves the participation of the local communities and other stakeholders. The Government of Goa provides financial and technical support to the Gram Panchayats to implement the plan. The progress of the plan is monitored and evaluated periodically to ensure its effective implementation.

3. Swachh Bharat Plan (Grameen) or the Clean India Mission (Rural) Phase II is the second phase of India's nationwide campaign to achieve universal sanitation coverage and eliminate open defecation in rural areas. The program was launched on 2nd October 2019, and it aims to make all villages in India Open Defecation Free Plus (ODF Plus) by 2024.

The program focuses on improving the quality of life in rural areas by promoting cleanliness, hygiene, and sanitation practices, and by providing access to safe and sustainable

sanitation facilities. Some of the key components of the program include:

- Construction of toilets and hand washing facilities in households and public places
- Solid and liquid waste management, including the construction of waste treatment and disposal facilities
- Behaviour change communication to promote hygiene and sanitation practices
- Capacity building of local governments and communities for effective implementation of the program
- Monitoring and evaluation of the program's impact.

The program is being implemented by the Ministry of Jal Shakti, Department of Drinking Water and Sanitation, in collaboration with State Governments, local authorities at panchayats and other stakeholders. The program is expected to benefit around 2.87 lakh villages across India and improve the overall health and well-being of rural communities.

4. The United Nations approved the Sustainable Development Goals (SDGs) in 2015 as a plan for a brighter and more sustainable future for all. The SDGs seek to

eradicate poverty, safeguard the environment, and guarantee that all people live in peace and prosperity.

The 17 SDGs are:

1. No Poverty
2. Zero Hunger
3. Good Health and Well-being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life On Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals

Each objective contains precise goals as well as indicators to track progress towards completion. The SDGs are interrelated, and improvement in one area can benefit others which are further disseminated as localization of SDGs in

nine thematic areas viz; Poverty free and enhanced livelihood village, Healthy village, Child-Friendly village, Water sufficient village, Clean and green village, Self-Sufficient infrastructure in village, Socially secured village, Village with good governance and Engendered development in village.

5. The role & responsibilities of Village Development Committees (VDCs) of the Village Panchayats outlines the functions and responsibilities of committee members in a village panchayat.

The functioning of committees at village panchayats further activates the governance of rural areas in India such as the finance committee, works committee, and social justice committee, and highlights the importance of their functions in ensuring the effective delivery of services and development initiatives. It also emphasizes the need for transparency and accountability in the functioning of committees, and provides guidance on how to ensure proper documentation, financial management and decision-making process to lead at local governance system.

Aim of Research Study:

To review the ODF levels of villages under Bicholim taluka. It will also give an understanding of how the funds can be better managed and what new policies / strategies to be

incorporated to achieve cleanliness and sanitation in villages.

Objectives of Research Study:

- To get an understanding of how the villages in Bicholim are undertaking the cleanliness and sanitation mandates.
- To get the ground reality of the cleanliness and sanitary practices the village adopts. It will help us understand the gap between the practices documented and the practices adopted.
- To document the Solid & Liquid Waste Management practices followed & role of Committees at village panchayats of Bicholim block.
- To review the activities conducted, projects initiated for waste management at source & thereby maintain ODF status by village panchayats of Bicholim taluka.
- To study the functioning of Garbage Management Committee at village panchayats of Bicholim taluka.

Research Methodology and Data Collection

Description of Research Design and Procedures Used

For conducting our research, we used Qualitative methods to understand people's experiences and behaviours. We collected data through interviews and then analyzed the data to identify patterns between the 18 villages in terms of their funding, ODF Status, presence of Community Sanitary

Complexes and their waste collection and segregation methods. Our research was exploratory in nature with the data collected being both subjective and objective.

The Research design was Cross-sectional as data was collected from different groups of participants at the same point in time. Then data collected was used to draw insights about each particular village and also to study differences between villages of Bicholim taluka.

Sources of Data Collection

The data collection was done through questionnaire method and in-depth interviews which was administered to elected members, members of each village committees and panchayat secretaries. Hence, all the data gathered was based on Primary sources.

Also, some insights were gathered while interacting with the locals.

Sampling Procedures

The primary data is sorted from the field surveys through questionnaires and interviews designed for the research sample. Secondary data is collected from E-journals, other online sources.

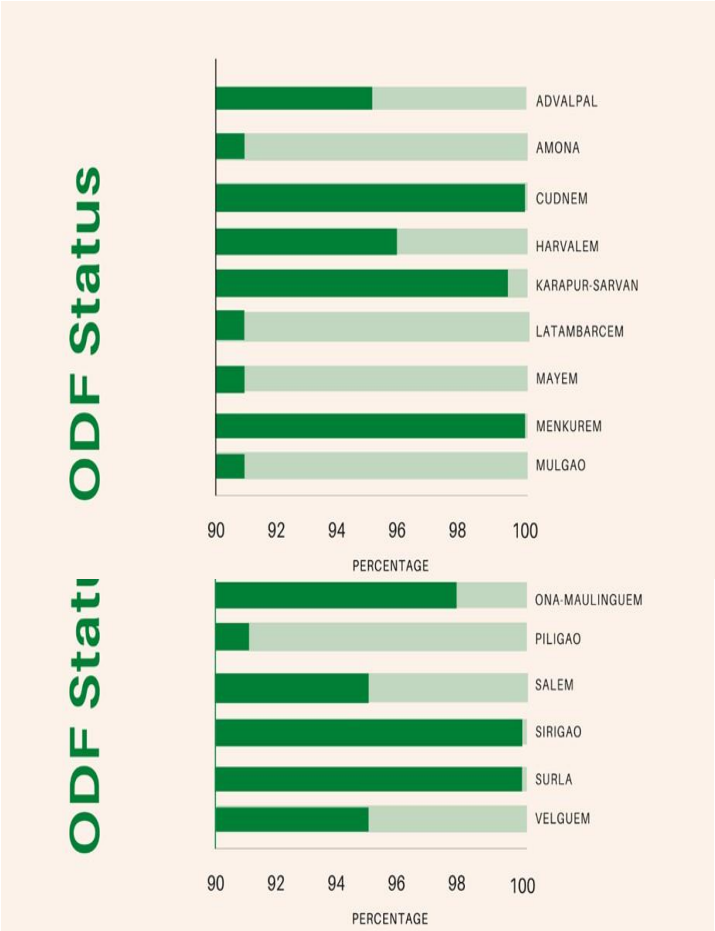
A pre-defined list of 18 village panchayats viz; Advalpal, Amona, Cudnem, Harvalem, Karapur- Sarvan, Latambarcem, Maulinguem, Mayem, Mencurem, Mulgao, Naroa, Navelim, Pale-Cotombi, Piligao, Salem, Sirigao, Surla, Velguem

under Bicholim block were considered to conduct questionnaires and interviews to further gather data. Thus, a Quota sampling technique was used since there were a pre-determined set of villages to be studied.

Quantitative Data from the survey of villagers, members of Garbage Management Committees were summarized in percentages and depicted in Graphs. Qualitative data from interviews with 18 village panchayat elected representatives, Block Development Officer (BDO) and Panchayat Secretaries are summarized and presented in the form of Case Reports. Thus total 195 respondents viz; all 126 elected representatives, a Block Development Officer & all 18 Panchayat Secretaries and on an average 50 villagers including members of Garbage Management Committees reported their responses.

Methods and Instruments of Data Gathering

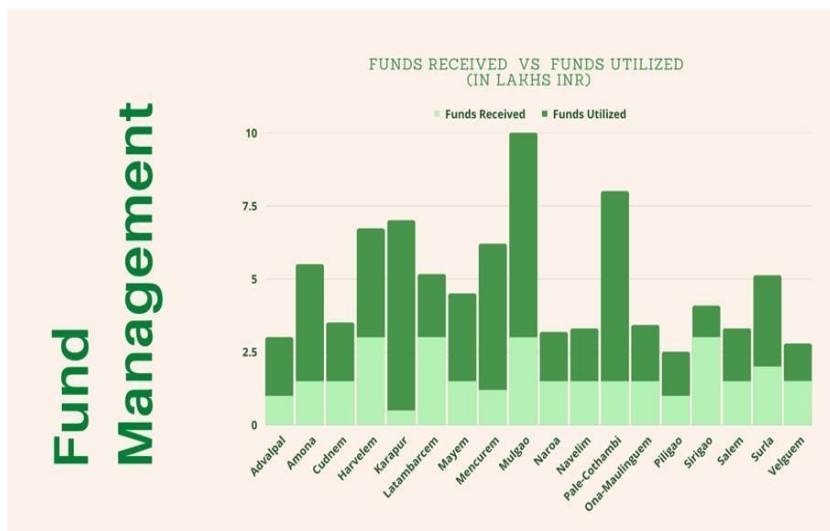
In person interviews were conducted which were semi-structured in nature. A well- structured questionnaire was used, however, cross-questions and follow-up questions were also asked, if required.



