

# NEW NUMBERS & LETTERS

# NEW NUMBERS & LETTERS



$$H(t) |\psi(t)\rangle = i\hbar \frac{d}{dt} |\psi(t)\rangle$$

The collage consists of four distinct images. The top-left image depicts a globe of the Earth surrounded by several US dollar bills, suggesting a connection between science and economics. The top-right image shows a ball-and-stick molecular model with red spheres representing oxygen atoms and grey spheres representing carbon atoms. The bottom-left image is a line graph showing Intensity in arbitrary units (a.u.) on the y-axis and Wavelength in nanometers (nm) on the x-axis. Two peaks are visible: a black peak at  $\lambda_{em} = 435 \text{ nm}$  and a red peak at  $\lambda_{ab} = 581 \text{ nm}$ . The bottom-right image shows a spiral galaxy with a black arrow pointing towards its center.



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KURIAKOSE ELIAS COLLEGE  
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# *New Numbers and Letters*

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## Editorial Note

The journal *New Numbers and Letters* encompasses articles picked from multifarious arenas of research and inquiry. Multidisciplinary in its nature and scope, the journal explores how arts, science and technology, economy and consumption work towards human betterment. As a part of persistent pursuit for academic excellence, Kuriakose Elias College, Mannanam proudly presents the Volume XI, Issue I. In this edition of the journal, we have exemplary articles to our reading and discussion. The persisting covid pandemic has usurped our habits and brought significant changes in our lifestyles. More than adults, children have been greatly affected by this uninvited guest-Covid 19. A qualitative analysis of the impact of online education of children coupled with the doubts and apprehensions of parents as an exploratory study reflects on assessing the situation and suggesting methods to improve the condition. I am sure a reading of this article would be highly beneficial. Another interesting field of study has been explored by the review of how nanotechnology can significantly play a role in preventing Covid 19 outbreak and help us decipher the link between the current pandemic of SARS- COV-2 and nanoparticles.

Huge hue and cry are made over conservation of environment and turning the places greener for a better world. The article on biosynthesis of nanoparticles specially to find greener methods of inorganic material synthesis is a must read for all and will definitely contribute to better understanding and management of the same. Gaussian distribution is an oft discussed topic in mathematical functions. It helps in understanding the probability distribution. A review of inverse Gaussian distribution pertaining to its reliability characteristics and applications is definitely an

interesting area of study to delve into. The article on Time series analysis using ARMA model is worth an interesting read. A time series plot of the levels of Lake Huron suggests a steady decline and fitting a linear regression trend in time with an ARMA model for the residual errors conclude that the decline is indeed statistically significant. Hence this study would enable the fitted model to forecast the next 3 year of lake levels.

With myriad subjects discussed in the journal articles, comes the icing on the cake – the reading of Joker as the birth of a maverick wherein alienation masquerades as an anomie or normlessness, a kind of social isolation or a kind of self-imposed estrangement, making it the most ineffable and impenetrable topics of contemporary life. India is a land of thousands of little hamlets or villages. As Mahatma Gandhi once remarked “The soul of India lies in its villages”, the article included in this journal is a research study that covers the impact of village tourism of Malarickal village. The author delves deep into the various elements that contribute towards the socio-economic development of the place and its people along with their satisfaction index hence making it a popular rural tourism destination. The articles on evaluation on microbial consortia present in mosquitoes and their influence on the Vector competence and effect of pesticides on the cost benefit ratio of *Jasminum sambac* (oleaceae) are promising areas of research and inquiry into science and technology and its advancement towards a better and sophisticated human life and making the world a healthier and safer place to stay. The observations made in this regard are applauded and well-represented turning it significant for the journal as well. Economy has a huge role to play in the development of any kind. The age needs financial socialization with great efficacy so that the future stays secure and soars high in its

economic progression and prosperity curve. The articles on promoting financial self-efficacy among young adults and influence of in-store factors on impulse buying behavior of consumers with reference to Kottayam district is worth reading. The article on the role of United Nations in advocacy of Human rights sets standards to aman's entitlement of enjoying inherent dignity of human person and meaningful life. Last but not the least, "*Malayala naadaka charithrathil mariyamma naadakathinte praadhanyam*" by Dr. Ponni Devasya tries to analyse that "*Mariammanaadakam*" written by "*Kocheppan tharakan*" marks a milestone in the history of Malayalam drama literature for a number of reasons, including the first play that deals with a social subject, a play written in the vernacular of the nineteenth century, the first feminist play to feature female characters who have acquired a sense of identity, and the earliest Malayalam play that deals with comedy with ease rather than a clown.

I am extremely glad to have received this opportunity of penning down my thoughts and observations in review of all the articles-the treasure house of knowledge, research and inquiry that have been published in this journal. I wish all the best to the contributors of the articles and a happy reading to the literati.

**Fr. (Dr.) XAVIER C S**



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### Call for Papers

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# Inverse Gaussian Distribution and its Reliability Characteristics-A Review

Maya T Nair

Department of Statistics, SVR NSS College, Vazhoor  
E-mail: mayatnair123@gmail.com

## Abstract

*The inverse Gaussian distribution is the probability distribution of the time required for a particle subject to linear Brownian motion with positive drift to reach a fixed point in its path for the first time. The distribution of the displacement of the particle at a fixed point in time is the Gaussian distribution. In this paper, some reliability characteristics of inverse Gaussian distribution are discussed.*

**Keywords:** Inverse Gaussian distribution, Moment generating function, Reliability Function, Hazard Rate

## Introduction

The inverse Gaussian  $IG(\mu, \lambda)$  distribution has many properties analogous to that of the Gaussian distribution. The  $IG(\mu, \lambda)$  distribution has a history dating back when Schrodinger (1915) and Smoluchowsky (1915) presented independent derivations of the density of the first passage time distribution of Brownian motion with positive drift. The drift free case had already been published by Bachelier (1900). The name inverse Gaussian was proposed by Tweedie (1945) and Tweedie (1956) studied the statistical properties of  $IG(\mu, \lambda)$  distribution. From the point of view of probability and

mathematical statistics the distribution can be regarded as a natural exponential family generated by the one-sided stable law with index  $\frac{1}{2}$ . The probabilist is motivated by the connection of the inverse Gaussian distribution to Brownian motion, while the statistician is fascinated by the numerous intriguing properties and parallels it shares with the Gaussian distribution.

**Definition**

A continuous random variable  $X$  is said to follow the inverse Gaussian distribution with parameters  $\mu$  and  $\lambda$  and it is denoted by  $IG(\mu, \lambda)$  if its probability density function is given by

$$f(x, \mu, \lambda) = \left(\frac{\lambda}{2\pi x^3}\right)^{\frac{1}{2}} \exp\left(-\frac{\lambda(x-\mu)^2}{2\mu^2 x}\right), \quad x > 0, \mu > 0, \lambda > 0 \quad (1)$$

**Properties**

Mean of  $IG(\mu, \lambda)$  distribution

$$\begin{aligned} E(X) &= \int_0^\infty f(x, \mu, \lambda) dx \\ &= \int_0^\infty \left(\frac{\lambda}{2\pi x^3}\right)^{\frac{1}{2}} \exp\left(-\frac{\lambda(x-\mu)^2}{2\mu^2 x}\right) dx = \mu \end{aligned} \quad (2)$$

Mode of  $IG(\mu, \lambda)$  distribution

Mode is the solution of  $f'(x) = 0$  and  $f''(x) < 0$ , where  $f(x)$  is the probability density function and primes denote differentiation with respect to  $x$ .

For the model (1),  $f'(x) = 0$  implies

$$\frac{d}{dx} \left( \left( \frac{\lambda}{2\pi x^3} \right)^{\frac{1}{2}} \exp \left( -\frac{\lambda(x-\mu)^2}{2\mu^2 x} \right) \right) = 0$$

which gives

$$\text{Mode} = \mu \sqrt{1 + \frac{9\mu^2}{4\lambda^2}} - \frac{3\mu^2}{2\lambda} \tag{3}$$

Clearly  $f''(x) < 0$ , so the distribution is unimodal.

Moment generating function of  $IG(\mu, \lambda)$  distribution

$$\begin{aligned} M_X(t) &= E(e^{tX}) \\ &= \int_0^\infty e^{tx} f(x, \mu, \lambda) dx \\ &= \int_0^\infty e^{tx} \left( \frac{\lambda}{2\pi x^3} \right)^{\frac{1}{2}} \exp \left( -\frac{\lambda(x-\mu)^2}{2\mu^2 x} \right) dx \\ &= e^{\frac{\lambda}{\mu} \left( 1 - \sqrt{1 - \frac{2\mu^2 t}{\lambda}} \right)} \end{aligned} \tag{4}$$

Characteristic Function of  $IG(\mu, \lambda)$  distribution

$$\begin{aligned} \Phi_X(t) &= E(e^{itX}) \\ &= e^{\frac{\lambda}{\mu} \left( 1 - \sqrt{1 - \frac{2i\mu^2 t}{\lambda}} \right)} \end{aligned} \tag{5}$$

Cumulant generating function of  $IG(\mu, \lambda)$  distribution

$$\begin{aligned} K_X(t) &= \log M_X(t) \\ &= \frac{\lambda}{\mu} \left( 1 - \sqrt{1 - \frac{2\mu^2 t}{\lambda}} \right) \end{aligned} \tag{6}$$

**Reliability characteristics**

Early occurrence of certain events such as failure or repairs is a common phenomenon in the lifetime of industrial products. Chhikara and Folks (1977) and Folks and Chhikara (1978) suggested the use of the inverse Gaussian distribution for a model of such life time behaviour and discuss the different reliability features of the distribution. They have shown that for the model (1), its failure rate is non-monotonic, initially increasing and then decreasing

**Distribution Function**

The distribution function of the  $IG(\mu, \lambda)$  distribution given in (1) is

$$\begin{aligned} F(x; \mu, \lambda) &= \int_0^x f(t, \mu, \lambda) dt \\ &= \int_0^x \left(\frac{\lambda}{2\pi t^3}\right)^{\frac{1}{2}} \exp\left(-\frac{\lambda(t-\mu)^2}{2\mu^2 x}\right) dt \\ &= \int_0^x \left(\frac{\lambda}{t^3}\right)^{\frac{1}{2}} \phi\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right)\right) dt \end{aligned}$$

where  $\phi(\cdot)$  is the probability density function of the standard normal distribution.

$$\begin{aligned} &= \int_0^x \phi\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right)\right) d\left(-2\sqrt{\frac{\lambda}{t}}\right) \\ &= -\int_0^x \phi\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right)\right) d\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right) + \sqrt{\frac{\lambda}{t}}\left(1 + \frac{t}{\mu}\right)\right) \\ &= -\int_0^x \phi\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right)\right) d\left(\sqrt{\frac{\lambda}{t}}\left(1 - \frac{t}{\mu}\right)\right) + e^{\frac{2\lambda}{\mu}} \int_0^x \phi\left(\sqrt{\frac{\lambda}{t}}\left(1 + \frac{t}{\mu}\right)\right) d\sqrt{\frac{\lambda}{t}}\left(1 + \frac{t}{\mu}\right) \end{aligned}$$

$$= \Phi\left(-\sqrt{\frac{\lambda}{x}}\left(1-\frac{x}{\mu}\right)\right) + e^{\frac{2\lambda}{\mu}} \Phi\left(-\sqrt{\frac{\lambda}{x}}\left(1+\frac{x}{\mu}\right)\right) \quad (7)$$

This result, first obtained by Schrodinger (1915), was later obtained independently by Shuster (1968).

### Reliability Function

The reliability function of  $IG(\mu, \lambda)$  distribution given in (1) is

$$\begin{aligned} R(t) &= 1 - F(t) \\ &= \Phi\left(\sqrt{\frac{\lambda}{t}}\left(1-\frac{t}{\mu}\right)\right) - e^{\frac{2\lambda}{\mu}} \Phi\left(-\sqrt{\frac{\lambda}{t}}\left(1+\frac{t}{\mu}\right)\right) \end{aligned} \quad (8)$$

### Hazard Rate Function

If  $X$  represents failure time, then the reliability function  $R(t)$  is given by (8). For the  $IG(\mu, \lambda)$  distribution, the hazard rate  $h(t)$  is given by

$$h(t) = \frac{\left(\frac{\lambda}{2\pi x^3}\right)^{\frac{1}{2}} \exp\left(-\frac{\lambda(x-\mu)^2}{2\mu^2 x}\right)}{\Phi\left(\sqrt{\frac{\lambda}{t}}\left(1-\frac{t}{\mu}\right)\right) - e^{\frac{2\lambda}{\mu}} \Phi\left(-\sqrt{\frac{\lambda}{t}}\left(1+\frac{t}{\mu}\right)\right)} \quad (9)$$

It is easy to show that  $h(t)$  is not a monotone function of  $t$  in  $(0, \infty)$  and that it increases from zero at time  $t = 0$  till it attains a maximum at some critical time  $t^*$  and then decreases to a non-zero asymptotic value.

### Conclusion

A phenomenon of this nature, failure rate is non-monotonic, initially increasing and then decreasing makes the inverse Gaussian law a good candidate for modelling lifetimes with high early failure rates.

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## **Time Series Analysis Using ARMA Model**

**Tijo Mathews, Smitha S.**

*Department of Statistics, Kuriakose Elias College, Mannanam*

*E-mail: tjomathews@gmail.com, smitha283@gmail.com*

### **Abstract**

*A time series plot of the levels of Lake Huron suggests a steady decline. Fitting a linear regression trend in time with an ARMA model for the residual errors, leads to the conclusion that the decline is indeed statistically significant. The fitted model is used to forecast the next 3 year of lake levels.*

Keywords: Time series, ARMA model, forecast.

### **I. Introduction**

Scientists have historically used the North American Great Lakes region as an indicator of long-term environmental damage on the continent. Time series analysis comprises methods for analysing time series data in order to extract meaningful statistics and other characteristics of the data. The main objective of time series analysis is forecasting. In time series forecasting, past observations are collected and analysed to develop a suitable mathematical model which captures the underlying data generating process for the series. In this paper, we take a close look at the annual measurements of the levels of Lake Huron, recorded as yearly averages. Our primary goal is to fit an appropriate model to the data in order to determine if this trend is statistically significant. This article is composed of four parts, the structure of this article is established as the following: segment 2



describes the methodology that is used, sector 3 is the analysis part and section 4 puts the conclusion.