Source: Computed from Primary Data

The above bar charts indicate the on ground ODF Status of each village as per our discussions with the panchayat secretaries and sarpanchas. Though the villages claim to be Open Defecation Free on papers, the ground reality differs as we learnt through the interactions.

Some villages such as Cudnem, Menkurem, Sirigao and Surla have close to 100 percent ODF status. On the other hand, Mayem, Mulgao, Naroa and some others have just about 90 percent which highlights the gaps between what is reported and what actually exists.



Source: Computed from Primary Data

The above chart highlights the huge gaps that exist between the Funds allocated to each village and the amount that they are using up for waste management. The most prominent as we see is Mulgao wherein the funds allocated from the government are in the range of 2.5 lakhs whereas the funds utilized are much higher (in the range of 7-7.5 lakhs).

Community Sanitary Complex Status					
	YES/NO	NO. OF CMC'S		YES/NO	NO. OF CMC'S
ADVALPAL	✓	1	NAROA	✗	0
AMONA	✓	5	NAVELIMI	✗	0
CUDNEM	✗	0	PALE-COTHAMBI	✗	0
HARVALEM	✓	2	ONA-MAULINGUEM	✓	3
KARAPUR-SARVAN	✗	0	PILIGAO	✗	0
LATAMBARCEM	✓	4	SALEM	✗	0
MAYEM	✗	0	SIRIGAO	✗	0
MENCUREM	✗	0	SURLA	✗	0
MULGAO	✓	2	VELGUEM	✗	0

Source: Computed from Primary Data

The above table highlights if Community Sanitary Complexes are present in the villages and if yes, then how many are functional.

Amona being a model village, has the highest number which is 5 followed by Latambarcem which has 4, while Cudnem, Karapur and many others have none.

Data from Village Panchayats at a Glance

The following are the case reports of all 18 village panchayats of Bicholim Taluka selected for the purpose of fieldwork:

Advalpal Village

Advalpal is a village in the Bicholim Taluk of the North Goa District of the Indian state of Goa. It is 25 kilometers east of Panaji's district headquarters. Advalpal's pin code is 403503, and the postal headquarters are in Assonora. It has a

population of 1472 people, with 790 males and 672 females. The panchayat is divided into 05 wards. Approximately there are 446 houses & of these there are 28 SC households and no ST households.

ODF Status

- On paper the village is 100% ODF free but when checked on the ground level, approx. 90% of the village is ODF free.
- There is only 1 Community Sanitary Complex near the village's temple which is not used seldom by people.
- Only the people who had given names for building a toilet have one.
- Some toilets were made 4 years back, no repair was needed till date due to good quality of the toilets constructed
- 1 home 1 toilet regardless of the family size is an issue which needs to be addressed.

Waste Management & Segregation Process

Process of Waste management –

- One person collects dry waste from every house in the village. This waste collection process takes 15 days. Dry waste mostly consists of Plastics (75%), paper, dust, cardboards, cloth etc

- The waste collected in 15 days is almost 500 kgs in weight
- People have issue in segregating wet & dry waste hence don't do it.
- No waste segregation committee is found to be active, other authorities under waste management is also yet to formed as elections were concluded recently.
- Wet Waste is disposed by the villagers themselves by either putting it into plants or into soak pits
- The waste collected is handed over to Goa Waste Management Committee once or twice every month
- Earlier Mineral foundation used to help in waste management and conducted regular awareness campaign but, now the practice is stopped as mining is stopped which has degraded the company's financial position
- Audits of committee has not been conducted. Panchayat reports audit to Government which happens once in a year. This process has not been conducted since past 4 years. Though audit was conducted last year

Finance

- Government provides 1 lakh rupees per year for waste management which is insufficient and is the

main reason of inefficient waste management in the village

- The Garbage collector is given 8000 rupees per month for his service
- Bottles are sold to generate some revenue for working capital

Observations

- New Village development Plan & GPDP is yet to be formulated and will be formulated by December 2022
- Previous VDP & GPDP are observed to be followed partially
- Also, there is no proper sewage system in the village
- Roads and surroundings of the village is cleaned rarely, only done when necessary
- Bio waste is mostly burnt and/or thrown in the gutter
- Water sanitation committee has 7 members.
- E Gram Swaraj Portal is partially updated.

Amona Village

Amona is a village in Bicholim Taluk in North Goa District of Goa state, India. It is 9 KM from Navelim Bicholim. This village is spread across 734.06 hectares with 970 no. of houses and 2963 total population. This village has 50% female population and 82.2 % literacy rate.

ODF Status

- The village has toilets installed in all the households as of 2022.
- There are total 5 Community toilets in the village.
- Bathroom waste is dumped into soak pits.
- Outsiders and daily-wage workers do not have bathrooms and hence go in public.
- No recent survey has been done to check the condition of bathrooms.

Waste Management & Segregation Process**Process of Waste Management-**

- Dry waste is collected twice in a month. 2 labors from outside the village collect the dry waste and collect it in the shed.
- The waste is segregated in the shed. Though a new process of segregating at the source is in the trial process.
- There is a schedule for waste collection.
- There is no process for wet waste management. Wet waste is disposed off at the home level.
- The amount of plastic waste is pretty high.
- Social audits are held every year. Due to Covid it was not conducted for past 4 years.
- Sesa Goa- a Vedanta Group company helps the village in cleaning gutters, wells.

- They also made MRF shed in the village for solid waste management.

Finance

- The entire village revenue is 6-7 Lakhs per annum.
- The grant for waste management is 1.5 Lakhs which is insufficient. The current expenditure is 4 lakhs.
- Lack of funds lead to lack of safety equipment like gloves, etc.
- Major cost is due to labor and vehicle.
- Protests held for building of the MRF shed. It was previously planned to be built near the school, but later it was made on a land given by the temple.

Observations

- New and effective ways of segregation at source is being tried out.
- E-Swaraj updated from time to time.
- R&D development committee is there but work is done majorly by the panchayat.
- No Reduce, reuse, recycle campaign has been conducted recently.
- Health camp organises menstrual hygiene camp.
- Anganwadis organizes awareness programs once in a while. It was conducted last year by the name Swayampurn Goa.

- Swachagrahi is less active in participating in the action plan.
- GPDP plan is made but there is lack of funds for implementation.

Cudnem

Cudnem is a hamlet in the Bicholim Tehsil in the North Goa District of Goa, India. It is located 10 kilometres from the sub-district headquarters in Bicholim and 28 kilometres from the district headquarters in Panaji. The settlement has a total land area of 992.12 hectares. Cudnem village has an overall population of 3,308 people and around 975 dwellings.

ODF Status

- The village is 100% ODF-free since 2021.
- There is only no Community Sanitary Complex in the village.
- 90 Bio-toilets were given by the government to the houses. There are no public toilets.
- There is maintenance required for these toilets. Requests are there from villagers.
- Infrastructure repair is done and managed by villagers themselves.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected twice in a month and kept at mrf shed. Saligao or Bicholim plant collects the

waste. Panchayat gets money for dry waste. Segregation happens at mrf.

- There is no wet garbage collection. Wet Waste is disposed of by the villagers themselves by either putting it into plants or into soak pits. No issue is foreseen for wet waste. This is done at the household level.
- Biomedical waste is mixed with dry waste. No separate process, due to lack of funds.
- New mrf shed is being opposed because villagers feel there will be pollution. It is near the playing field and hence there is opposition to this construction.
- Panchayat does road cleaning regularly 4 days before the festival.
- Social audits are conducted from time to time. Gram Sabha calls everyone but there is less or no participation.

Finance

- Instead of 5 lakhs, 1.5 lakhs is received since 2021. It is difficult to cover labor payments and diesel within this.
- 5000 per month is paid to laborers and they are called for 10 days in total. Females are appointed for waste segregation.