## **II. Methodology**

A time series is a series of observations  $x_t$ , observed over a period of time. The four categories of the components of time series are: Trend, Seasonal Variations, Cyclic Variation and Random or Irregular movements. Usually time series, showing trend or seasonal patterns are non-stationary in nature. Some mathematical tests like the one given by *Dickey and Fuller* are generally used to detect stationarity in a time series data. Differencing and power transformations are often used to remove the trend and to make the series stationary. Autocorrelation is a mathematical representation of the degree of similarity between a given time series and a lagged version of itself over successive time intervals. Autocorrelation is also sometimes called “lagged correlation” or “serial correlation”, which refers to the correlation between members of a series of numbers arranged in time. The covariance between  $\{X_t\}$  and  $\{X_{t-k}\}$  is known as the autocovariance function at lag  $k$ . PACF is the correlation between  $X_t$  and  $X_{t-k}$  after their mutual linear dependency on the intervening variables  $X_{t-1}, X_{t-2}, \dots, X_{t-k+1}$  has been removed. The Akaike information criterion (AIC) is a mathematical method for evaluating how well a model fits the data it was generated from. In statistics, AIC is used to compare different possible models and determine which one is the best fit for the data. AIC is calculated from the number of independent variables used to build the model and the maximum likelihood estimates of the model (how well the model reproduces the data).

The formula for AIC is  $AIC = 2k - 2\log(L)$ , where  $k$  = number of parameters,  $L$  = maximized value of likelihood function for the estimated model. Given a set of candidate models for the data, the preferred model is the one with the minimum AIC value. Hence AIC not only rewards goodness of fit, but also includes a penalty that is an increasing function of the number of estimated parameters.

Time series models are designed to find out various characteristics of the time series data. The selection of a proper model is extremely important as it reflects the underlying structure of the series and this fitted model in turn is used for future forecasting. A time series model is said to be linear or non-linear depending on whether the current value of the series is a linear or non-linear function of past observations. The commonly used models for studying linear time series are Autoregressive (AR), Moving Average (MA), Autoregressive Moving Average (ARMA), Autoregressive Integrated Moving Average (ARIMA) and Seasonal ARIMA Model.

A stochastic model that can be extremely useful in the representation of certain practically occurring series is the autoregressive model. Autoregressive models are based on the idea that current value of the series,  $X_t$  can be explained as a linear combination of  $p$  past values,  $X_{t-1}, X_{t-2}, \dots, X_{t-p}$  together with a random error  $\epsilon_t$  in the same series. An autoregressive model of order  $p$ , abbreviated as  $AR(p)$ . Rather than using past values of the forecast variable in a regression, a moving average model uses past forecast errors in a regression-like model. A moving average model of order  $q$ , is denoted by  $MA(q)$ . An ARMA  $(p, q)$  model is a combination of  $AR(p)$  and

$MA(q)$  models and is suitable for univariate time series modelling. If we combine autoregressive and a moving average model with differencing, we can obtain a non-seasonal ARIMA model. ARIMA is a short term used to represent the Autoregressive Integrated Moving Average. An extension of ARIMA that supports the direct modelling of the seasonal component in the time series data is called SARIMA or Seasonal ARIMA or Seasonal Autoregressive Integrated Moving Average. The seasonal ARIMA model incorporates both non-seasonal and seasonal factors in a multiplicative model. One shorthand notation for the model is  $ARIMA(p, d, q)(P, D, Q)S$  where  $p$  = non-seasonal AR order,  $d$  = non-seasonal differencing,  $q$  = non-seasonal MA order,  $P$  = seasonal AR order,  $D$  = seasonal differencing,  $Q$  = seasonal MA order, and  $S$  = time span of repeating seasonal pattern.

The Box-Jenkins Model is a mathematical model used for forecasting of data following specified time series. The Box-Jenkins Model can analyse several different types of time series data for forecasting purposes. Its methodology uses differences between data points to determine outcomes. The methodology allows the model to identify trends using autoregression, moving averages, and seasonal differencing to generate forecasts. In time series analysis, the Box-Jenkins's method, named after the statisticians George Box and Gwilym Jenkins, applies autoregressive moving average (ARMA) or autoregressive integrated moving average (ARIMA) models to find the best fit of a time-series model to past values of a time series. The Box-Jenkins methodology comprises following steps, Identification of process, Estimation of parameters and Diagnostic Checking.

Dickey Fuller test is a test for checking the stationarity of the data. In statistics, the Dickey Fuller test tests the null hypothesis of whether a unit root is present in an autoregressive model. The alternative hypothesis is different depending on which version of the test is being used, but is usually stationarity or trend stationarity. It is named after statisticians David Dickey and Wayne Fuller, who developed this test in 1979.

### III. Analysis

R is a programming language and free software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.

Time series plot of lake hourn data is

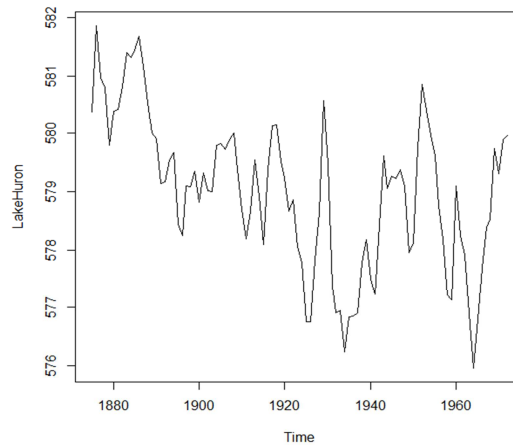


Fig: 3.1

### Auto Correlation Function Plot

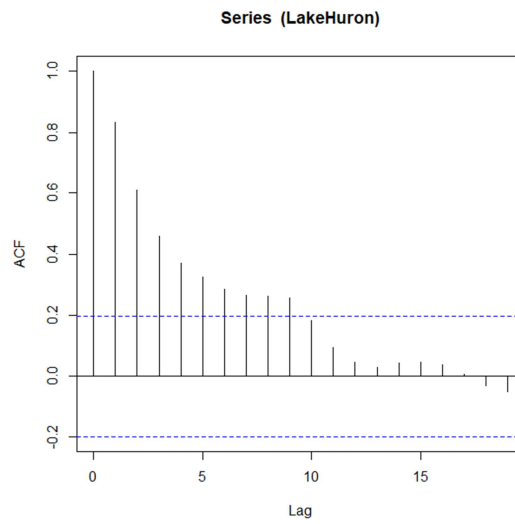


Fig: 3.2

### Partial Auto Correlation Function plot

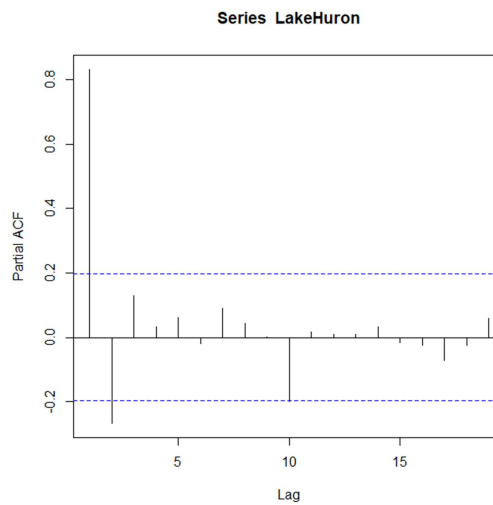


Fig: 3.3

### ARMA Modelling

The `auto.arima()` function in R uses a combination of unit root tests, minimization of the AIC and MLE to obtain a best ARMA model. The model was identified as ARMA (1,0,0) with AIC Value 219.2

### Residual Analysis

ACF plot of residual is given in Fig 3.4 and that of PACF plots is given in Fig 3.5

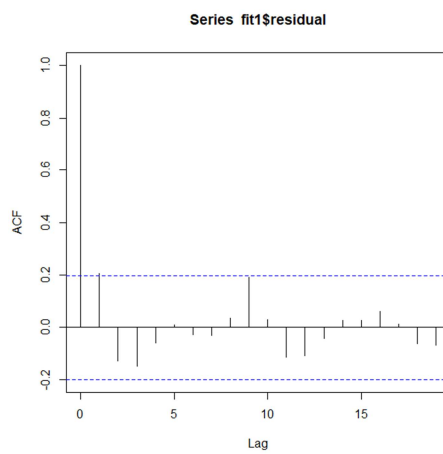


Fig: 3.4

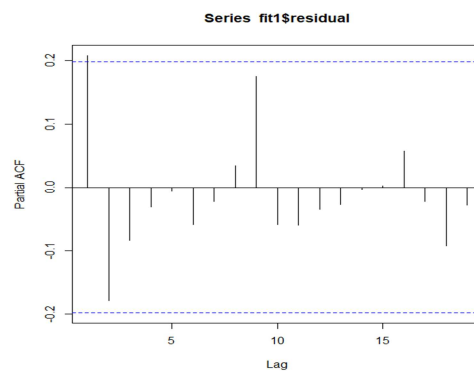


Fig: 3.5

**Box-Pierce test**

Box test is used to determine whether the residuals are correlated or not. data: fit1\$residual: X-squared = 4.2156, df = 1, p-value = 0.04005. Since the p-value is smaller than the significance level 0.05 we can conclude that the residuals are correlated.

**Forecasting**

An out of sample forecast uses **all available data** in the sample to estimate a model (Hyndman & Athanasopoulos). The level of Lake Huron upto 2023 is forecasted using the fitted ARMA model. The forecasted values are:

Year	Forecast
2021	579.1155
2022	579.1154
2023	579.1154

**IV: Conclusion**

Time series forecasting is a fast-growing area of research and as such provides many scopes for future works. The main objective of this paper is to model and to forecast the water level and to test the significance of actual level and forecasted level using R. Based on the forecasting results, we can say that the ARMA model is more capable in monitoring and forecasting water level. ARMA (1,0,0) is the fitted model, and this model is considered as the best model to forecast.

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## **Online Education and Parent Satisfaction During Covid-19 Pandemic Scenario- An Exploratory Study**

**Meenakshi S, Chinchu Rani Vincent**

*Department of Psychology, Kuriakose Elias College, Kerala, India*

*E-mail: chinchu0313@gmail.com*

### **Abstract**

*Parents are the first and continuing educators of children. Parental satisfaction and involvement help improved learning outcomes. However possible disparities exist in the extent to which they can help their children. This can in turn result in varying parental dissatisfaction. The outbreak of Covid 19 pandemic has made world open to online education. It has accelerated the dissatisfaction and tension associated with education among both children and parents. The resent study aims to qualitatively analyse the impact of online education of children on parents' satisfaction in the context of COVID-19 pandemic. A qualitative study was performed among a sample of 50 parents from Kerala and data was collected using a self-prepared questionnaire. The result was interpreted descriptively using literature and grounded theories.*

**Keywords:** Parent, CBSE, Kerala State, Parental Dissatisfaction, Online Education

## **Introduction**

Novel Corona Virus Disease (COVID-19) has paved way for a massive public tension throughout the world. Its progression has created a heightened sense of confusion, fear and stigma among general public in variable extents. The provision of education and mental health issues are among the major challenge faced during this pandemic. Teaching is moving to online on an unpredicted scale. Many have sort to recreate the school settings through online platforms with many uncertainties. Being new to it, the changing structure has put a question on the level of satisfaction of parents with the quality of education of their children.

Parental involvement, encouragement as well as support are crucial to bring improved learning outcomes. As addressed by Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2008), productive partnerships between students, parents, schools and the broader community helps in escalating the student engagement and achievement. Research has shown that parental engagement helps in reducing dropout rates and improves the likelihood of commencing higher education. It also contributes to better social skills and psychological behavior. Salisbury, Branson, Albrecht, (1997) argued that evaluation of parental satisfaction with schools is a fundamental element in the improvement of the overall quality of education as satisfied parents actively involve themselves in school activities. Being the prime driver of learning, even in online education, many parents round the world do successfully school their children at home. However this seems unlikely to generalize over the whole population. There are possibilities for substantial disparities between families in the extent to which they can help their children.

Bryk and his colleagues (2010) found that those schools which built on strong parent engagement have successfully improved their student's reading four times higher and in learning mathematics about ten times better. Powell, (2010) found that parents who were actively engaged in schools' programs were more satisfied with services provided by schools. Jinnah and Walter (2008) studied the relationship of parental satisfactions with parent involvement, their result indicated that parental involvement positively established parental satisfactions with child care programs.

Thus a question arises whether the sudden shift to a new method of teaching would impact the quality of education. For the students to be adaptive it is important to ensure that the parents must be able to adapt to the changing circumstances effectively. It is equally important to address any kind of physical as well as psychological difficulties that they may face in this context. The present study aims to qualitatively analyse the impact of online education of children on parents' satisfaction in the context of COVID-19 pandemic.

### **Aim**

With the growing need and significance of study the problem is stated as to understand the impact of online education and parent satisfaction during covid 19 pandemic scenario.

### **Method**

A qualitative study was performed using grounded theories and related literatures. The study focused on parents of children belonging classes 5, 6 and 7 of both, Kerala state and CBSE institutions. A randomly selected sample of 50 parents of school students belonging to

the two categories, 25 from each was selected. Method of purposive random sampling was used for sample selection so as to avoid manipulation. Participants were interviewed over phone based on a self-prepared questionnaire. Required data were collected, recorded and administrated to further analysis. The data was analyzed descriptively.

**Result and Discussion**

Table1: Responses of the participant in percentage.

SL. NO.	QUESTIONS	STATE		CBSE	
		YES%	NO%	YES%	NO%
1	Do you sit along with the child during online classes?	56	44	44	56
2	Do you help you child in (after) online education?	84	16	92	8
3	Have you faced any difficulties in using the technologies required for online classes?	36	64	36	64
4	Have you ever noticed whether the duration of online classes is affecting the child or not?	28	72	20	80
5	Does your child face any physical difficulties such as headaches due to online classes?	24	76	20	80
6	Does your child face any psychological difficulties such as stress due to online classes?	20	80	8	92
7	Whether the classes were distorted due to technological difficulties?	60	40	44	56
8	Does the present virtual education help in the personality development of your child?	44	56	48	52
9	Does the present online education system have affected the quality of education of your child?	68	32	56	44

The findings indicate that most of the parents need to get involved in the online classes irrespective of their hectic schedule. Among these parents of students from Kerala state schools need to engage more as most classes are via television that does not ensure the teacher supervision. Parents report that for the students of lower classes, parents must give more attention regarding their needs and studies. Also short classes are advisable for smaller children. and class time need to reduce by 2-3 hours. Also some of the students are unable to complete their notes due to lack of time. Some parents reported physical difficulties such as strain for the eyes due to long duration of classes. Parents reported that the mode of teaching is difficult to understand for students using television for online education. It is especially reported in case of students of state syllabus were they were taught in English and now as the classes are in regional languages. They emphasize on the need for more activities such as reading and the teachers should ensure the comfort of students.

However Irrespective of the streams, parents are ready to help the students in spite of their difficult situations. They are responsive to the needs and difficulties of the student. Being in a home environment, they can take leisure breaks in between which might have led to being adaptive to duration of classes. The findings also indicate that a good proportion of individuals have not faced any difficulties to use the technologies demanded for online classes such as smart phones. Being the part of a technologically advanced era, the uses of smartphones as well as various other applications are familiar for the parents as well as students. The rest were distorted due to technological difficulties and barriers such as climatic problems, occasional electricity cut offs and

even unavailability of internet connection and was more among state syllabus student classes.

Analyzing the introspective suggestions of the parents, it is observed that many of them are satisfied with the new mode of education even though a proportion still stands for the conventional method. They emphasis on the lack of social interaction and environmental exposure. Parents from both the streams believe that the quality of education of their child has considerably affected by the online education. They also perceive that the present virtual education system does not help in the personality development of the child. Many reported that the online classes are not useful as it is more like the child learning by himself. They emphasis on the need for more explanation on the content. Teachers should also help the students with other co-curricular activities. Some of them suggested that the school authorities must make sure that respective class teachers are interacting with their students at least once in two weeks. They emphasis that teachers address the difficulties of the students and also to make sure that the online education is received by everyone irrespective of their contexts. Also, the teachers need to ensure that the students do not manipulate the exams and thereby improve the quality of education provided.

The literature consistently documents positive associations between home and school based parental activities and children's educational achievement. Parental involvement with the child's education as well as participation in their school life benefits in the form of better school achievements (Friendly & Bellas, 2009). Several factors influence the parental satisfaction in the education of child such

as the quality of educational services provided by the schools, standard curriculum, environment, technology equipment, ratio, physical facilities and communication. Also differences in the non-cognitive skills of the parents, the amount of time available to devote to teaching, availability of resources and also the amount of knowledge they can impart influence the quality of their involvement (Oreopoulos et al., 2006). Forett and Mendez (2010) suggest that the more educated the parents the higher their satisfaction and this was also found in the case of primary schools.

The sudden shift in education pattern is new and yet to completely discover. This in turn has created much chaos. However, is in a phase of acceptance. The process of online education is a new phenomenon for the adults. They had experienced and had only been familiar with the conventional method of education. They must be able to come out of their existing cognitive belief pattern so as to accommodate the new method.

### **Limitation and Scope for further study**

The present study focusses on a relatively small sample. Also, the study is largely qualitative. The study is also descriptive in its explanation of findings. The study can be further expanded by quantitatively assessing parental dissatisfaction and its related variables. The study can also be explored based on other coexisting socio cultural and demographic factors.

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# **Biosynthesis of Nanogold using Honey and its Surface Plasmon Absorption Studies**

**Jollyamma Mathew, Linta Maria Jose**

*Research and Post Graduate Department of Chemistry, Kuriakose Elias College, Mannanam - 686561*

*Email: jollysaiku@gmail.com; lintamariajose@gmail.com*

## **Abstract**

*Biosynthesis of nanoparticles is of interest to biologists, chemists and material scientists especially in light of efforts to find greener methods of inorganic material synthesis. Nanobiotechnology combines biological principles with physical & chemical procedures to generate nano- sized particles with specific functions. In the biosynthesis using natural products as reducing agent, nanoparticles of desired size can produce at room temperature. In the present study, gold nanoparticles were synthesised using varying concentrations of honey as the reductant. UV- Vis measurements showed characteristic pattern of variation with respect to concentration. The colour as well as absorption values are indicative of the nano nature of gold particles.*

**Keywords:** gold nanoparticles, biosynthesis, honey, reducing agent

## **1. Introduction**

Biosynthesis of gold nanoparticles has been carried out by several groups of scientists using plants, fungi and bacteria. Many microorganisms produce inorganic nanomaterial either intra or extracellularly. Synthesis of gold nanoparticles using the bacteria *Pseudomonas aeruginosa* was reported by Husseiny *et al.* in 2007 [1].

The synthesis of stable gold nanocubes by the reduction of aqueous  $\text{AuCl}_4$  by *Bacillus licheniformis* has been described by Kalishwarlal *et al.* in 2009 [2]. The intra and extracellular biosynthesis of gold nanoparticle by Fungus *Trichothecium Sp.* was reported by Absar and coworkers in 2005 [3]. The biosynthesis of gold nanoparticles using marine alga *Sargassum wightie* has been investigated by Singaravelu *et al.* in 2007 [4]. The stable nano gold particles were obtained by reduction of aqueous  $\text{AuCl}_4$  ions by the extract of Marine alga.

The synthesis of gold nanoparticles by the reduction of gold ions using a kind of Chinese herbal extract – Barbated skull cap has been reported by Wang *et al.* in 2009 [5]. The study on edible mushroom as reducing and protective agent for gold nanoparticles has been carried out by Philip in 2009 [6]. The extremophilic actinomycete, *Thermomonas* when exposed to gold ions reduced the metal ion extracellularly and yielding gold nanoparticles was also reported. The first report on the formation of gold nanoparticles by living plants was presented by Gardea – Torresday and coworkers in 2002 [7]. They use alfalfa seeds for the preparation of gold nanoparticles.

The leaf extracts of two plants *Magnolia Kobus* and *Diopyros Kaki* were used for extracellular synthesis of gold nanoparticles by Song *et al.* in 2009 [8]. The extracts from Black Tea ((i) tea leaf broth (ii) ethyl acetate extract and (iii)  $\text{CH}_2\text{Cl}_2$  extract) has been employed as a reducing agent for the synthesis of gold nanoparticles by Begum *et al.* in 2009 [9]. The present work has been focused on the

biosynthesis of gold nanoparticles using the natural reducing agent honey.

## **2. Experimental**

### **2.1. Materials**

Solutions of natural honey with different concentrations (10% to 50%) were prepared for the study. Chloro auric acid was purchased from HiMedia Laboratories Pvt. Ltd., Mumbai, India.

### **2.2. Synthesis of gold nanoparticles**

2.5 ml of .00125M gold solution and 2.5 ml 10% honey solution were taken in a clean test tube and mixed well. A pink colour was developed, indicating the formation of colloidal gold nanoparticles and its absorbance was measured using a colourimeter. The measurement was done for 24 hours with an interval of 1 hour. Similar experiment was done with all the other samples of honey and same observation has been found.

## **3. Results and Discussion**

Five samples designated as sample-1 (10%), sample -2 (20%), sample -3 (30%), sample - 4 (40%) and sample -5 (40% 10 days) were prepared using 0005M gold solution as the precursor and honey as reducing agent. The colour and appearance of these samples are indicative of gold nanoparticles formed (colour ranges from bluish violet to reddish violet) (figure 1). Here honey is used as a reducing and capping agent for the preparation of gold nanoparticles.



**Figure 1.** Synthesis of gold nanoparticles

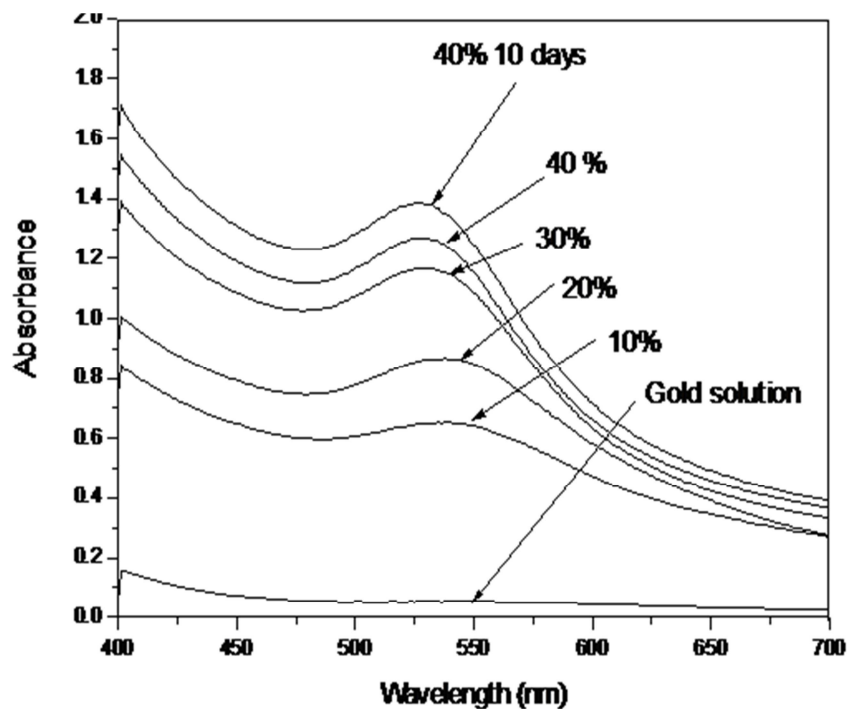
By adjusting the concentrations of  $\text{HAuCl}_4$  and honey in aqueous solutions, different samples of nanogold were prepared at room temperature. The primary ingredient of honey is fructose, a monosaccharide and reducing agent. Also, it contains vitamin C, a slow reducing agent. Further, when honey is diluted with water, chemical reaction between glucose, water and oxygen produces small amounts of  $\text{H}_2\text{O}_2$  and gluconic acid. This slow release of  $\text{H}_2\text{O}_2$  makes honey a mild antiseptic. As glucose is changed to gluconic acid due to dilution with water, the presence of the reducing agent fructose in honey may be responsible for reduction. It is also possible that sucrose and proteins/ enzymes play a role in the reduction.

### **3.1. UV-Visible absorption studies**

The UV–vis absorption spectrum of all the samples were measured (figure 2). Here the absorption intensities are found to

increase as the concentration of reducing agent in the sample increases.

The result of the study is summarized in table 1.

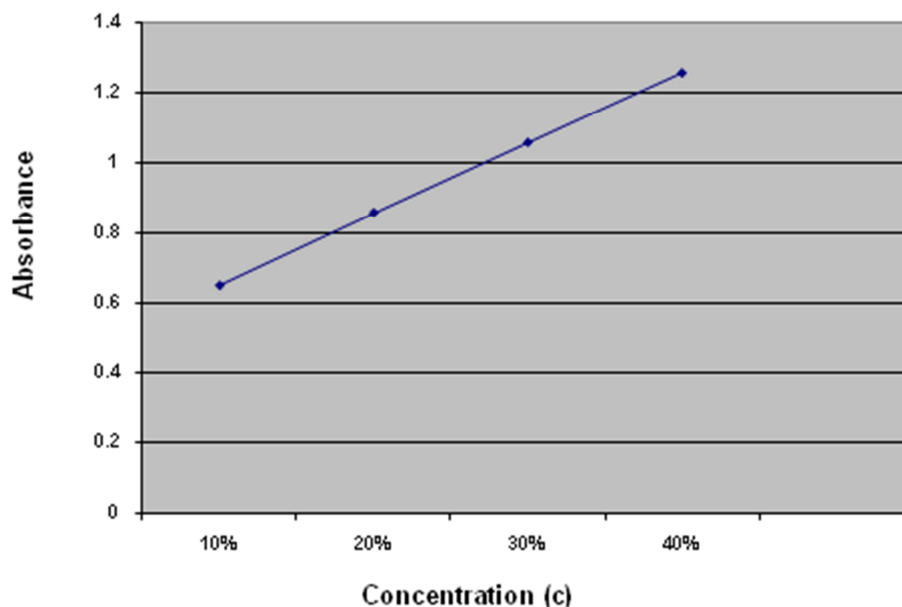


**Figure 2.** The UV-Vis absorption spectra of gold nanoparticles using different concentrations of honey

**Table 1.** UV-Vis absorption studies of gold nanoparticles

Concentration of honey	Absorption intensity	Wavelength (nm)
10%	.65	540
20%	.867	538.8
30%	1.169	536
40%	1.267	550
40% after 10 days	1.377	530

If we plot absorbance against concentration, according to Beer-Lambert's law, a straight-line graph is obtained. As concentration increases, absorbance also increases. The plot of absorbance of each sample against their concentration is shown in figure 3.



**Figure 3.** Plot of absorbance of gold nano sample against concentration of reducing agent

#### 4. Conclusion

In the present study, gold nanoparticles were synthesised using varying concentrations of honey as the reductant. The colour as well as absorption values are indicative of the nano nature of gold particles. UV- Vis measurements showed characteristic pattern of variation with respect to concentration. The reduction and growth of gold nuclei using honey as the reducing agent follows a green and economic method, taking advantage of an efficient bioresource. Consequently, this environment friendly method will be a competitive alternative to the existing method for producing nanoscale inorganic materials.

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## **Role of Nanotechnology in Preventing Covid-19 Outbreak; Short Review**

**Ambili. K. S.<sup>a,b</sup>, Jesty Thomas<sup>a\*</sup>**

<sup>a</sup> *Research Department of Chemistry, Kuriakose Elias College,  
Mannanam, Kottayam, Kerala 686561, India.*

<sup>b</sup> *Department of Chemistry & Research Centre, St Albert's College  
(Autonomous), Ernakulam, Kerala, 682018, India.*

*E-mail: jestyk@kecollege.ac.in*

### **Abstract**

*The emergence of COVID-19 is becoming a serious threat to human life worldwide. Nanoparticles have drawn significant interest in the control of COVID-19 outbreak due to their unique properties. This review helps in understanding the possible link between the current pandemic of SARS-COV-2 and nanoparticles.*

**Keywords:** coronavirus, COVID-19, diagnosis, nanotechnology

Since December 2019, the world has faced infectious novel coronavirus disease-2019 (COVID-19) outbreaks due to the viral particles of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2) [1]. Corona virus is an enveloped, positive-sence and single stranded RNA virus which causes emerging respiratory disease outbreaks and a variety of diseases [2]. It had a substantial global impact and influenced over 223 countries, areas or territories. Corona virus disease affected 11,92,120,681 peoples around the world out of which 26,42,826 people died up to 14<sup>th</sup> March 2021, numbers which are still rising. Nanoparticles are expected to act as anti-viral

therapeutic agents against COVID-19 or as diagnostic agents that contribute to the detection of viral particles of SARS-COV-2 [2]. Moreover, nanoparticles play a significant role in the prevention of this viral outbreak as well.