- Fund constraint is the main issue. The action plan is ready but cannot be implemented due to a lack of funds. The money is not enough to pay the salaries. Salary is being paid with panchayat funds. Panchayat has not given additional requests for funds to Govt.
- Panchayat land belongs to a third party. There is a need for land for a crematorium and MRF shed also.
- Lupin Foundation has adopted Cudnem village. It has developed the panchayat office and given farmers fertilizers and compost material. Its helping villagers since 2019. They have also made the MRF shed but the entire work is not complete.

Observations

- E-Swaraj updated from time to time.
- R&D development committee is there but work is done majorly by the panchayat.
- Menstrual hygiene reports are sent every month. A joint inspection is done by health and panchayat.
- Roads and surroundings of the village are cleaned rarely, only done when necessary
- In association with Lupin Foundation, Panchayat distributes sanitary napkins at Harvaalem.
- Swachagrahi is less active in participating in the action plan.

- GPDP plan is made but there is lack of funds for implementation.

Karapur / Carapur

Carapur is a population town in the North Goa district of the Indian state of Goa. Carapur has a population of 5334 people according to the 2001 India census. Men make up 50% of the population, while females make up 50%. Carapur has a literacy rate of 76%, which is above the national average of 59.5%, with male literacy at 83% and female literacy at 69%.

ODF Status

- The village is currently still not at the ideal level of 100 percent ODF status.
- It is roughly at about 85-90% ODF status, covering a large number of villages.
- Under 11 wards of the village, about 2500 houses have toilets installed currently with no complaints or repairs required as of now.
- The village does not have community toilets installed.
- There is prevalent use of septic tanks.

Waste Management & Segregation Process

Process of Waste Management -

- Dry waste is collected once a month. Around 35,000 rupees are essentially spent on labor wages and the traveling expenses.
- The waste is collected, separated and sent to Saligao. GWMC is responsible for collecting the waste and transporting it to Saligao.
- The primary concern is the lack of allocation of funds for dry waste collection.
- The village does not have a structured wet waste collection process. Even if wet waste is collected, the expenses are to be borne by the village itself. This is another primary constraint.

Currently, the wet waste is either disposed off in homes, burnt off or fed to livestock. The sanitation and maintenance of gutters and bushes are done once every year. In case the villagers approach the panchayat asking for maintenance, then the panchayat provides labor for the same.

- The allocation of funds by the Government is approximately 50,000 rupees per year and expenditure comes at a total of about 40-50,000 rupees a month.
- There are also multiple blackspots for the waste collection in the village.
- The mineral foundation in collaboration with the panchayat conducts awareness campaigns for the

village residents on waste collection. Workshops are often conducted as well.

Finance

- The expenditure of the village results in approximately 6-7 Lakhs per annum.
- The grant for waste management is approximately 50 thousand rupees per annum which is clearly insufficient.
- The distinct lack of funds leads to less frequent waste collection drives.
- The primary costs include the labor and transportation expenses.

Observations

- The E-Swaraj portal is being updated regularly by the village panchayat.
- The Swachagrahi members do not come for the monthly meetings. The primary reason behind it is the lack of monetary compensation for this work and the preoccupation of the members.
- The village water and sanitation committees are currently inactive.
- No initiatives have been taken for menstrual hygiene. The disposal of sanitary napkins is essentially by burning them along with the rest of the waste.

Regular online audits take place. Audits have been done about 3 to 4 times till date.

Harvelem Village

Harvalem is a town in the Bicholim taluka of the North Goa province. It lies 9 kilometres from the Bicholim sub-district headquarters and 35 kilometres as from head office and capital city of Panaji. The overall surface area of the town is 505.00.75 hectares. Farming and industry-related activities are the main sources of income for Harvalem people. As of the 2011 census, Harvalem has an overall population of 2608 people, 833 homes, and 5 commercial businesses.

ODF Status

- The village has a 95% - 96% ODF status.
- There are 2 Community Sanitary Complex in the village.
- 4% households don't have toilets but have applied for it hoping to get sanctioned by next quarter.
- The toilets are in decent condition.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected twice or thrice in a week as per requirement using a vehicle and kept in MRF shed. Segregation happens in the MRF shed and takes about 6-10 days.

- The village has received extra funds for been the role model village and currently constructing a new MRF shed using the same. (100% Waste collection)
- Clusters are made of houses for door-to-door collection and the village uses online tagging technology to record the collection - 2 chips in every household + scanner at homes to record collect for accuracy
- E-wastes is also collected at regular intervals (major producer – schools).
- Also, ColorCon under CSR is tying up for wet waste collection at the village
- Every villager & businesses are provided with a waste collection with has info- graphics for generating awareness about waste management & segregation. Also, they provide big custom trash cans for institutes and businesses.
- After collection and segregation of waste, GWMC is called which takes the waste for further process.
- Roads and temple waste are collected at regular intervals and to permanently erase black spots, the panchayat has come up with installation of dummy cameras (future plans to install real cameras) and heavy fines as a solution.

- The Panchayat is conducting pilot tests in 2 wards for testing wet waste decomposer machine
- There is no wet garbage collection. Wet Waste is disposed of by the villagers themselves by either putting it into plants or into soak pits. This is done at the household level. This a a general practice that is followed here but is changing rapidly due to awareness programs, provision for right equipments and technology and collective efforts of the villagers and the Panchayat.
- There waste management awareness programs by the panchayat and the sattari NGO. Also, there is a camp once a year for awareness and treatment of waste done by Valpoi NGO.

Finance

- Government funds, MPLD Funds (The Members of Parliament Local Area
- Development) and Panchayat funds are the main sources of income for the panchayat
- They receive 3 Lakh from the government
- Harvalem panchayat uniquely uses the provision of - Funds as per Volume of waste so, there is no problem of funds as such
- Panchayat Funds comprise of – Household tax, fines & Garbage tax – Rs 100

- 1 Labour – Once a month is paid Rs 8k
- Monthly expenses are approximately Rs 31000.
- Rickshaw hiring to load and unload waste for segregation every week or two is another expense
- Mineral Foundation helps with awareness – drives, and managerial and administrative advice.

Observations

- E-Swaraj is updated from time to time.
- Material for new MRF shed was provided as reward for being role model panchayat
- Water testing by committee is active and performs checks on – clean drinking water – wells, households, natural water
- Compulsory rain water harvesting, green cover and planting trees for houses for environmental benefits.
- Fencing done by panchayat for houses to ensure safety, funding for this project was accommodated through under NREGA
- Panchayat website details - vpharvelam.com
- 2 Swacchagrahi appointed – not so active
- Awareness drive on single-use plastic for shopkeepers was conducted last year.

Latambarcem Village

As per Census 2011 statistics, the postal code or town code for Latambarcem village is 626744. The hamlet of

Latambarcem is located in the Bicholim tehsil in Goa's North Goa area. It is 10 kilometres from the Bicholim sub-district headquarters and 34 kilometres as from Panaji district headquarters. Latambarcem town is also a gram panchayat, according to 2009 figures.

The settlement has an area of 3654.35 hectares. Latambarcem has an overall population of 6,722 people, of whom 3,437 are male and 3,285 are female. Latambarcem village has a literacy rate of 75.62%, with 81.52% of men and 69.44% of females being educated. Latambarcem village includes around 1,533 dwellings and 9 wards. The zip code for Latambarcem village is 403503.

ODF Status

- ODF on ground level - People do not use toilets despite there being toilets installed in houses.
- Some toilets are facing tank issues. 24 are pending to be constructed. There was approval for 195.
- There are 4 community toilets which are in use.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected every day. Labours do so by collecting dry waste from door to door.
- The Waste which is collected every day is stored near 2 to 3 temples and brought to the MRF shed once in 4 days.

- It is found that Dogs attack the waste stored near the temples searching for food creating some trouble for the labours
- Segregation process is done in the MRF shed itself.
- After segregation GWMC is called using mobile application for collecting the waste taking it to Saligao for further process.
- 1 labour is assigned for collection and 1 is assigned for segregation.
- Labour salary is 500 per day
- Pickup charges are 5000 per month.
- Wet waste is not collected by the panchayat and disposed off by households at personal level, generally by the means of either burning them and/or putting it into soak pits
- Dry waste is collected from roadside once in a while.