The fight against this viral pandemic employs a multistage scientific approach. Primary requirement should be a proper diagnostic process for the detection of the virus. Second requirement is the therapeutic intervention that can effectively reduce the effects of the virus. Third is the development of vaccines which help to create antibodies. Nanotechnology is an emerging tool for the detection, antiviral therapy and to provide vaccines against respiratory viruses.

Disinfection using nanomaterials is a finer approach for the prevention of the spread of COVID-19. Nanomaterials are helpful in sterilizing protective equipment in a hospital environment by avoiding viral contamination by air and contact with infected surfaces [1]. Photosensitizers like nanosized titanium dioxide (TiO<sub>2</sub>) can be used for disinfecting indoor environments, such as hospitals and clinics [3]. Several nanomaterials like silver, zinc oxide, and copper nanoparticles shows antiviral property and can be coated on surfaces for providing self-disinfecting action. It was observed that carbon nanotubes and graphene sheets can entrap infection agents and inactivate them by compressing in carbon-based fibers. Silver nanoparticles have been studied to own antiviral properties and are recognized as an inhibitor against SARS-CoV-2. Silver based sanitizers and disinfectants are also being used for disinfection. Research is developing for the fabrication of new reusable nano-filtered face masks containing nanofibers. Nano

porous silicon-based membranes with improved filtering efficiency of N95 respirators are under development.

Nano biosensors are widely used for various diagnosis processes since they can selectively detect all types of analytes by combining the excellent electrical and optical properties of nanomaterials with biological or synthetic molecules used as receptors. Thus, different methods of detecting SARS-CoV-2 using nano biosensors are being studied. Researchers are using gold nanoparticles, gold nanorods etc. for detecting SARS CoV-2 which expected to provide fast results with low error rates. Researchers at the Catalan Institute of Nanoscience and Nanotechnology developed a nano-interferometric biosensor to use in testing device for Covid-19. A highly sensitive COVID-19 test based on magnetic nanoparticles to extract viral RNA was developed by researchers from the Norwegian University of Science and Technology (NTNU). It was reported that more than 5 million NTNU COVID-19 tests have already been supplied to the Norwegian health authorities.

Metal nanoparticles, magnetic nanoparticles, quantum dots etc, are some of the nanoparticles implemented for coronavirus detection using colorimetric, electrochemical, fluorescence or optical detection techniques. The rapid diagnosis and effective inhibition of coronavirus using spike antibody attached gold nanoparticles was reported by Ray et al. It was observed that antibody attached gold nanoparticles bind to SARSCoV-2 spike protein and thus inhibiting the virus from binding to cell receptors [6]. Scientists from the University of Maryland School of Medicine developed an experimental diagnostic test for COVID-19

that can visually detect the presence of the virus in 10 minutes using plasmonic gold nanoparticles to detect a color change in presence of virus [7]. Apart from gold nanoparticles, silver nanoparticles, iron oxide nano particles, zirconium quantum dots etc are using in the detection of corona virus since they are effective than the conventional diagnosis technologies [2].

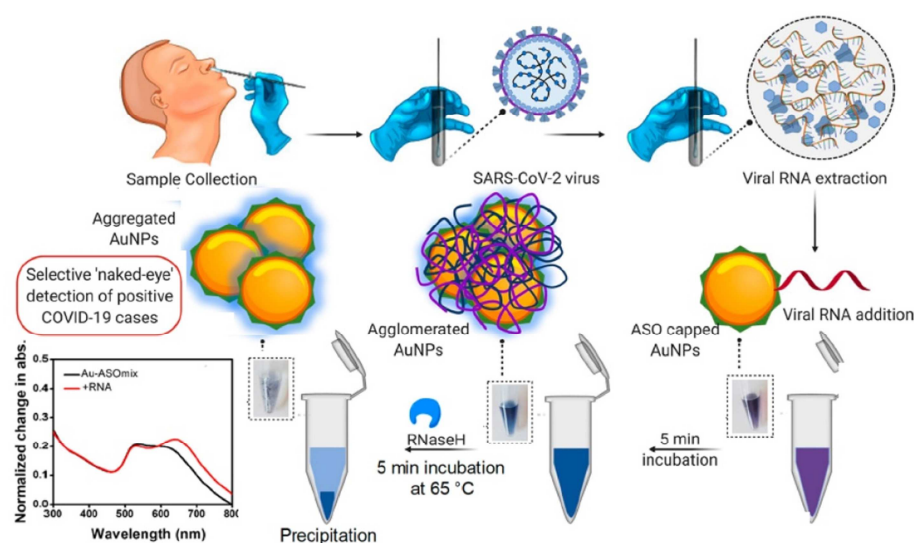


Fig 1. Schematic representation of detection of SARS CoV-2 using plasmonic gold nanoparticles [7]

Several metal nanoparticles like AuNPs Ag Nps, silicon nanoparticles can be used for the treatment against covid-19 due to their minimal cytotoxicity. Lipid nanoparticles, dendrimer nanoparticles, polymer-based nanoparticles etc. can act as good carriers in nanomedicine. Nanotechnology can also improve the vaccine development against covid-19. NPs can be systematically functionalized with various proteins, polymers, and functional groups to perform specific inhibitory functions which also can act as excellent delivery

vehicles. Hence it offers possibilities for fast and safe vaccine development using subunit proteins instead of whole viruses [8].

### **Conclusion**

Nowadays, world is facing the most dangerous situation regarding the novel SARS-CoV-2 outbreak which is affecting people's life in every region. Nanomedicine is power tool which moderate the covid-19 pandemic. Nanotechnology mediated technologies in the medical field may play a crucial role in COVID-19 prevention, diagnosis, treatment, and vaccine development.

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## **Application of Bismuth oxyhalide photocatalysts for the deterioration of pharmaceutical pollutants**

**Mekha Susan Rajan, Anju John, Jesty Thomas\***

*Post Graduate and Research Department of Chemistry, Kuriakose Elias College, Mannanam, Kottayam, Kerala 686561*

*E-mail: mekharjn38@gmail.com, anjujohnkadavil@gmail.com, jestyk@kecollege.ac.in\**

### **Abstract**

*The uncontrolled existence of pharmaceutical compounds in the aqueous environment demands for more efficient water treatment technologies. Bismuth oxyhalides, BiOX (X = F, Cl, Br and I) appears as an innovative class of photocatalysts for waste water decontamination. The photocatalytic degradation performance of BiOX have been widely explored by many researchers either in pure or improved forms. These composites are capable of degrading pharmaceutical pollutants under UV or visible light. Modification of bismuth-related photocatalysts with metals/non-metals, carbonaceous materials and biopolymers and the use of heterostructures/mixed metal oxides is testified to promote it with remarkably high visible light response and competent photocatalytic performances. This review focus on different BiOX photocatalysts for the degradation of pharmaceutically active compounds.*

**Keywords:** bismuth oxyhalide, photocatalysts, degradation, pharmaceutically active compounds.

## Introduction

Pharmaceutical compounds are biologically active chemicals that can cause long term contamination to aquatic systems [1]. The overuse of antibiotics would develop resistance in microorganisms against these antibiotics that ultimately affects human health [2]. Therefore, it is essential to remove pharmaceutical waste from the hospital as well as industrial effluents before its expulsion. The conventional wastewater treatments and biological treatment methods are not practically efficient for the complete removal of these pharmaceutically active compounds (PhACs) from wastewater streams [3]. Nowadays advanced oxidation processes like photocatalysis offers a viable approach to deal with wastewater treatment [4].  $\text{TiO}_2$  has gained much attention in photocatalysis studies as it was the first photocatalyst discovered and is still one of the most widely-explored materials [5]. But due to the wide band gap of  $\text{TiO}_2$ , an ultraviolet irradiation is required for photocatalysis which has consequent implications for its use as solar light activated catalyst [6].

Recently, Bismuth oxyhalides,  $\text{BiOX}$  ( $X = \text{F}, \text{Cl}, \text{Br}$  and  $\text{I}$ ) have been widely explored in photocatalysis research due to their tunable band gap, chemical stability, non-toxicity and corrosion resistance [1,7]. The  $\text{BiOX}$  series exhibits tetragonal matlockite structure and this peculiar arrangement of layered structure benefits them immensely to display high photoactivity [8]. The crystal structure models of pure  $\text{BiOX}$  ( $X = \text{F}, \text{Cl}, \text{Br}, \text{I}$ ) is shown in Fig.1 [9]. An increase in atomic number of  $X$  in  $\text{BiOX}$  depicts a decreased band gap, with an order of  $\text{BiOF} > \text{BiOCl} > \text{BiOBr} > \text{BiOI}$ , which provides a reason for the enhancement of photoactivity in the order  $\text{BiOF} < \text{BiOCl} < \text{BiOBr} < \text{BiOI}$ .



BiOX photocatalyst except BiOF, displays an indirect band gap nature which is favorable for impeding the recombination of photo-generated electron-hole pairs [8]. The band gap of BiOCl has been estimated experimentally to be 3.46 or 3.51 eV within the ultraviolet range, whereas the band gaps of BiOBr and BiOI were assessed to be 2.91 eV and 1.92 eV, respectively within the visible-light range using absorption spectra [10]. Nevertheless, the photocatalytic efficiency of the pristine BiOX is still slow under sunlight irradiation because of the high recombination rate of photo generated electron-hole pairs. In order to tackle these problems, current modification studies tend to emphasis on facet control, elemental doping, bismuth-rich strategies, defect engineering and heterojunction construction [11]. Thus, this review mainly summarizes the recent advancements in bismuth oxyhalide photocatalysts for the degradation of PhACs.

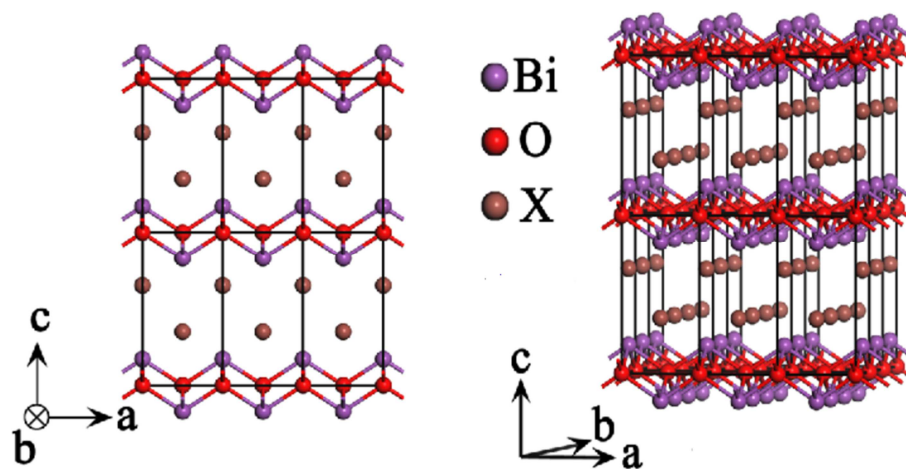
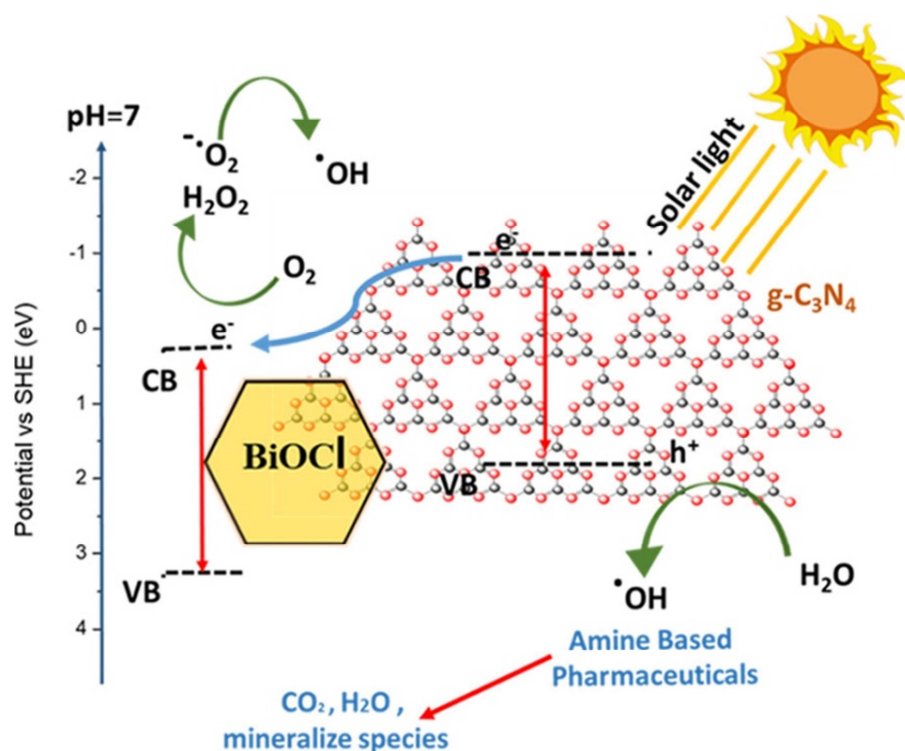


Fig. 1. Crystal structure models of pure BiOX (X = F, Cl, Br, I) [9]

## **Environmental Applications of BiOX Photocatalysts**

Bismuth oxychloride (BiOCl) was the first BiOX compound to be investigated for photocatalytic properties [12]. This study was followed by, many other reports which further establishes the abilities and potential of BiOX compounds as photocatalysts. Many efforts have been undertaken to improve the photocatalytic performance of BiOX compounds [13]. Al Marzouqi et al. [14] fabricated 2D/2D BiOCl/g-C<sub>3</sub>N<sub>4</sub> heterostructure via microwave-assisted method and was used to degrade amine-based pharmaceutical, nizatidine. About 96% of the pollutant (0.4mg/ mL) was degraded after 30 min. of simulated solar light irradiation. Mechanism of nizatidine photocatalytic degradation over BiOCl/g-C<sub>3</sub>N<sub>4</sub> sample is outlined in Fig.2. The photoexcited electrons present in the conduction band (CB) of g-C<sub>3</sub>N<sub>4</sub> get moved to the CB of BiOCl upon visible light irradiation. The electrons interact with surface-absorbed O<sub>2</sub> to produce superoxide radical ( $\cdot\text{O}_2^-$ ) and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) and the interaction between these new species yields a highly oxidizing hydroxyl radical ( $\cdot\text{OH}$ ). The holes ( $\text{h}^+$ ) residing in g-C<sub>3</sub>N<sub>4</sub> can react with surface-absorbed H<sub>2</sub>O to create more  $\cdot\text{OH}$  and thereby enhances its photocatalytic activity. The species such as  $\text{h}^+$ ,  $\cdot\text{O}_2^-$  and  $\cdot\text{OH}$  are mainly accountable for the degradation of nizatidine through its successive attacks via the formation of several intermediate products.