Finance

- Total money expenditure is 18k approx.
- Source of revenue is house taxes, business taxes. But this does not generate enough money for waste management.
- Audits under MG energy scheme was conducted last year.

- Approximately 3 lakhs are received per year from the government. Last funding came in 2019 & so, current expenditure is managed with panchayat funds.
- The village received Goa liberation fund of Rs 1 lakh last year.

Observations

- There is GPDP committee present having 26 members from village. They make reports and maintain documentation
- There is no external private company to support the village in terms of funds and/or waste management.
- Village water sanitation committee is present but not active.
- Village action plan is going to be revised soon.
- Village swacchata plan is not present.
- Reduce, Reuse, Recycle awareness or any campaign has not happened yet. There is intention on making a plan.
- E-Swaraj updated from time to time.

Mayem

Mayem is a Village in Bicholim Taluk in North Goa District of Goa State, India. It is located 17 KM towards North from District head-quarters Panaji.

Mayem's postal head office is in Bicholim. The population is 7544.

Mayem lake is situated in Mayem. Mayem lake is nestled in the Bicholim taluka of Goa.

ODF Status

- There are 11 wards present.
- The ODF status is 90%.
- The number of households are around 3000.
- Almost all the households have toilets.
- There is no common community toilet present.

Waste Collection & Segregation Process

- There is a MRF shed present.
- Construction of new MRF shed is in progress.
- Dry waste collection takes place.
- The waste collection process requires 3 labours for collection and 1 rickshaw for transporting.
- Wet waste is disposed in soak pits on household level.
- Waste is collected once in 5 days.
- 5 continuous days for collection and the days in between for segregation.

Finance

- Expenditure is 24k per month for labour and vehicle.
- Expenditure per year is around 3 lakhs.
- Fund of 1.5 lakhs was last received in 2019-20.

Observations

- The E-swaraj portal is updated.
- No such help is received from any NGO in waste management process.
- The use of machinery for remoulding dry waste.

Mencurem

Mencurem village is located in Bicholim taluka of North Goa district in Goa, India. It is situated 25km away from sub-district headquarter Bicholim (tehsildar office) and 37km away from district headquarter Panaji. As per 2009 stats, Mencurem Dumacem is the gram panchayat of Mencurem village.

The total geographical area of village is 467.97 hectares. Mencurem has a total population of 1677 people, out of which male population is 821 while female population is 854. Literacy rate of mencurem village is about 77.19% out of which 83.68% males and 71.00% females are literate. There are about 193 registered houses in the village.

ODF Status

- The village has a 100% ODF status.
- There is no Community Sanitary Complex in the village.
- There is one communal toilet near the temple for special occasions.
- No complaints have been registered as far the toilets are concerned.

Waste Management & Segregation Process

- Process of Waste management –
- Dry waste is collected from all households once in a week ward wise.
- It is kept at shed and taken by GWMC vehicle once in 3 months.
- There are 2 labors for waste collection and 1 cycle.
- New MRF shed is in process of construction.

Finance

- 1,20,000 lakhs are received every year. It is difficult to cover all expenses within this.
- 2 Labour – Once a month, paid 9100 per month.
- Yearly expenses are approximately 50,000.
- Fund constraint is not an issue in this village.
- Wet waste disposal in home pits.

Observations

- E-Swaraj updated from time to time.
- Panchayat collects funds from house tax and professional tax.
- Swachhagrahi is inactive since the current term.
- Health check-ups done for the waste collection laborers regularly.
- Village action plan, 2021 is updated and in pipeline for 2022.

Mulgao

Mulgao is a tiny town of 758 hectares of Bicholim Taluka in North Goa district, which is renowned and rated to have the finest living conditions in India in the Indian state of Goa. There are 783 houses in total. The village is administered by a sarpanch, who is elected as the community's representative in local elections. All significant economic activity in Mulgao are dependent on BICHOLIM, the neighbouring town.

ODF Status

- The ODF status is 90%.
- 90% of the households have toilets present.
- Around 10% people do not use household toilets.
- There are 2 community toilets and both are functional.

Waste Collection & Segregation Process

- Door to door waste collection takes place and there is an MRF shed present.
- MRF shed was constructed with help of Comunidade.
- MRF shed is far from the main village.
- Road cleaning is done once in a month.
- The wet waste is put into soak pits at an individual level and MGNREGA is helping construct soak pits.
- Waste collection and segregation is done once per week.

- Labour is difficult to get.

Finance

- Wages are 500 Rs per day.
- Monthly wages total to 19k. Yearly expenditure was 7 lakhs.
- In 2017 wards were addressed regarding importance of waste management. 3 lakhs were allotted. Since 2019, no grant is received.

Observations

- Anyone who is burning waste in public is fined 5000 Rs.
- A village map is conducted with markings of blackspots and garbage sheds.
- On Swachh Bharat day, a rally was conducted by school children.

Naroa

Naroa is a village in the Bicholim Taluk in the North District of the Indian state of Goa. It lies 13 kilometres east of the district headquarters in Panaji, 9 kilometres east of Navelim Bicholim, and 13 kilometres east of the state capital in Panaji.

The village's entire geographical area is 801.45 hectares. Naroa has an overall number of 1,897 people, 952 of whom are male and 945 of them are female. The literacy rate in Naroa village is 79.81%, with 85.92% of men and 73.65% of

females being literate. In Naroa village, there are around 419 dwellings. The naroa village locality's zip code is 403504.

ODF Status

- The ODF status is 70%.
- There are no public toilets present.
- Installed toilets have not received complaints.
- Around 50 to 60 households have no toilets present.

Waste Collection & Segregation Process

- Dry waste collection takes place.
- Wet waste is disposed at household level.
- Road cleaning is done once in 3 months.
- Every alternate month 2 days are kept for street cleaning.
- 2 labours conduct the waste collection.
- 1 rickshaw is used.
- Waste is collected 2 times a month.

Finance

- The wages paid are Rs 500 per day for labour and Rs 1100 for rickshaw.
- Expenditure per month is approximately 14k.
- Fund of 1,50,000 was received.

Awareness

- Rally was conducted once for waste management awareness.

Navelim

Navelim village is located in Bicholim taluka of North Goa district in Goa, India. It is situated 16km away from sub-district headquarter Bicholim (tehsildar office) and 26km away from district headquarter Panaji. The total geographical area of village is 1088.73 hectares. Navelim has a total population of 2,703 peoples, out of which male population is 1,387 while female population is 1,316.

ODF Status

- The village has toilets installed in all the households as of 2022.
- On paper the ODF status is 100 % but in reality, it is 95%.
- There are no Community toilets in the village except for in t
- Bathroom waste is dumped into soak pits.
- No recent survey has been done to check the condition of bathrooms.

Waste Management & Segregation Process

Process of Waste Management-

- Dry waste is collected once in a month. 6 labors from the village collect the dry waste and collect it in the shed.
- The waste is segregated in the shed.
- There is a schedule for waste collection. The waste is collected for 3 days and then segregation is done.
- There is no process for wet waste management. Wet waste is disposed of at the home level.
- GWMC comes once in 2 months.

- GWMC doesn't always comes on demand.
- 500 kg of waste is collected in a month.
- No sanitary pad collection is done yet. Though a process of collecting sanitary waste is initiated with 250 Rs per kg of sanitary waste.

Finance

- Sampoorna Foundation helps the village with finances and other support.
- Funding is 3 Lakhs on paper but only 1.5 Lakhs in reality.
- 2000 per day is paid for vehicle that collects waste plus the wages 250 per person that is soon to be increased to 500.
- Monthly 15,000 is spend on waste management including buying masks, bags and other safety measures.

Observations

- E-waste collection was done as a part of Vedanta's CSR.
- NGO's help in road cleanliness and sanitation.
- Awareness campaigns are done by Mineral Foundation for SHG's, NGO's and
- Mahila Mandal.
- Swachharahi is appointed only on paper.

- Most committees are only restricted to paper work and no actual work is done by them.
- Not much updated on E- swaraj portal.

Pale-Cothambi

Pale village is located in Satari taluka of North Goa district in Goa, India. It is situated 9km away from sub-district headquarter Valpoi (tehsildar office) and 63km away from district headquarter Panaji. The total geographical area of village is 793.54 hectares. Pale has a total population of 5,706 peoples, out of which male population is 3,024 while female population is 2,682.

ODF Status

- The village has toilets installed in 95-100 % the households as of 2022.
- On paper the ODF status is 95- 100 %.
- There are no Community toilets in the village except for in two- three wards.
- No recent survey has been done to check the
- These community toilets are only used during public events.
condition of bathrooms.

Waste Management & Segregation Process

Process of Waste Management-

- 6 people are assigned for waste collection. It is done for 3 days in a week. Two people are for segregation.

- Waste segregation is done at households.
- Labor plus vehicle plus driver wage and other expenses cost 53800 per month.
- Collection is done twice in a month.
- Bathroom waste is dumped into soak pits.
- New MRF shed will be created, the plan was rejected by the government but Mineral foundation is helping now.

Finance

- Insufficient funds are a big concern.
- Primary revenue is house tax.
- Waste management expenses cost 53800 per month.
- Mineral foundation provides assistance and aid.

Observations

- Road cleaning is done on special occasions.
- Dustbins are placed in adequate spots in all wards.
- Awareness campaigns are conducted frequently.
- No provision for menstrual waste collection and disposal.
- No swacchagrahi is appointed.
- No training programs are conducted.
- Village water and sanitation committee is created and their
- E- swaraj portal is updated for the new year.

Ona-Maulinguem

Ona village is located in Bicholim taluka of North Goa district in Goa, India. It is situated 3km away from sub-district headquarter Bicholim (tehsildar office) and 36km

away from district headquarter Panaji. The total population is 3026. The male and female populations are 1575 and 1451 respectively. The size of the area is about 21.31 square kilometre.

ODF Status

- The village has toilets installed in all the households as of 2022.
- 90% plus households have bio toilets.
- Around 282 new toilets have been installed in phase 2.
- The ODF status in reality is 98%.
- There are 3 community toilets built by Nestle.

Waste Management & Segregation Process

Process of Waste Management-

- Waste is collected for 4 days and placed at MRF shed and segregation is done.
- GWMC collects the waste once in 15 days.
- 10 kg dry waste is collected per day.
- Wet waste is collected in soak pits at household level.
- Panchayat collects electronic items as well.
- Sanitary napkins are not collected and burnt at households.

Finance

- 16k is spent on labors and other expenses related to waste management per month.
- 1.5k is the fund provided by the government for waste management in a year.
- Nestle is a huge source of revenue with funds given by Nestle for public work like street lights, etc.

Observations

- Nestle supports in sanitary project and plantations.
- Contractors repair the damages in the toilets.
- Gutters are cleaned in April/May.
- Awareness program were conducted before Covid.
- Village water and sanitation committee are on paper.
- Monthly meetings are held to decide waste management plans.
- Waste management committee has 2 women employees.
- E-swaraj portal is updated.
- 2 social audits were conducted in the past 5 years.
- Anganwadi conducts workshops near temple every year.
- There is no Research and advisory committee.
- GPDP is not ready for the running year.

Piligao

Piligao is a small village of 818 hectares in Bicholim Tehsil in North Goa district. It has a total population of around 3,000 and there are 781 households present in 7 wards. It is situated 5km away from sub-district headquarter Bicholim (tehsildar office) and 34km away from district headquarter Panaji.

ODF Status

- On ground level, the ODF status is approximately 90%.
- No Community Sanitary Complex (CMC) are present as of now because of NOC issues. As many villagers stay in rented accommodations, hence No Objection Certificates are not issued by landlords for construction of toilets.

Waste Collection & Segregation Process

- Currently only dry waste collection is carried out by the panchayat.
- Wet waste is managed through soak pits in the individual households whose process is explained during Gram Sabha.
- Menstrual waste is collected along with dry waste itself.
- Total 5 labours are employed for waste collection and segregation out of which 2 labours collect the

waste once in fifteen days and 3 people manage the segregation.

- The waste collection from the MRF shed is done by GWMC as and when a request is raised by the VP secretary.
- Black spots do exist and are removed by labor on daily wages. Mineral foundation assists with the labour.

Finance

- The source of village revenue is house taxes.
- Organizations such as Atriya Engineering, Prakha Engineering(shipbuilding) and
- Vedanta/Sesa(mining) exist.
- Funds received from the government are 1 Lakh whereas expenditure on waste management is around Rs. 1,50,850.
- Rs. 11,000 per month are spent for 5 labourers and providing fuel and rent for the vehicle used for collection.

Awareness

- Awareness regarding ‘Reduce Reuse and Recycle’ is spread by the panchayats and bags are provided to store the dry waste at home.

- There is one high school present in the village and campaigns are conducted in schools on 2nd Oct to raise awareness.
- Swachh Bharat week was observed wherein awareness campaigns were conducted.

Observations

- No official is appointed as Swachhagrahi.
- Village Water and Sanitation Committee is present but only on paper.
- Village action plan and GPDP will be completed by 19 Dec for this year.
- E-swaraj portal is updated regularly.
- Social audits were done by MG Energy.
- ‘Opta’ used to help previously by providing kits to labors who collect waste.

Salem

Salem village is located in Bicholim taluka of North Goa district in Goa, India. It is situated 17km away from sub-district headquarters Bicholim (tehsildar office) and 40km away from district headquarters Panaji. The total geographical area of the village is 1069.53 hectares. Salem has a total population of 3,600 people and there are about 850 houses in Salem village.

ODF Status

- The village has a 95% ODF status.

- There is no Community Sanitary Complex in the village.
- There is maintenance required for these toilets. Multiple complaints about ODF toilets for leakage and smell. People prefer old-age toilets made out of bricks.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected once in a week and kept in a temporary mrf shed. Segregation happens in the temporary MRF shed.
- Dry waste from roadsides collected every 3 months,
- There is no wet garbage collection. Wet Waste is disposed of by the villagers themselves by either putting it into plants or into soak pits. This is done at the household level.
- New MRF shed is in process of construction.
- There is no on-time response from GWMC. They collect segregated waste after 4-5 days of complaining.

Finance

- 3 lakhs are received since 2021. It is difficult to cover all expenses within this.
- 1 Labour – Once a month, paid 400 per day.
- Monthly expenses are approximately 15000.

- Fund constraint is the main issue. Excess expenses of about 1 lakh are paid from panchayat funds.
- Rickshaw hiring to load and unload waste for segregation every week or two.
- No financial aid from any NGO, Mineral Foundation helps with awareness – drives, and managerial and administrative advice.

Observations

- E-Swaraj updated from time to time.
- Panchayat collects funds from house tax and professional tax.
- Awareness drive on single-use plastic for shopkeepers conducted last year.
- House-to-house awareness program in 2021-22, 150 attendees.
- Swachhagrahi is inactive since the current term.
- Water and sanitation committee is inactive.
- Village action plan, 2021 is updated.
- No such special practices.

Shirigao

Sirigao is a small village of 287 hectares in Bicholim Tehsil in North Goa district. It is situated 8km away from sub-district headquarter Bicholim (tehsildar office) and 26km away from district headquarter Panaji. Population of the

village is 1617 (according to 2011 census) in 5 wards with 430 as the number of households.

ODF Status

- The village is 100% Open Defecation Free.
- Community Sanitary Complex are not present in the village.
- 96 toilets were built in the village under the Swachh Bharat mission.
- No toilet repair or retrofitting requests have been received until now.

Waste Collection & Segregation Process

- Segregation of dry waste is managed in the existing MRF shed.
- 4 women are hired as labor.
- Collection and Segregation is done in 4 days within 1 month with 2 days allocated to collection and 2 days to segregation.
- People follow 'Reduce Reuse and Recycle' in their households.
- Wet waste is collected in soak pits by each individual household.
- Sanitary napkins are disposed off at the household level majorly through burning.
- Black spots which exist are cleared regularly in each respective ward.

- GWMC vehicle comes to collect waste from MRF shed when the request is raised, which is once a month. Waste is then transported to Salegaon facility.

Finance

- Major source of revenue in the village is house tax.
- Funds received is Rs. 3 lakhs through which the waste collection, segregation and transportation is managed.
- Monthly expense is Rs. 9000.

Observations

- No awareness campaigns have been conducted in the last few years, particularly due to covid curbs in place.
- No swachhagrahi appointed as well as of now.
- VWSC currently has 7 members with no female members.