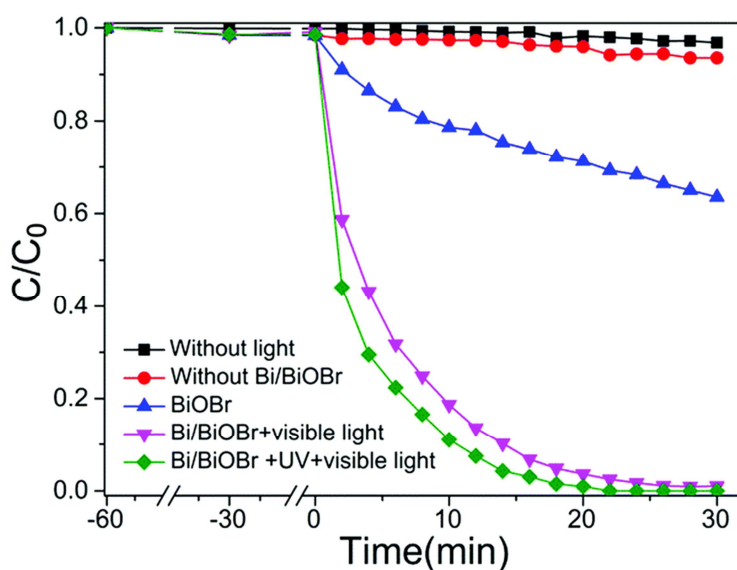
**Fig. 2.** Proposed reaction pathway for amine-based pharmaceuticals over the BiOCl/g-C<sub>3</sub>N<sub>4</sub> composite structures [14].

The visible light photocatalytic performances of BiOCl/AgCl/BiVO<sub>4</sub> n-p heterojunction synthesized through a one pot hydrothermal method was also reported [15]. In this study BiOCl/AgCl/BiVO<sub>4</sub> heterostructure synthesized at pH 1.2 and pH 4 degraded 72% and 47% of diclofenac, respectively. This change in pH during the preparation process influenced the morphology of photocatalyst since an enhanced pH favors the formation of nanorods in addition to the nanosheets. The ternary BiOCl/AgCl/BiVO<sub>4</sub> heterojunction improved the visible light response of the photocatalyst with effective electron-hole separation. Another effort for promoting the visible light activity of BiOCl was made by Singh and his coworkers [16]. They synthesized WO<sub>3</sub>/BiOCl photocatalyst stacked on graphene sand composite (GSC) and chitosan

(CT) for the proficient mineralization of pharmaceutically active drugs such as oxytetracycline (OTC) and ampicillin (AMP). Power law model was utilized to spot the intricacies of long-term degradation procedure. After 60 min. of visible light irradiation, 60%WO<sub>3</sub>/BiOCl/GSC and 60%WO<sub>3</sub>/BiOCl/CT degrades 97% and 78% of AMP respectively. The OTC degradation efficiency using 60% WO<sub>3</sub>/BiOCl/GSC and 60%WO<sub>3</sub>/BiOCl/CT were observed to be 98% and 87%, respectively after 120 min. of visible light irradiation. The degradation efficiency of 60% WO<sub>3</sub>/BiOCl/GSC and 60%WO<sub>3</sub>/BiOCl/CT were far greater than their binary and unary composites due to the extensive adsorption of antibiotics onto their surfaces. The obtained outcomes obviously specified that 60%WO<sub>3</sub>/ BiOCl/GSC facilitated photocatalytic processes and were most favorable for ampicillin and oxytetracycline elimination.

BiOBr is greatly exploited in the degradation of pharmaceutical pollutants owing to its outstanding photocatalytic activity, appropriate band gap, and stability under visible light irradiation [17]. The visible light induced photocatalytic degradation of antibiotic norfloxacin was investigated using BiOBr nanosheets, BiOBr flower microspheres and Bi/BiOBr nanosheets synthesized through hydrothermal method, solvothermal method and hydrothermal chemical reduction method, respectively [18]. Bi/BiOBr nanosheet was identified to be the best photocatalyst for the degradation of norfloxacin due to the enhanced charge carrier separation achieved by the heterojunction formed between wider bandgap BiOBr and the lower Fermi level Bi metal. Bi/BiOBr nanosheets could degrade 97.2% of norfloxacin over 180 min. visible light irradiation. The diffuse reflectance spectra analysis

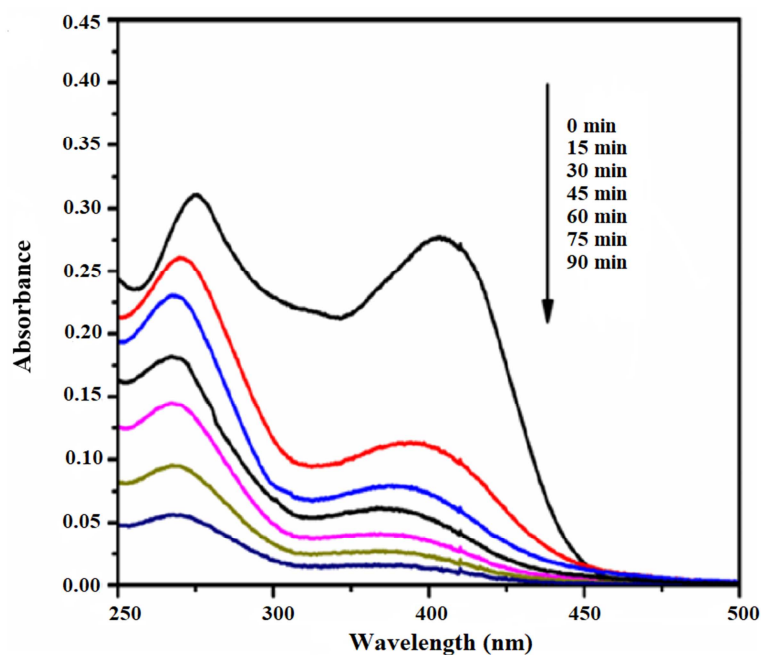
estimated the band gap energy of BiOBr nanosheets, BiOBr flower microspheres and Bi/BiOBr nanosheets as 2.93 eV, 2.67 eV and 2.25 eV respectively. Therefore, the light absorption efficiency is considerably stronger in Bi/BiOBr nanosheets and BiOBr flower microspheres compared to that of BiOBr nanosheets. Free radical capture experiment displayed  $h^+$  and  $\bullet O_2^-$  as the main active species involved in the photodegradation of norfloxacin using Bi/BiOBr photocatalyst. It was observed that Bi/BiOBr heterostructure synthesized *via an in situ* solvothermal strategy significantly enhanced visible-light-responsive photocatalytic activity for synchronously eliminating various antibiotics coexisting in water [19]. The Bi nanoparticles could extend the light absorption spectra of the sample and further impedes the charge recombination of photoexcited BiOBr photocatalyst. The coexisting system of tetracycline hydrochloride, ciprofloxacin and doxycycline could be simultaneously photodegraded to roughly 100% within 30 min. by the Bi/BiOBr photocatalyst. The relationship of tetracycline concentration variations with irradiation time for Bi/BiOBr and BiOBr samples is depicted in Fig.3. The photodegradation of antibiotics by the Bi/BiOBr photocatalyst is due to the collective effect of processes such as adsorption, photolysis and photocatalysis.



**Fig. 3.** Photocatalytic activities for degradation of tetracycline solution under visible-light irradiation at room temperature in the presence of Bi/BiOBr and BiOBr samples [19].

BiOI has been explored as a visible light active photocatalyst for environmental remediation and waste water purification. Dehghan et al. [20] compared the photocatalytic activity of bismuth oxyiodide (BiOI) prepared through hydrolysis (BiOI-H) and solvothermal (BiOI-ST) methods by taking tetracycline hydrochloride as target pollutant. The BET surface area for BiOI-H and BiOI-ST were found to be 8.0034 and 26.659  $\text{m}^2\text{g}^{-1}$ , respectively. The lower band gap energy for BiOI-ST (1.579 eV) relative to BiOI-H (1.836 eV) elucidated the lower energy requirement of BiOI-ST nanoparticles to stimulate photocatalytic reaction process. The authors studied the adsorption and photocatalytic performance of BiOI-ST by statistical and mathematical methods and demanded its use as a hopeful choice to remove low concentration of tetracycline hydrochloride in hospital wastewaters via visible light induced photocatalytic process. But, the photocatalytic activity of bare

BiOI is not satisfactory due to the fast recombination rates of photogenerated electrons and holes, which reduces its overall efficiency [21]. Since BiOI is a p-type semiconductor, the construction of BiOI-based p-n junction structure is an effective strategy to overcome the limitations of BiOI and for improving its catalytic activity. Literature reports the efficient utilization of SnO<sub>2</sub> nanoparticle/BiOI n-p heterostructure for the photodegradation of oxytetracycline hydrochloride [22]. It was noticeable that the reaction rate constant of 30 wt % SnO<sub>2</sub>/ BiOI heterostructure was about 3.2 times higher than that of bare BiOI. 30 wt % SnO<sub>2</sub>/ BiOI degraded about 94% of oxytetracycline hydrochloride under 90 min. of visible light irradiation. The UV-vis spectra of photocatalytic degradation of oxytetracycline hydrochloride in the presence of 30wt% SnO<sub>2</sub>/BiOI under visible light irradiation is shown in Fig.4. Noticeably, the characteristic absorption peak of oxytetracycline hydrochloride progressively reduces with the continuation of light time.



**Fig.4.** Time-dependent UV-vis spectra of oxytetracycline hydrochloride solution for 30wt% SnO<sub>2</sub>/BiOI sample [22].

The removal of oxytetracycline hydrochloride and bisphenol A under visible light irradiation were investigated using SrTiO<sub>3</sub>/BiOI heterojunction photocatalysts prepared by facile chemical bath method with assistant of ethylene glycol [23]. About 85% of the oxytetracycline and 90% of the bisphenol A could be degraded in 90 min. and 120 min. respectively, in the presence of 22.12wt% SrTiO<sub>3</sub>/BiOI. Because of the intimate contact between SrTiO<sub>3</sub> and BiOI, the photogenerated carriers of the SrTiO<sub>3</sub>/BiOI composites could be separated efficiently and the photocatalytic performance was significantly improved. Photogenerated holes (h<sup>+</sup>) and superoxide radicals (<sup>•</sup>O<sub>2</sub><sup>-</sup>) were estimated as the main active species during the degradation of studied compounds. Hao et al. demonstrated that BiOI, synthesized using polyvinylpyrrolidone (PVP) as a directing agent



toward microsphere structure, was useful for the photocatalytic deterioration of tetracycline under visible light irradiation, indicating its ability to degrade persistent pharmaceutical pollutants [24].

### **Conclusion**

Now a day's water pollution caused from pharmaceutical wastes is a problem of great concern due to the increased use of medications in daily life. Photocatalysis has fascinated scientific community since it permits the treatment of antibiotic deposits in aquatic systems in an eco-friendly manner. Significant advancement has been attained in the execution of photocatalytic treatment of waste water contaminated with antibiotics in the past few years. Bismuth oxyhalides are a new class of photocatalysts that holds inimitable properties that result in enhanced photocatalytic activity equated to traditional photocatalysts. This review offers a comprehensive outline on the recent progresses on this relevant topic. The review discusses the high activity that bismuth oxyhalide photocatalysts exhibits for the degradation of pharmaceuticals and the photocatalytic degradation mechanisms associated with them.

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## **An Evaluation on Microbial Consortia Present in Mosquitoes and their influence on the Vector Competence**

**Shibitha Emmanuel<sup>1,2</sup>, Sandhya Chandran<sup>3\*</sup>**

<sup>1</sup>*Postgraduate and Research Department of Microbiology, Sree Sankara College, Kalady, Ernakulam, Kerala, India*

<sup>2</sup>*Department of Zoology, St. Joseph's College, Irinjalakuda, Thrissur, Kerala, India.*

<sup>3\*</sup>*Department of Biochemistry, Kuriakose Elias College, Mannanam, Kottayam, Kerala, India.*

*Email: Sandhyachandran2014@gmail.com*

### **Abstract**

*The disease-transmitting mosquitoes can be categorized mainly into three genera, Anopheles, Aedes, and Culex. The significant mosquito–microbiota interactions include symbiotic relationships, where mosquito factors can shape the composition and proliferation of the microbiota. However, the microbiota contributes to the mosquito's food digestion, nutrition, growth, fertility, and immunity. At the same time, the bacteria could modify the gut environment and inhibit the development of parasites either by inducing reactive oxygen species (ROS) or modulating the expression of mosquito immune genes. This review focuses on the bacterial species present in mosquitos and their influence on vector competence. The bacterial transmission strategies are of great importance since mosquito microbiota has shown great potential for cutting down the transmission of mosquito-borne pathogens. Vector control is one of the most effective strategies to reduce mosquito-borne diseases. The engineered symbiotic bacteria producing antipathogen effector molecules can be an effective tool for reducing the transmission of mosquito-borne pathogens.*

**Key words:** Mosquitoes, Microbial Consortia, Vector Competence

## **Introduction**

Mosquitoes are hexapod invertebrates having a significant influence on human beings. They belong to the order Diptera, Culicidae family of Insecta class. India is one of the richest biogeographic zones for different mosquitoes. Studies indicate that Indian mosquito fauna includes 393 species divided among 49 genera and 41 subgenera (Prakash *et al.*, 2014). Even though most species of this holometabolous insect remains non-pathogenic, some are vectors of certain dreaded diseases like malaria, chikungunya, Zika, yellow fever, etc. (Jayakrishnan *et al.*, 2018). Mosquito-borne diseases cause more than 500 million people infected and one million people eventually die (Carabello *et al.*, 2014). With the limitations of progress towards elimination, imposed by insecticide and drug resistance, combined with the lack of vaccines, innovative strategies to fight mosquito-borne disease are needed urgently. Vector control is one of the most effective strategies which can be used to cope up with the problem. In recent years, the use of mosquito microbiota has shown great potential for cutting down the transmission of mosquito-borne pathogens (Bandyopadhyay *et al.*, 2006). In this scenario, the studies involving the bacterial species present in mosquitoes and their transmission strategies are of great importance.