Suria

- E-swaraj portal was updated in June 2022.
- Mineral foundation has agreed to help with funds but funds are not yet received.
- Mineral foundation used to conduct awareness camps earlier.
- Village action plan is ready for this year.
- Previous year's GDPDP available.

- Social audit was conducted last in 2017.
- Decomposing machine and new MRF shed construction is in plan

Surla village is located in Satari taluka of North Goa district in Goa, India. It is situated 48km away from sub-district headquarters Valpoi (tehsildar office) and 76km away from district headquarters Panaji. The total geographical area of the village is 1478.77 hectares. Surla has a total population of 3,500 people and there are about 1000 houses in Surla village.

ODF Status

- The village has a 100% ODF-Free status.
- There is no Community Sanitary Complex in the village.
- 100% of households are equipped with toilets.
- There are no complaints from villagers about the maintenance of toilets.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected twice in a week and kept in an MRF shed. Segregation happens in the MRF shed.
- Waste is collected in the first 2 days and then segregated for the next 6 days, only dry waste segregation.

- There is no wet garbage collection. Wet Waste is disposed of by the villagers themselves by either putting it into plants or into soak pits. This is done at the household level.
- 5 Labourers work in waste collection and segregation.
- 1 Rickshaw is rented for Rs. 12000 for waste collection
- New MRF shed is approved and the construction will start soon.
- Occasional cleaning of black spots.
- Menstrual waste is also collected separately at the time of collection of dry waste.

Finance

- 2 lakhs are received since 2021, there is difficulty in fund allocation and utilization.
- 5 Labourers - paid Rs. 350 per day.
- Monthly expenses are approximately 26000.
- 1 Rickshaw is rented for waste collection for Rs. 12000 per month.
- Fund constraint is the main issue. Panchayat earns from house tax, there is no
- imposition of garbage tax.
- Rickshaw hiring to load unload waste for segregation every week or two.

- Machinery and Rickshaw is also approved by the government.
- Mineral Foundation helps financially as well as for awareness on waste management.

Observations

- E-Swaraj updated from time to time.
- Awareness campaign did last year door to door.
- Bags distributed among villagers for waste collection in households.
- Feedback taken from households for waste collection.
- Remote black spots are blocked and Board of Awareness is installed.
- Water and Sanitation Committee is present.
- GPDP plan is to be made for the current year.

Valguem

Valguem village is located in Bicholim taluka of North Goa district in Goa, India. It is situated 16km away from sub-district headquarters Bicholim (Tehsildar Office) and 46km away from district headquarter Panaji. The total geographical area of village is 324.24 hectares. Valguem has a total population of 2,732 people and there are about 450 houses in Valguem village.

ODF Status

- The village has a 95% ODF status.

- There is no Community Sanitary Complex in the village.
- There is no complaint from villagers about household toilet repair.

Waste Management & Segregation Process

Process of Waste management –

- Dry waste is collected once in a month and kept in a temporary MRF shed.
- Segregation happens in the temporary MRF shed.
- 2 Labourers and 1 Vehicle with a driver are hired for waste collection and segregation.
- Separate labor is hired for roadside waste collection.
- There is no wet garbage collection. Wet Waste is disposed of by the villagers themselves by either putting it into plants or into soak pits. This is done at the household level.
- A 6-day process is followed for waste collection and segregation.
- No menstrual waste collection.
- GWMC comes once in every 2 months for waste collection.

Finance

- Lakhs received since 2021.
- Total waste collection and segregation costs are Rs. 10600 per month.

- Garbage Tax is imposed for fund collection at Rs. 30 per month per household.

Observations

- E-Swaraj portal is not updated.
- Panchayat collects funds from house tax and garbage tax.
- Vedanta e-waste collection initiative in the village as part of CSR.
- Road waste collection and sanitation by NGOs
- Swachhagrahi is inactive.
- Committees like Water and Sanitation Committees are inactive and show no participation.

Observations and Findings

The objective of this research study is not only to identify waste collection methods and techniques adopted by the different villages of Bicholim block but also to keenly observe and understand the entire waste management mechanism in place.

The villages, while they do have some underlying commonality in the processes and procedures adopted, they have also displayed uniqueness of culture and practices followed.

After visiting and interviewing all the 18 villages of Bicholim Taluka, Goa, the following are the findings revealed from all the villages.

Waste Management

- Only dry waste is collected once to thrice according to the village population and area.
- Waste is collected door to door by labors using trucks, riskshaws and/or cycles for the same
- After collection, waste is stored & segregated in MRF sheds
- Then GWMC is called to collect the segregated waste for taking it to Saligao for further process
- Cleaning of roads, public places and blackspots are found to be done either once a month or completely ignored. But there are few villages which are working rigorously on this problem
- Wet waste is disposed at household level and e-waste & menstrual wastes are burnt causing environmental harm
- It was observed that people are hesitant in wet and e waste management. Also, landlords do not sign of NOCs for giving land for building infrastructure related to waste management.

ODF

- Though, most of the villages are 90-95% ODF free, they still need to work on the ground level

to create awareness and change the behavior of the people doing so.

- Also, there's a need to achieve 100% presence of toilets in households along with at least 1-2 community sanitary complex.

Finance

- Panchayats find it difficult to do waste management efficiently in the current level of funds received by the government.
- People are reluctant to allow the approval of imposing garbage tax.
- Panchayats are unaware of the correct process of requesting of funds from the government resulting in frequent rejections by the government to grant funds.
- Also, they are unaware of the schemes, subsidies and provisions to raise funds for the village in general and for garbage management.
- There is a need for running continuous awareness campaigns about waste management among the villages and need for education, up skilling and technological infrastructure to work on the roots of the above stated problems.

Limitations of the Study

Some of the primary limitations of the research process and methodology have been listed below:

- The disconnect between different stakeholders made the data collection a little inconsistent. Since not all the data about these villages and waste management was recorded by the local bodies in charge, a lot of the data was estimated and roughly evaluated.
- Another limitation was the research objective being to analyze and study the implementation and formulation / appointment of committees for water and sanitation, was not as easy to achieve. This was primarily due to these committees existing only on paper and not on ground.
- The interaction with Goa Waste Management Corporation (GWMC) officials and understand their involvement in the waste disposal and management in the villages was minimal due to their busy schedule which limited the task of cross checking the practical problems encountered during the entire process of waste management, segregation activities, etc. handled at panchayats.

Implication of the study and Policy Suggestions

The major issue lies in the fact that the village locals are not fully aware and convinced about the need for proper waste management techniques. The village panchayats need to undertake measures and initiatives which will emphasize on the need of adopting necessary practices in the area of waste management. The following could be some initiatives which the village panchayats can consider for ensuring the same.

- **Conduct awareness campaigns:** The importance of proper waste collection and disposal can be raised among inhabitants by villages through awareness initiatives. Organizing neighborhood events, passing out leaflets and pamphlets, and using social media to spread the word are some examples of how to do this.
- **Use signage:** In order to help inhabitants remember the value of proper waste disposal signage can be strategically placed throughout the community, such as next to waste pickup stations.
- **Provide waste bins:** Residents can be encouraged to properly dispose of rubbish by placing sufficient trash cans throughout the village. These containers need to be kept in handy spots and should be cleaned out frequently.

- **Offer incentives:** Communities might think about rewarding citizens who dispose of their waste appropriately. For instance, if households continuously abide by waste collection regulations, they may receive a discount on their property taxes.
- **Involve community groups:** Spreading the word about proper waste collection and disposal can be accomplished by involving neighbourhood organizations like clubs and schools. To keep the community orderly and clean, these organizations might plan cleanup days and other programmes.
- **Partner with local authorities:** To guarantee that waste collection services are dependable and available to all inhabitants, villages can collaborate with local authorities. This collaboration may also contribute to the safe and proper disposal of garbage.

Summary and Conclusion

Waste management and disposal is a critical problem that still affects the health and well-being of people and communities in villages in India. The results of this research emphasize the value of promoting sustainable waste management practices through community involvement, education, and awareness-raising. To guarantee the effective and secure disposal of waste, effective waste management necessitates the involvement of all

stakeholders, including governmental organizations, non-profit organizations, and local communities.

Waste management will remain a pressing problem that needs to be addressed as India experiences rapid urbanization and population expansion. In order to effectively control waste and improve the health and wellbeing of people and groups in villages all over India, it is crucial that policymakers, researchers, and practitioners continue to collaborate.