In mosquitoes, a dynamic and diverse microbial flora harbour mainly in their midgut and on their cuticle. It also harbours in somatic cells, crop, salivary glands, circulation systems, and reproductive organs (Scolari *et al.*, 2019). In adult mosquitoes, some dominant bacteria share the midgut and ovary, while other bacteria are only found in specific tissues or development stages. *Wolbachia* is an

intracellular bacterium that infects not only somatic tissue cells, but also stably infects the germ cells of the ovary leading to vertical transmission (Tchioffo *et al.*, 2015). Members of the symbiotic microbiota play a key role in mosquito physiology and immunity (Douglas, 2014). Insects like mosquitoes may acquire this microbiota through vertical transmission or horizontal acquisition. The vertical transmission of maternal microbes is one of the major routes for establishing the microbiome in newborns (Li *et al.*, 2020). *Aedes*, an arbovirus vector of dengue, chikungunya and Zika fever draws special attention due to their rapid geographical spread and increasing disease burden. This is due to the association between certain gut microbes and potent human pathogens such as parasites, viruses, and bacteria in the host vector.

### **Disease-transmitting genera of mosquitoes**

Disease-transmitting mosquitoes can be categorized mainly into three genera: *Anopheles*, *Aedes*, and *Culex*. *Anopheles* transmits malaria and O'nyong-nyong fever (Kean *et al.*, 2015). Arboviral diseases, including dengue fever, chikungunya fever, West Nile fever, Zika fever, and yellow fever, are transmitted mostly by *Aedes* (Kraemer *et al.*, 2019). *Culex* transmits mainly filarial worms and West Nile Virus (Wilke *et al.*, 2015). When the female adult mosquito bites an infected person, pathogens together with the blood are taken into the mosquito midgut. The pathogens then infect or traverse the gut epithelial cells, enter the hemolymph, invade the salivary glands, and are then transmitted when the infected mosquito bites another person.

Mosquito–microbiota interactions are quite complex. This symbiotic relationship mostly exists in such a way that mosquito factors can shape the composition and proliferation of the microbiota, and the microbiota contributes to the mosquito’s food digestion, nutrition, growth, fertility, and immunity (Engel *et al.*, 2013). The influence of the microbiota on mosquito physiology and thereby pathogen transmission can be summarized as in Table 1.

**Table 1. Some bacterial species inhabiting mosquito organs influencing their physiology**

Mosquito species	Microbiota	Function	Reference
<i>Aedes aegypti</i>	<i>Enterobacter</i> sp., <i>Serratia</i> sp.	Blood digestion	Gao <i>et al.</i> , 2011
<i>Aedes albopictus</i>	<i>Acinetobacter baumannii</i> , <i>Acinetobacter johnsonii</i>	Blood digestion and nectar assimilation	Minard <i>et al.</i> , 2013
<i>Aedes aegypti</i> , <i>Culex pipiens</i>	<i>Saccharomyces cerevisiae</i>	Nutrient source	Sirot <i>et al.</i> , 2011
<i>Aedes aegypti</i>	<i>Wolbachia</i>	Blood-feeding success	Steyn <i>et al.</i> , 2016
<i>Anopheles stephensi</i> <i>Wolbachia</i>	<i>Asaia</i>	Larval development	Chouaia <i>et al.</i> , 2012
<i>Anopheles stephensi</i>	<i>Asaia</i>	Activates antimicrobial peptides	Capone <i>et al.</i> , 2013

## **The Potential of the Mosquito Microbiota to Reduce Vector Competence**

The mosquito gut (immunity organ) plays a significant role in fighting pathogen infections (Saraiva *et al.*, 2016). Reports indicated that bacteria could modify the gut environment and inhibit the development of parasites either by inducing reactive oxygen species (ROS) or modulating the expression of mosquito immune genes. In many cases, the introduction of bacteria inhibits pathogens such as *Plasmodium*, while removal of gut microbiota with antibiotics enhances the susceptibility of mosquitoes to infection (Dong *et al.*, 2009). The *Asaia* sp. was shown to activate antimicrobial peptide expression in *A. stephensi* (Chouaia *et al.*, 2012). Boissiere *et al.*, (2012) demonstrated that Enterobacteriaceae have a positive role in *Plasmodium falciparum* infection.

Wu *et al.*, (2019) reported that a *Serratia marcescens* strain, isolated from *Aedes aegypti*, enables arboviral infection. This bacterium secretes a protein, which digests gut membrane-bound mucins to enhance viral dissemination in mosquitoes. The strain-specific activity occurs between bacteria isolated from the same mosquito species either from the same genera or same species. The study by Bai *et al.*, (2019) reported inhibition of *Plasmodium* development by modulating the immunity-related effector genes such as TEP1 and FBN9 by *S. marcescens* strain Y1, isolated from the gut of field-caught *Anopheles sinensis*. However, gut bacteria can also directly inhibit pathogen development in mosquitoes via their secretions. Transmission and development of pathogens may be



influenced by ROS, metabolites, small peptides, and proteins secreted by gut bacteria.

Viruses in Pathogen Transmission Control: Use of mosquito-specific viruses to control pathogen transmission was largely conceptual until now. The interesting characteristics of mosquito-specific viruses are host-specificity and ability to spread into mosquito populations. Viruses can have a broad impact on mosquito immunity. They compete with other microbes for nutrition and can even shape midgut bacterial and fungal microbiota (Muturi *et al.*, 2018). However, size of potential effector genes gets restricted by their restrictive genome capacity and limits the use of viruses for pathogen control.

#### **Gut microbiota engineering to decrease the vector competence**

Symbiotic bacteria can be engineered to produce antipathogen effector molecules (paratransgenesis), which can be explored as a promising way to fight various arthropod-borne human pathogens. It was first tested using an engineered endosymbiont of *Rhodnius prolixus* which express Cecropin A, a naturally occurring pore-forming peptide lethal to the parasite to control the transmission of *Trypanosoma cruzi* by Durvasula *et al.* (1997). Earlier, *Escherichia coli* was used to synthesize a single-chain immunotoxin or compounds such as salivary gland and midgut peptide 1 (SM1) or phospholipase-A2 (mostly targeting ookinetes) to block Plasmodium development in the mosquito midgut (Riehle *et al.*, 2007). However, *E. coli* cannot persist in the mosquito gut and is not a mosquito symbiont. However, employing a single effector raises the concern of potential development of resistance by the pathogen. These concerns were

addressed by Wang *et al.* (2012) by producing a mosquito symbiotic *Pantoea agglomerans* strain to secrete five different antimalarial proteins at the same time, attaining strong suppression of Plasmodium development. On the other hand, forcing symbiotic microbes to synthesize effectors may lead to reduced effectiveness. A recent work by Shane *et al.* (2018) reported an engineered midgut symbiont *Asaia* to conditionally express the antiplasmodial protein scorpine, driven by a blood meal-inducible promoter. This allows the transgenic bacteria to compete more effectively with wild type *Asaia* and improve gut colonization.

Now the question is how to introduce the gut bacteria to reduce vector competence and to ensure their persistence in mosquito field populations. A new *Serratia* bacterial strain AS1 from an *Anopheles* ovary was isolated and identified by Wang *et al.* (2012). The strain AS1 can stably colonize the mosquito midgut as well as its reproductive organs, and it can be transmitted vertically (from female to offspring), and horizontally (from males to females). These properties allow its fast and stable spread into mosquito populations. When engineered to express antimalarial compounds, AS1 strongly reduced mosquito competence for transmission of the human malaria parasite *P. falciparum* (Wang *et al.*, 2012). This advance provides a promising tool for driving mosquito pathogen refractoriness into the field.

## **Conclusion**

Vector control is one of the best strategies to prevent mosquito borne diseases. There is no efficient vaccine for most of these diseases (except yellow fever). In order to reduce the global public health

burden from arthropod-borne diseases, alternative approaches are needed to control insect and arbo-pathogens. The tripartite relationships between mosquito, microbiota, and the transmitted human pathogens may lead to effective tools that can complement current strategies for disease control. Microbial susceptibility to infection can be altered through immune priming or direct inhibition. The microbiota can control the mosquito immune response and influence vector competence to human pathogens. Vector control can thus attain through the control in microbiota without disturbing the ecological balance.

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## **Effect of Pesticides on the Cost Benefit Ratio of Jasminum Sambac (Oleaceae)**

**Jessy Joseph Kavunkal**

*Department of Zoology, K. E. College, Mannanam, Kottayam,  
Kerala 686561.*

*E-mail: srjessy@kecollege.ac.in*

### **Abstract**

*Economically significant flowering plants are inevitable and are mostly prone to the attack of environmental infections by pests and also with changing climate patterns. Jasminum sambac, one of the flowering plants is observed for the fragrance. The plants get attacked by variety of insect pests causing drastic reduction in flower production. This will result in lower crop benefit cost ratios. Horticultural crops can provide employment potential through better agricultural practices. Hence for a better yield it is important to manage the pest incidence. This paper relates the yield of jasmine flowers after biopesticide management to its main pests. There is evident difference in the yield after the treatments with many biopesticides. The better observation is got from Beauveria bassiana application. These biopesticides are active in controlling the larval population of the pest that aim to attack leaves, buds and flowers in its phenology. The cost benefit ratio after this pesticide application is high compared to other biopesticides used in the study. The observations of the effect each pesticide and its cost benefit ratios are represented in the tables.*

**Keywords:** Jasminum sambac; Beauveria bassiana; jasmine flowers; pests; cost benefit ratio.

## **Introduction**

Flowers have their own importance since ancient times and are being used for decoration worshipping as well as in satisfying the aesthetic feelings. In recent years, the floriculture is emerging as a market demand driven activity throughout the world and considered as a potential money spinner. Among horticultural crops, cut flowers and ornamentals perhaps do fetch higher value. This demand for fresh flowers and plants is increasing worldwide over the coming years. India has made noticeable advance in the production of flowers, particularly cut flowers, which have a good potential for export. During 2016-17, floriculture covered an area of 0.328 million hectare with a production of 2.277 million tonnes of loose flower. Ornamental plants improve indoor air quality with ability to remove tobacco smoke and other such volatile organic compounds. Horticultural crops showed higher employment potential and favorable benefit cost ratios when compared to field crops.

India exports this oil mainly to England, United States of America, Holland, Sweden, Japan, Norway and European Union while jasmine flowers are exported to the neighboring countries like Sri Lanka, Singapore, Malaysia and Gulf countries while nearly 15 tonnes of flowers are sold daily in four cities of India viz. Madras, Bangalore, Delhi and Calcutta (Bose and Yadav, 1998). The sweet scented Jasmine essential oil is unique, because it mixes well with other floral extracts. Jasmine essential oil is used to flavor mouth wash liquids. India donates 40 per cent of total export of jasmine oil over the world. Every year over Rs 30 crores to 40 crores of foreign

exchange is possible through the export of jasmine flowers. Tamil Nadu is the leading producer of jasmine in the country with annual production of 130.07(000 MT) of loose flowers and 8.2 lakh numbers of cut flowers from a cultivated area of 12.59 (000 ha) hectares. Karnataka is the second highest producer of jasmine flowers. In the year 2015-16, Karnataka produced 36.92 (000MT) of jasmine flowers from 5.76 (000 ha). Andhra Pradesh is the third highest producer of jasmine flowers with a production of 15.13(000MT) of jasmine flower from 2.71(000 ha) (India Agristat 2015-16).

Department of Agriculture under State Horticulture mission, VFPCCK etc. in Kerala have identified floriculture as one of the significant areas under the National Horticulture Mission. Krishi Vigyan Kendras, Krishi Bhavans and State Horticulture Mission are providing training programmes to farmers, arrange field visits, consultancy and technical guidance for jasmine cultivation. Registered farmers' societies are also undertaking cultivation and marketing of Jasmine in addition to making garlands and bouquets which provide additional income for them. Subsidies are given to farmers for large scale cultivation of plants.

In Kerala, *Jasminum sambac* (Kuttimulla) is cultivated widely to sell as fresh flowers. cultivated widely to sell as fresh flowers. Pushpa 'Karshaka Swasraya Sangham' is a society formed for the development of jasmine growers in Kerala. Jasmine is production is at its peak from March to June. A lot of factors determine the flowering process of jasmine such as environment, pruning, nutrition,



hormones etc. One of the major constraints facing cultivation of Jasmine in Kerala is the incidence of pests. A number of insect pests attack jasmine crop and cause considerable damage resulting drastic reduction in flower production. Rao and Nageswara (1997) compared the employment potential (man days/ha) and profitability of selected horticultural crops like jasmine and crossandra with traditional field crops and highlighted the potential for future development of horticultural crops.

**Table 2. Area and Production of Jasmine in India (2011-12 - 2016-17)**

Year	Area ('000 ha)	Production	
		Loose ("000MT)	Cut(lakh nos)
2011-12	41.74	206.67	-
2012-13	10.35	50.89	-
2013-14	12.25	65.23	1.70
2014-15	10.01	56.57	1.73
2015-16	22.86	188.55	10.71
2016-17	25.53	187.19	10.71

## 2. Materials and Methods

### Survey

To study the prevalence, nature and symptoms of damage and seasonal occurrence of different pests attacking jasmine, *Jasminum sambac*, survey was conducted at three selected jasmine gardens maintained under normal agronomic practices of different

altitudes of Kerala. The selected sites were Kattappana (Idukki District.) as high range (9.7247° N, 77.0497° E, 1100 m AMSL), Changanacherry (Kottayam District.) (9.433589° N, 76.543937° E, 11 m AMSL) as mid range and Punnapra (Alapuzha District.) (9.4378° N, 76.3427° E 1 m AMSL) as the low range. The survey was conducted during the period from 2013 January to December 2015 and observations on the seasonal incidence of major pests were recorded at weekly intervals at three locations as cited above. Twenty five jasmine bushes were observed from each site and the pests and natural enemies noticed on them were recorded.

### **Field experiment to evaluate the bio efficacy of biopesticides and insecticides**

Experiments were carried out to evaluate the bioefficacy of biopesticides and inorganic insecticides at two experimental locations; Punnapra (Alapuzha district.) and Changanacherry (Kottayam district.) since at Kattappana, the high altitude location, the pest incidence recorded was very low as per the survey work conducted. The experiments were laid out in selected fields at one location each at Alapuzha and Changanacherry (Kottayam district.) in Randomized Block Design (RBD) with ten treatments including untreated check. Each treatment consisted of three plants and three replications were maintained for each treatment. Altogether there were ninety plants for the ten treatments at each site. The ten treatments of the experiment were categorized as given in Table 1. The details of various treatments are furnished in Table 3.

1. Biopesticides- T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub>, T<sub>6</sub>.

2. Chemical pesticides T<sub>7</sub>, T<sub>8</sub>, T<sub>9</sub>.

3. Untreated check. T<sub>10</sub>

All the treatments were applied at 15 days intervals during the period from March 2015 to May 2015 based on the observations on incidence of pests. Three sprayings were given on need basis for each treatment. In the last treatment of untreated check, only water was sprayed at the same interval as above. Pre and post treatment observations on the incidence of bud worm, thrips, leaf web worm, tingids and whiteflies were recorded at 3, 7 and 14 days after spraying following the same procedure carried out in the survey mentioned earlier. The per cent damage and the population of the pests were estimated.

### **Benefit Cost Ratio**

Benefit cost ratio of different treatments was worked out using the following formula Benefit Cost Ratio = Total benefit (Rs) / Total cost (Rs).

### **Results**

#### **Effect of insecticides and biopesticides on the yield of Jasmine**

Results on yield showed that all the treatments caused a significantly higher yield in Jasmine than the untreated check. Details of biopesticides applied is presented in Table 2. The treatment four *Beauveria bassiana* 10<sup>7</sup> spores/ml recorded the highest yield of 2405 kg ha<sup>-1</sup> and it was significantly superior to other treatments. This was followed by Flubendiamide 20WDG 50 gm ai/ha (2266 kgha<sup>-1</sup>) and *Bacillus thuringiensis* subsp. *kurstaki* formulation 500ml/ha (2098kgha<sup>-1</sup>) and the lowest yield was obtained in the untreated check among neem

derived botanicals (NSKE). Neem seed Kernel extract recorded a higher yield ( $1802 \text{ kg ha}^{-1}$ ) than Neem oil emulsion 0.2% ( $1807 \text{ kg ha}^{-1}$ ).

**Table2: Effect of insecticides and biopesticides on the yield of Jasmine**

Tr. No.	Treatments	Yield(kg/ha)
T <sub>1</sub>	Neem oil emulsion 0.2%	1807 <sup>b</sup>
T <sub>2</sub>	Neem seed Kernel Extract (NSKE) 5 %	1802 <sup>b</sup>
T <sub>3</sub>	<i>Lecanicillium lecanii</i> $10^7$ spores/ml,	1758 <sup>b</sup>
T <sub>4</sub>	<i>Beauveria bassiana</i> $10^7$ spores/ml	2405 <sup>e</sup>
T <sub>5</sub>	Azadirachtin 0.1 %	1929 <sup>b</sup>
T <sub>6</sub>	<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> formulation 500ml/ha	2098 <sup>c</sup>
T <sub>7</sub>	Acephate 75 SP 292gm ai/ha	1899 <sup>b</sup>
T <sub>8</sub>	Imidacloprid 17.8 SL 20 gm ai/ha	1895 <sup>b</sup>
T <sub>9</sub>	Flubendiamide 20WDG 50 gm ai/ha	2266 <sup>d</sup>
T <sub>10</sub>	Untreated check	1604 <sup>a</sup>

\* Mean of three replications

In each column, figure followed by the same letter do not differ significantly according to DMRT  $p = (0.5)$

### Benefit Cost Ratio

Benefit cost ratio of various treatments showed the treatment *Beauveria bassiana*  $10^7$  spores/ml giving the highest return of (Rs. 7,21,665  $\text{ha}^{-1}$ ) with a benefit cost ratio (1.58:1) followed by Flubendiamide 20WDG 50 gm ai / ha (Rs. 6,79,941  $\text{ha}^{-1}$ ) with a benefit cost ratio (1.48:1), *Bacillus thuringiensis* subsp. *kurstaki* formulation 500ml / ha with a return of (Rs. 6,29,523  $\text{ha}^{-1}$ ) with a benefit cost ratio

(1.41:1) and Imidacloprid 17.8 SL 20 gm ai / ha having a return of (Rs. 5,68,535 ha<sup>-1</sup>) with a benefit cost ratio (1.26:1). The entamopathogenic fungi *Lecanicillium lecanii* 10<sup>7</sup> spores/ml arrange field visits, consultancy and technical guidance for jasmine cultivation.

**Table 3. Benefit cost ratio of different treatments against major pests of Jasmine.**

Tr. No.	Treatments	Yield (kg/ha)	Total income (Rs.300/kg) (Rs. ha <sup>-1</sup> )	Cost of treatments and other costs (Rs. ha <sup>-1</sup> )	Benefit: Cost Ratio
T <sub>1</sub>	Neem oil emulsion 0.2%	1807	5,41,973	4,44,240	1.22:1
T <sub>2</sub>	Neem seed Kernel Extract (NSKE) 5 %	1802	5,40,713	4,46,870	1.21:1
T <sub>3</sub>	<i>Lecanicillium lecanii</i> 10 <sup>7</sup> spores/ml	1758	5,27,631	4,47,145	1.18:1
T <sub>4</sub>	<i>Beauveria bassiana</i> 10 <sup>7</sup> spores/ml	2405	7,21,665	4,56,750	1.58:1
T <sub>5</sub>	Azadirachtin 0.1 %	1929	5,78,752	4,48,645	1.29:1
T <sub>6</sub>	<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> formulation 500ml/ha	2098	6,29,523	4,46,470	1.41:1
T <sub>7</sub>	Acephate 75 SP 292gm ai/ha	1899	5,69,693	4,59,430	1.24:1
T <sub>8</sub>	Imidacloprid 17.8 SL 20 gm ai/ha	1895	5,68,535	4,51,218	1.26:1
T <sub>9</sub>	Flubendiamide 20WDG 50 gm ai/ha	2266	6,79,941	4,59,420	1.48:1
T <sub>10</sub>	Untreated check	1604	4,81,324	4,45,670	1.08:1

## Discussion

### Effect of insecticides and biopesticides on yield of Jasmine

A higher reduction in insect population was observed after treatment of *Beauveria bassiana*  $10^7$  spores/ml leading to higher flower yield (2405 kg ha<sup>-1</sup>). Among insecticides higher reduction in bud worm infestation was observed after treatment with flubendiamide 20 WDG 50 g /ha and with a yield of 2266 kg ha<sup>-1</sup> of flowers. The pest population in untreated control was high which resulted in the lowest flower yield.

Table 2

### Benefit Cost Ratio

The highest yield (2405 kg ha<sup>-1</sup>) and income (Rs. 7,21,665 ha<sup>-1</sup>) was obtained from plants with treatment of *Beauveria bassiana*  $10^7$  spores/ml with the highest benefit cost ratio (1.58:1). Vanitha and Dhandapani (2004a) and Nandanwar *et al.* (2004) had highlighted similar results. This was followed by a yield 2266 kg ha<sup>-1</sup> and income Rs. 6,79,941 ha<sup>-1</sup> from plants treated with Flubendiamide 20WDG 50 gm ai/ha with BC ratio of 1.48:1 and yield of 2098 kg ha<sup>-1</sup> and income of Rs. 6,29,523 ha<sup>-1</sup> from plants treated with *Bacillus thuringiensis* subsp. *kurstaki* formulation 500ml/ha. The present findings are in line with observations made by Praveen *et al.* (2001) in tomato fruit borer where Delfin @1.0 kg ha<sup>-1</sup> was highly effective in reducing the larval population, per cent fruit damage and increased fruit yield. The details of cost benefit ratio of biopesticides on jasmine yield is given in Table 3.

## Conclusion

Studies on the effect of insecticides and biopesticides on the yield of Jasmine showed a higher reduction in insect population after

treatment of *Beauveria bassiana*  $10^7$  spores/ml leading to higher flower yield ( $2405 \text{ kg ha}^{-1}$ ) with the highest benefit cost ratio(1.58:1).This was followed by treatment with flubendiamide with average yield of  $2266 \text{ kg ha}^{-1}$  of flowers with a benefit cost ratio of 1.48:1,and *Bacillus thuringiensis* with a benefit cost ratio 1.41:1.

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## **A Study on the Influence of In-Store Factors on Impulse Buying Behaviour of Consumers with Reference to Kottayam District**

**Sissy Babu**

*Department of Commerce, Ave Stella Maris College, Ramamangalam*

*E-mail: sissybabu27@gmail.com*

### **Abstract**

*Impulse buying behaviour is described as purchase made by consumer that was not planned in advance. It is a widely recognized phenomenon occurs in the mind set of consumers during purchase. A need for proper understanding of impulse purchase in retail environment is growing quickly. Impulsive desires to buy may not always emerge themselves and develop into the concrete expressions of impulsive purchasing; apparently there are a number of factors that could influence these urges, many of them are specific to retail environment. The study aims to explore the influence of in-store factors on consumer impulse buying behaviour. Precisely this paper investigated the impact of window display, promotional schemes, store layout, staff attitude, shelf positioning, self-service etc. on consumer impulse buying behaviour. The present study will highlight some of its findings which will be useful to marketer or retailers to understand various factors influencing for impulsive buying behaviours.*

**Keywords:** Impulse Buying Behaviour, in-store factors, organised retail stores, window display, promotional schemes



## **Introduction**

Impulse buying behaviour is becoming usual among consumers today. An impulse purchase or impulse buying is an unplanned decision to buy a product or service, made just before a purchase. It has been recently described as a persuading, greedily complicated buying behaviour in which careful examination of information and alternatives is left out due to the quickness of the decision-making process. The urge to consume can arouse emotional responses and is bound to happen without consideration of the consequences.

With the organized retail formats, consumer buying choices increased through a wide product range under one roof and ease of buy through self-service mode. Moreover, these outlets eliminate constraint of visiting different shops to complete the shopping. The smoothening in - store environment helps shoppers to relax and do the shopping. All these put together lead to an increase in impulse buying tendency of shoppers inside organized retail formats compared traditional retail outlets. Impulsive desires to buy may not always emerge themselves and develop into the concrete expressions of impulsive purchasing; apparently there are a number of factors that could influence these urges, many of them are specific to retail environment. The main issue in this research is to study the impact of in store factors on impulse buying behaviour.

## **Significance of the Study**

Impulse buying is described as purchase made by consumer that was not planned in advance. It disrupts the normal decision-making models in consumer's brains. Impulsive buying behaviour is a widely recognized phenomenon occurs in the mind set of consumers during

purchase. A need for proper understanding of impulse purchase in retail environment is growing quickly. Retail managers are at crossroad to choose right methods to keep customer coming and purchase from their stores. The informational need of retail manager is to be fulfilled so that they could run their business effectively and efficiently. The present study is useful and will highlight some of its findings which will be useful to marketer or retailers to understand various factors influencing for impulsive buying behaviours. And based on that they can develop marketing strategies which will help them to increase the sales and footfalls.

### **Scope of the Study**

The present study investigates the assumption that impulse purchase tendency is influenced by in-store factors. The study is conducted to understand consumers impulse purchase behaviour in evolving, systematic, professionally managed and self-service retail environment notionally called as ‘Organized Retailing’. The study was carried out among the consumers within the geographical boundaries of Kottayam district.

### **Objectives of the Study**

The study had the following specific objectives:

1. To study the store layout factors affecting the impulse purchase
2. To assess the influence of window display on impulse buying
3. To study the influence of promotional schemes on impulse buying
4. To study the influence of staff attitude on impulse buying behaviour

### **Methodology of the Study**

Descriptive and analytical research design have been used in the study. Both primary and secondary data were used for the study. Primary data were collected through questionnaire. Secondary data were collected from journals, articles, websites or internet etc. The population was identified as the consumers from different areas of Kottayam district. A sample of 110 consumers were selected by using Convenience sampling method from the accessible population. The primary data was analysed using MS Excel and various statistical tools like Likert's five-point scale, simple percentage and mean were used to obtain the results of the study. Tables were also used for the presentation of the matter in a simple manner.

### **Review of Literature**

**Ahmed & Parmar (2013)** in their article explored the factors of impulsive buying behaviour for FMCGs goods in Larkana and surrounding territories. There are two variables, i.e. Dependent variable "consumers' impulse buying behaviour", and Independent variables namely promotional approaches, store environment, window display, income level and credit card. The study concluded that consumers' impulse buying behaviour for FMCG's (products) is favourable in Pakistan. Consumers are more likely to buy impulsively when they see free product and price discount offers by a store.

**Ali & Hasnu** identify and explain the in-store shopping environment factors that cause impulse buying among consumers. In-store advertisements, attractive store displays, unexpected coupons and vouchers, cheaper prices and discounts, low shop crowding, friendly sales persons are the variables used in the study. Impulse buying scale

was developed in order to measure the impulse buying tendency of individuals. Findings suggest that in-store shopping environment does have influence over the impulsive buying actions among the consumers.

**John (2017)** in his study investigates the impulse buying behaviour in organized retail environment of Kerala. Researcher also assess the influence of various factors on impulse buying behaviour of a shopper, study also enquire the after effect of impulse buying behaviour on the shopper. Impulse buying behaviour and after effect are the dependent variables of the study. Data was collected from 518 shoppers using questionnaire. Data were processed and analyzed using SPSS. The research defined the relationship between the antecedent factor groups and impulse buying behaviour.

**Mittal, Pooja, & Kamakshi (2018)** examine the impulse buying behaviour of females towards cosmetics. The objective of the study is to understand the Cosmetic store environment factors which influence impulse buying behaviour and secondly on the basis of analysis provide suggestions to attract more customers in cosmetic store. Background music, in store displays, salespersons, ambience, convenience, store image, enjoyment, product assortment and shelf positioning are the factors used in the study. Results of survey have shown that Ambience, Convenience and Shelf Positioning have a significant impact on impulse purchase towards cosmetics.