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**CIVICAL CONSCIENTIOUSNESS, SOCIETAL
TRANSFORMATION ANDEFFECTIVE
TECHNIQUES AS VITALISED THROUGH ARTS
AND HUMANITIES WRITING**

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Abstract

Knowledge leads to wisdom and wisdom assembles the world. Robust communication of rich ideas and thoughts, wide learning and broader network of information sharing transform the subject knowledge that is acquired from one person to the fellow scholars, students and learners all over the world. Such sharing of the subject knowledge enriches the fecundity of experience. Any information is basically shared through the domain of writing. Writing in Arts and Humanities is one of the major platforms through which life oriented lessons reach the world. Francis Bacon quotes, “Reading maketh a full man, conference a ready man and writing an **exact man**” (**Bacon, 267**). Arts and Humanities render flawless service to the society in imparting value education. It not only facilitates the process of reading but relentlessly promotes the skill of writing.

Writing in Arts and Humanities fosters in the readers, an awakening of social responsibility essential for every human being. In relation with the significance of creating a social awareness, Arts and Humanities aims at bringing out life engaging articles, papers, books, thesis to generate a positive vibration in the minds of the readers. The outcome from the domain of Arts encompassing Languages, Literature, History and Philosophy profusely entertains the world towards a socially and communally harmonious world.

Key Words: History and Philosophy, art and humanities, fecundity, social awareness, socialresponsibility.

Introduction

Arts and Humanities exploit the field of history, culture, language, sometimes teach and preach intellectual subject matter, sometimes connect people with the moral and the spiritual realm. It attributes empathy and instills a philanthropic attitude in each and every word uttered. Taking into consideration, the challenges and the responsibilities irresistible in the present world, this domain of Arts recurrently speaks about the social, political, economical and the communal issues pertaining to reform the society. Thus Arts and Humanities disseminate a new practice to deploy the human resources appropriately through the medium of writing as a means to curb the social injustice and perils dominatingthe world.

Generally writers write for various reasons and purpose and four types of writing papers fit well for Arts and

Humanities:

Interpretive or analytical writing explains the meaning of any particular text with examples. In any analytical writing, a particular text is analyzed with the help of a theory. For example, the text is studied applying theories like Structuralism, Post Structuralism, Russian Formalism, Reader Response Criticism, Psychoanalytical Criticism, Deconstruction, Feminism, New Historicism, Post Colonialism, Modernism, Post Modernism, Cultural studies. Or any text is interpreted through these theories by taking into consideration the characters, plot, setting, narrative structure and themes.

Creative Writing comes under the second category which is taken for pleasure and leisure reading and also to enhance the writing competency. Any fictional writing such as poetry, novels, short stories come under creative fiction writing. Sometimes the real incidents are intertwined along with unreal incidents to frame non-fiction creative writing.

Expository writing explains a text to the reader. For example the writer shows how the characters of Arundhati Roy stand for gender inequality and gender discrimination.

Argumentative writing proves that some idea proposed by the writer in any work is true and that does exist. For

instance, Pamuk, a Turkish writer narrates the impossibility of leading a life without culture, tradition, past and history. He provides evidences on how a nation degrades neglecting the original history with arguments that he has read from other historical records.

Taking into acquisition the many types of writing, the techniques and the structure to be adopted, any research writing is done both for Science, and Arts and Humanities. Basically in any type of research writing, varied information is accumulated from a wide variety of sources to support the argument that is proposed. Writing in the domain of Science involves theoretical data, accumulation of facts, illustrations, knowledge about the devices used, laboratory records, the name of the chemicals, statistical enumeration that provides knowledge related to a particular area in science. Whereas writing papers in the field of arts and humanities involve certain social responsibility to create awareness about the societal happenings.

In Arts and Humanities, Scholars write papers either on the personal issues encountered by public in the society or on some social issues that the society faces as a whole. On the whole writers write for the society and also to amplify the research records. A learner becomes an erudite scholar with voraciousness in the reading competency. The more the learner reads, the more accuracy and scholarship the learner acquires.

In the Process of attaining proficiency in writing, the learner also accumulates loads of social responsibility that is exhibited in the writing. Added to this, writing an article, a thesis or a book hones the creative expression of innovative thinkers. As a scholar, everyone should know the what, why, how and to whom an article, a thesis or a book is written.

Apart from the structure, format, style and type employed to write a paper, a thesis or a book, a writer follows certain ethics to be validated. For example, writing a paper follows the format like an abstract, key words and a neatly organized explanatory part. The abstract speaks about the entire article in a few words followed by the key words. It is then followed by a clear arrangement of the content that is explained with illustration.

Generally, a thesis consists of five or six divisions. The first division generally discusses about the main objective, the writer, the works to be discussed, the theory on which the thesis rests, its characteristic features, literature review, chapterization and thesis statement. The second, third, fourth and fifth divisions elaborate on the critical study and analysis of the selected works either fiction or the non-fiction, and finally the last division sums up the entire discussion. These divisions are followed by bibliography where quotes and citations in support to the theoretical points are acknowledged. A book gives a detailed account of the writers' perception on

any idea, theory or a fictional interpretation.

On the whole, a writer writes for a group of audience who expects the writer to fulfill the varied interest. Such a writer must have certain unique characteristics. Writing in arts and humanities is expected to create a positive impact deviating people from a path of ignorance and innocence towards profound knowledge excavation. Such writing in the hands of a writer holds a powerful responsibility to teach people, inculcate values, ethics and to make them morally sound. Any work produces aesthetic feasibility to the reader and enable the readers to discern between the good and the evil prevailing in the society.

Writing in arts and humanities especially becomes a useful platform imparting the real treasure to the people around. In order to lead the human population towards a treasure house of knowledge, information storehouse and moral excavation, excerpts from arts and humanities abounds in its writing technique.

Apart from cultural norms, techniques, rules and format to write and publish a paper in arts and humanities, the spell bound nature of arts and humanities well educates the society to evolve or transform into a complete human being. Following the words of Horace on Poetry, Writing in Arts and Humanities both educates and entertains the individual and the society. It fills the heart with pleasure and imparts the mind

with practical applicability to lead a life. The construction of the thoughts to provide a positive impact on the society decides the success of any writer. Since the words once written are hoarded in concrete forms, a few icons are preferred. Each and every time a writer writes, the skill, confidence and the profundity of experience gets enriched. Since the ideas expressed in humanities is an art about social communication in a unique voice or style that captivates the mind of the readers, the writers always appeal the reading thirst of the readers. The futuristic ideas expressed are ever impacted and resonated, so appealing research in drafting a script is essential. Creating unique voice imitating great writers, philosophers and theorists deliberately promotes the level of the writers.

In addition to the voice, relevancy in subject matter and consistency in exploring wide range of things proves the meticulous efforts of a writer. For example, author Shashi Tharoor is one of the most influential writers whose writing is controversial at the same time induces hope in the mind of the readers. He is outspoken about the nature of living in the present day. He regularly opines in social media, writes sample articles resenting the perils in the society and advocates human rights, irrespective of engaging in politics. His writing fills the readers with words, theoretical formulations, subsequently creates awareness about the society, politics, economic disparities, personal evolution essential for human being to

thrive in the universe.

Adhering to the idea of William Wordsworth it is true that the language of the writer parallels with the language of the masses. The excerpt sincerely is conditioned to follow the willing suspension of disbelief formulated by Coleridge. The language not only appeals but allows the readers to accept whole heartedly the words of a writer as Coleridge proposes. The words touch the emotional level of the readers who tend to move gradually, creating a world full of bliss and knowledge. This writing in arts exploits the challenges encountered by a human being in the globalised and modern world.

Any writer writes, but it lies in the hands of an evocative person to create a writing that is unseen by a reader. Expressing what the other writers generally hesitate to write and deviating from the sonorous and monotonous effect also attains excellence. As the reader also grows along with the writer, the style of a writer in Arts and Humanities strictly follows lucidity but grand narration of any type of story. Arts and Humanities acts as a catalyst linking the past with the contemporary world. The domain imparts knowledge about individuals, the society and a profound contribution in the respective field of study. Besides, it satisfies the personal and the professional requirements of individuals creating an optimistic effect. To be highly acclaimed, Mathew Arnold's method of writing is advisable. The writing is neither historical

nor personal but a lengthened expression of unprejudiced study of the society.

The condition to reform the society alarms the writers not to involve the readers with the corruptive politics, disregarded policies, inefficient educational pursuits but make them understand the rationalized knowledge, brutal inequalities, apply multidimensional approach to gender and race, and create an aura detaching from the subject matter one proposes. A writer of Arts adopts to change the world, and does not deviate from the responsibility.

The writer as an advocator of human beings, understands the level of the readers and writes accordingly. He writes to publish and leads others to publish following him. As writing in Arts certainly creates a personal proforma and a professional name, a philanthropic writer not only achieves recognition with the publications in highly reputed journals earning name and fame inside the institution, but in the entire field of educational discipline. Such erudite scholars are availed opportunities to captivate learners, give public presentations in both media and in educational institutions. They are even invited to give talks in the respective field of study as a subject expert. Close to the inherent success in becoming a subject expert is choosing a topic that is untouched or rarely touched. The research pursuit or topic chosen to write a research paper furnishes the future research endeavours. Hence a writer is

always conscious to touch a subject that he is already interested so that he gets an opportunity to improve the research faculties. Subsequently, a writer also is required to remain updated on every article published in connection with ones area of interest. In case of absence of ideas related to ones research, they can readily read the ample abstracts available. These innumerable abstracts illuminate and provide feasible research views based on the respective area of interest.

The ability to ponder, consistent reading and the introspective research seriously provide access to the plenty of research articles and enable a researcher to receive profound knowledge on any subject and will allow to stand unique from other researchers. Since the reader reads and evaluates the article with similar ones, and finally judges the transparency and the promising words, a writer is demanded to be comparably competitive in writing. A writer in Arts and Humanities also broods over the research during the incubatory period of research, or while writing a research proposal, and contribute meaningful portrayal of the society. He nurtures a clear thesis statement provided with clarity that is the prerequisite for any quality research and academic publishing. Later he looks for measures to publish.

In addition to the sequential order of statements, a well planned structure, with theoretical interpretation, analysis and illustration, quotes and citation are added finally. This is done

not to obstruct the natural flow of ideas from the memory.

Firstly, the efficiency of the introductory part is retained in the mind of the readers, until the readers complete reading the entire paper. Secondly theory or concept is introduced, with a thorough theoretical justification so that the readers will naturally understand the necessity and the implications in adding the theory. For example when the writer discusses about the theory, postmodernism and one of its concepts historiographic metafiction, the writer must enable the readers to understand the necessity to understand postmodernism, its perusal of the lack of order in the twentieth century, and the dominant concept historiographic metafiction. Thirdly fecundity of other research papers or review is elaborated related to the respective research writing to provide support. A writer explains how the research differs and stands unique from others. Addition of footnotes at the end of the paper in advance clears all the possible doubts of the viewers. Finally choose the appropriate journal to get the paper published. A part from the informative research and proper planning to publish in a valid journal, attention is paid to filter the deceptive journals. The writers look for UGC Care listed journals, peer reviewed international journals and multidisciplinary journals for further perusal. Scopus indexed journals are preferable. The journal is identified to be fakeif:

- The language is not scholarly

- The publication fee is high. Sometimes they charge but only a small amount
- There is no clear explanation of the editorial board, editorial team, or explain their professional affiliation with an association or a university is given
- The review process is absent
- No scholarly articles are found

After a thorough scrutiny of the promising nature of the journal, submission deadline, preferable citation details, appropriate format to be followed, whether APA or MLA, availability of peer review team, editorial details, stipulated period of time within which the article is peer reviewed, and published, are noted. Finally the papers are sent.

The writer requires patience after submitting the paper for further perusal from the editorial side. Detailed instruction is given to make amendments, if the paper fails to meet the requirements of the journal. According to the suggestions of the editorial team, further changes are made and the subject matter is furnished. The writer waits from three to six months for the second hearing. If the writer fulfils the academic accuracy of the journal, it is published or if the paper remains abrupt without being properly revised, the paper is rejected and the writer has to

come up with a new feasible research article.

The writer shall be confident that a valid journal seeks the writers consent to make any changes. Hence the writer reads the instruction carefully before carrying out the changes revises and rearranges the words, sentences or even paragraphs to get it published. Once it is accepted for publication, a final draft of the final layout is sent to the author where changes are just noted in the paper, indicating the page number and is sent to the editorial board. Finally the correction is implemented and is published.

The final section of this article concentrates in particular on the types of readers, and the role a writer has to play to sooth the artistic taste of readers of different background.

Reader satisfaction is the greatest demand of the day. A few readers are in dire need of evolving the world into paradise, a few need the society to be politically strong, economically sound, morally vibrating and daring. For those readers choose the topic that will bring a transformation in the society. The readers through a thorough reading of the research paper, tend to understand the roles and responsibilities as a human being to pursue for the evolution of a better world. The shrewd readers recognize the necessity to prioritize the goals, act according to the words of the researcher and reform the society. As the writer covers majority of the problems prevailing in the society through his own experience, and devises solutions through easily

accessible resources with a proper statistical data, historical records and provide sufficient proof, the paper reaches nook and corner. Apart from writing, getting it published, the desirable success rests in citation process. The more the paper is cited, the more success the writer has reached. The metrics employed to calculate the scholarly influence depends on the skeptical, provoking thoughts effectively applied by the researcher. The chief role to write in Arts and Humanities is to kindle the social responsibility and the moral lessons it imparts to transform an individual thereby contributing to the society. Adding to the research, language, high impact journal, unique features, a writer as a path maker and a philanthropist, has in his hands the proper responsibility to shape every human being. The way in which a writer chooses a topic assembles the distorted mind of the individual in this materialistic world. Since Science papers aim to provide accuracy, statistical data, calculations, arts and Humanities take up the role of fulfilling the aesthetic sense and through the aesthetic role, invest an awareness about the world that is slowly crouching towards social and racial discrimination, economic disparities, gender violence, unemployment that lead to poverty and corruption, spoiling the life of young and adults.

The reader has to comprehend the dire need of a revolution in the mind of the readers in the present scenario. A revolution generally needs much money power and the human resource that is practically impossible in the current situation. But

it is certainly possible to bring about revolutionary thoughts in the minds of millions of learners and readers all over the world through the powerful portrayal of words. Injecting the society with powerful thoughts through papers, articles and books, the writer especially in Arts and Humanities adopts both teaching the human kind and entertaining. The greatest problem with the society today is lack of awareness about oneself, the society in which they live and the environment that nurtures them. A writer of humanities discusses the materialistic, social, political, economic, personal issues with examples about the inequality, absence of manners, vows and wide range of discrimination. Adopting a plain language to discuss, writing clearly to the readers the crucial issues, publishing different types of articles openly in an online and offline forum directly or indirectly reach the mind of the readers. The writer shall provide living examples, appropriate illustration such as the life of Mr.Ratan Tata, Dr.A.P.J.Abdul Kalam, or Dr, V. Santha who live for the society.

Retaining the tangible nature and adopting a robust communication, Arts and Humanities also create story tellers, dreamers, visionaries and through them impart value education both to the learned and to the illiterates. The varied research activities carried out in the field of English Language Teaching especially promotes the necessity to eradicate illiteracy. Time has come to revitalize past, history, culture and tradition through the writings in Humanities. It engages oneself with life, attach

humanistic concerns and the need to be empowered academically, socially and civically. Besides contributing to regional, national economic development, leading to innovation and discoveries, cultural veracity of different states and regions are understood clearly.

Finally writing in Arts and Humanities fosters research, develops healthy relationships in disciplines such as education, business, industrial, government and the private sector. It provides solutions to world problems such as hunger, poverty, unemployment, environmental disruption and the necessity to respect nature, understand and engage in cultural absorption. The study of arts and other humanities enables a greater understanding of the human condition. On the whole writing in arts and Humanities broadens the role of effective communication, provides a basic grounding in the field of education teaches citizenship and leadership qualities and finally impart moral, ethical and cultural responsibility.

Moreover no organisation, company or institution except Arts and Humanities teaches the ability to enhance critical thinking, adopt the practical realities of life, acknowledges fellow human beings and to comprehend the emotions of people around. Irrespective of different educational or social backgrounds, Arts and Humanities depreciates imbalances in life and promotes a healthy relationship among people and also paves way for a congenial environment

necessary for the growth of a society.

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