**Sharadkumar (2016)** in his study examined the external, consumer related factors and situational factors affecting impulsive buying behaviour of consumers in Organized Retail Stores in Gujarat State. External factors like Promotional offer, Price, Window Display,

Staff Behaviour and Proximity (Nearness) has been taken into consideration. The consumers, who shop in general stores, departmental stores, shopping malls, Hyper markets etc. in the area of Gujarat has been taken as the population for this study

**Data Analysis and Interpretation**

For analysis of data study mainly used mean score analysis. Mean Score Analysis is a simple analysis tool used to identify the level of agreement or level of satisfaction etc. of variables under study. The mean percentage score is calculated using the below formula: MPS= (Mean score of variable \* 100) /maximum possible score. Mean score ranked as if the value of mean above 75 percent, then it is strongly agree area, if the score is between 50 percent to 75 percent with means the rating is agree. If the value lies between 25 to 50 percent, it means disagree and if the score is less than 25 percent which means strongly disagree.

**Influence of store layout factors on impulse purchase**

**Table 1 Store layout factors**

Factors	*EI	VI	SWI	SI	NI	Mean	MPS
Cleanliness of the store	51 (46.4%)	31 (28.2%)	16 (14.5%)	9 (8.2%)	3 (2.7%)	4.07	81.4
Vibrant & decorative interiors	13 (11.8%)	44 (40%)	35 (31.8%)	9 (8.2%)	9 (8.2%)	3.39	67.8
Background music and lighting	15 (13.6%)	23 (20.9%)	39 (35.5%)	15 (13.6%)	18 (16.4%)	3.02	60.4
Mean average						3.49	

Source: Primary data

[Note: EI-extremely influential, VI-very influential, SWI-somewhat influential, SI-slightly influential, NI-not at all influential]

The respondents state that cleanliness of the store is extremely influential as their mean score is above 75 percent. Vibrant and decorative interiors are very influential as their mean score lies between 50 to 75 percent. Background music and lighting are also very influential as their mean score lies between 50 to 75 percent.

**Influence of window display on impulse purchase**

**Table 2 Window display**

Statements	*SA	A	N	D	SD	Mean	MPS
I am more likely to enter the store if it has an eye-catching window display	22.7% (25)	34.5% (38)	31% (34)	5.4% (6)	6.4% (7)	3.62	72.4
I am interested in shopping at well-designed window shops	15.4% (17)	41% (45)	30% (33)	7.3% (8)	6.3% (7)	3.52	70.4
Sometimes I buy products influenced of shop’s window display	18.2% (20)	33.6% (37)	31.8% (35)	11% (12)	5.4% (6)	3.48	69.6
Mean average						3.54	

Source: Primary data,

[Note: SA-Strongly Agree, A-Agree, N- Neutral, D-Disagree, SD- Strongly Disagree]

The respondents agree to the statements ‘I am more likely to enter the store if it has an eye-catching window display’, ‘I am interested in shopping at well-designed window shops’ and ‘Sometimes I buy products influenced of shop’s window display’ as their mean score lies between 50-75 percent.

**Influence of promotional schemes on impulse purchase**

**Table 3 Promotional schemes**

Statements	SA	A	N	D	SD	Mean	MPS
An attractive price offer affects my impulse purchase behaviour	53.7% (59)	31.8% (35)	11.8% (13)	2.7% (3)	- -	4.36	87.2
Various schemes such as buy one get one free, free trial pack of new products prompt me to buy	31.8% (35)	35.4% (39)	26.4% (29)	6.4% (7)	- -	3.93	78.6
A sign of stock clearance sale prompts me to make an immediate purchase	28.2% (31)	30% (33)	23.5% (26)	11% (12)	7.3% (8)	3.61	72.2
Mean average						3.96	

Source: Primary data,

[Note: SA-Strongly Agree, A-Agree, N- Neutral, D-Disagree, SD- Strongly Disagree]

The respondents strongly agree to the statements ‘An attractive price offer affects my impulse purchase behaviour’ and ‘Various schemes such as buy one get one free, free trial pack of new products prompt me to buy’ as their mean score is above 75 percent. And the respondents agree to the statement ‘A sign of stock clearance sale prompts me to make an immediate purchase’ as their mean score lies between 50-75 percent.

**Influence of staff attitude on impulse purchase**

The respondents strongly agree to the statements ‘Commitment in service and friendliness of stores’ staff affects your buying decision’, ‘Staffs’ willingness to communicate with customers’

positively affects your buying decision’ and ‘Convincible recommendation from salespersons triggers your new needs’ as their mean score lies above 75 percent.

**Table 4 Staff attitude**

Statements	SA	A	N	D	SD	Mean	MPS
Commitment in service and friendliness of stores’ staff affects your buying decision	46.4% (51)	37.3% (41)	10.9% (12)	03.6% (4)	01.8% (2)	4.23	84.6
Staffs’ willingness to communicate with customers’ positively affects your buying decision	40% (44)	39.1% (43)	12.7% (14)	06.4% (7)	01.8% (2)	4.09	81.8
Convincible recommendation from salespersons triggers your new needs	31.8% (35)	36.4% (40)	19.1% (21)	10% (11)	02.7% (3)	3.85	77
Mean average						4.05	

Source: *Primary data*

[Note: SA-Strongly Agree, A-Agree, N- Neutral, D-Disagree, SD- Strongly Disagree]



## **Findings**

- The respondents state that cleanliness of the store is extremely influential as their mean score is above 75 percent. Vibrant and decorative interiors are very influential as their mean score lies between 50 to 75 percent. Background music and lighting are also very influential as their mean score lies between 50 to 75 percent
- Consumers can be attracted to a store for purchase by settling up a well-designed window displays as their mean score lies between 50-75 percent.
- Consumers are more likely to buy impulsively when they see free product and price discounts offers as the mean score lies above 75 percent.
- Good behavior of the staff emerged to be the most significant in-store factor in influencing impulse buying among consumers. (Highest mean average)

## **Suggestions**

- A focus on salesperson's training by retailers can be very helpful in increasing the sales through impulse buying
- Retailers can offer price discounts that can push buyers to purchase both essential and optional items on impulse, thus increasing the overall sales.
- Retailers must improve the shopping environment through attractive store displays and in-store advertisements and make it enjoyable to trigger impulse buying among consumers.

## **Conclusion**

Impulse buying is a sudden and immediate purchase with no pre-shopping intentions either to buy the specific product or to fulfill a specific buying task. The study revealed that the most influential in-store factor on impulse purchase is staff behavior. Promotional schemes also have a major impact on impulsive buying. The result of the study will be useful to marketers or retailers to understand the influence of various in-store factors on impulse buying behavior. Thus they can develop marketing strategies which will help them to increase the sales and footfalls.

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## **The Role of Financial Socialization in Promoting Financial Self Efficacy among Young Adults**

**Divya Joseph, Bincy Joseph Attayil**

*Post Graduate Department of Commerce, K.E. College Mannanam,  
Kerala, India*

*E-mail: divyaj@kecollege.ac.in, bincyjosephattayil1995@gmail.com*

### **Abstract**

*Financial socialization is the key factors which influence the financial well-being and financial inclusion of the people. Many studies show that most of the financial problems such as an increased burden of debt, bankruptcy, and low savings among people in general is due to the lack of financial knowledge and negative financial behavior among the people. Financial inclusion, financial knowledge, and financial behavior of an individual can be widely attributed to financial socialization. When you take into consideration the Indian society in where the financial inclusion among the people is in its primitive stage financial socialization among the general public is something to be discussed about. The paper highlights financial socialization impact on young adults and how it has influenced the financial self-efficacy of the people.*

**Key Words:** Financial socialization, Financial inclusion

## **Introduction**

Financial socialization is one of the most discussed topics nowadays. It deals with financial inclusion, people's behavior towards managing finances and financial discipline. A comprehensive understanding of the financial well-being of the people and the influence of society is the major aim of the study. We need to know the early process of individual financial socialization because it determines the acquisition and developing of financial knowledge, and financial behavior which is one of the key factors which contribute to future financial well-being of individual.

Financial socialization can be defined as the “process of acquiring and developing values, attitudes, standards, norms, knowledge and behavior that contribute to the financial viability and individual well-being. To ensure financial inclusion among the people the government has brought in Pradhan Mantri Jhan Dhan Yojana (PMJDY) in order to provide universal banking services for every unbanked household, also projects like Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) to provide insurance to all the people in the country. The impact of financial socialization on such projects and the impact of such projects on the people and their financial inclusion and behavior will be evaluated in detail through this study.

Many recent studies have found that the financial wellbeing of the individual and thereby the well-being of the society is greatly influenced by the financial socialization factors in the society. Many studies have proved that that a higher level of financial socialization leads to good higher level of financial literacy and financial

confidence. This study aims to look into such factors and the influence exerted by financial socialization on people.

### **Significance of the study**

Study on Financial socialization and financial habits have a lot of application and importance in today's world as only a well financially socialized person can only depict good financial behavior and discipline. The study will help understanding the influence of financial socialization on the banking habits of people. In India where the financial inclusion is at its very primitive stage the study is of great importance as it will help closely analyze the impact of financial socialization on the individual. The study helps in understanding the various factors that lead people to bankruptcy, as nowadays due to bad financial decisions people seem to fall into debt traps. Financial literacy among the common people in the country is very low. The study lays importance on how financial literacy is closely linked to the various financial socialization factors. The effectiveness of the various projects promoted by the government can be closely understood and their success is to be analyzed. The financial habits will in turn translate into good financial behavior for the whole society. The results of the study will help in understanding such results.

### **Statement of the study**

The major aim of this study is to analyze financial socialization and how it has influenced the financial self-efficacy of the people. The study aims to measure the extent of the various financial socialization factors such as family, friends, peers etc among the people. The questions regarding how financial socialization affects the financial

habits of the young people and the financial literacy among people will be addressed through this study. Hence the study is titled as “**The Role of Financial Socialization in Promoting Financial Self Efficacy Among Young Adults**”.

### **Objectives of the study:**

The objectives of the study are:

- To identify the level of awareness about financial socialization among young adults.
- To identify the extent of financial socialization absorption rate from financial socialization agents among young adults.
- To identify the most influencing financial socialization agent among young adults
- To identify the relationship between financial socialization and financial self-efficacy among young adults.

### **Research Methodology**

The study is a descriptive one. Population of the study constitutes young adults (between the age group of 20 to 40) in Kottayam district. Primary data used for the study was collected using a questionnaire. The sample size for this survey was 60. The samples for the survey was selected using convenient sampling method.

### **Review of literature**

**Jorgensen and Svala (2010)** found that perceived parental influence had a negative association with the objective financial knowledge in college students, however these results were not significant. Using different measures of socialization may provide

different results. The current study examines parental financial socialization and formal financial education to determine if there is a relationship between financial socialization and objective financial knowledge.

**Lapp (2010)** had examined the influence of financial education on financial knowledge and financial self-efficacy. Participants of a financial training program were surveyed on their subjective financial knowledge and financial self-efficacy both before they participated in the training and one year later the results showed subjective financial knowledge significantly increased one year after the training.

**Cho, Gutter, Kim & Mauldin (2012)** conducted a study of adults, ages 24-66 with low and moderate income also found evidence supporting financial communications influence on financial behaviors. Respondents whose parents discussed the importance of saving, using credit, and having a spending plan were more likely to report having a spending plan and written financial goals than respondents whose parents did not have any financial discussion with them.

**Kim & Chatterjee, (2013)** conducted a study using a nationally representative sample and examined the financial socialization and young adult's financial management. The study found that children who had a savings account as a child, whose parents monitored spending and those who have done part time jobs were more likely to have bonds, certificate of deposits and other non-bank account related liquid assets.



**Data Analysis and Interpretation**

Analysis of data is done using percentage analysis and mean scores and is presented in four tables below.

**Table 1**  
**Demographic profile of the respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percentage</b>
Male	35	58
Female	25	42
<b>Total</b>	<b>60</b>	<b>100</b>
<b>Qualification</b>	<b>Frequency</b>	<b>Percentage</b>
Higher secondary	23	38
Graduate	35	58
Post graduate	1	2
Professional	1	2
<b>Total</b>	<b>60</b>	<b>100</b>
<b>Occupation</b>	<b>Frequency</b>	<b>Percentage</b>
Student	57	95
Business	1	1.67
Salaried	0	0
Self employed	1	1.67
Professional	0	0
Agriculture	0	0
Others	1	1.67
<b>Total</b>	<b>60</b>	<b>100</b>
<b>Annual income</b>	<b>Frequency</b>	<b>Percentage</b>
Up to 10000	40	66.67
10000-25000	8	13.37
25000-50000	7	11.67
50000-100000	5	8.33
Above 100000	0	0.00
<b>Total</b>	<b>60</b>	<b>100</b>

**Table: 2****Awareness of financial socialization among respondents**

<b>Level of awareness</b>	<b>Number of respondents</b>	<b>Percentage</b>
Extremely aware	4	6.67
Highly aware	5	8.33
Moderately aware	25	41.67
Slightly aware	16	26.67
Not at all aware	10	16.67

**Table: 3****Most influencing agent in various financial aspects**

<b>Influencing agent</b>	<b>Financial decision(%)</b>	<b>Saving and debt management practices(%)</b>	<b>Reducing financial anxiety(%)</b>	<b>Financial socialization agent(%)</b>
Parents	53.33	56.67	58.33	53.33
Friends	8.33	10.00	11.67	13.33
Education	30	30.00	26.67	28.33
Media	8.33	3.33	3.33	5.00

**Table: 4**  
**Helpfulness of financial socialization**

Criteria	Weighted score	Mean score	Remarks
Financial socialization helped me to stick to my plan when unexpected expenses arise	231	3.85	Agree
To make progress towards my financial goal	220	3.66	Agree
Not to make credit when unexpected expenses occur	215	3.58	Agree
To figure out solutions easily while facing a financial challenge	226	3.76	Agree
To be confident in my ability to manage my finance	224	3.73	Agree
To avoid financial anxiety	224	3.73	Agree

### Findings

- The study concluded that majority of the respondents were moderately aware about financial socialization.
- Majority of the respondents agreed that parents is the socialization agent exerting influence on their financial decision
- Another factor analyzed through the study is financial literacy of the individual. Most credited parents for their financial literacy

- Savings and debt management practices of young adults was also analyzed through the study, here also parents were the most influencing socialization agent
- Agent influential in reducing the financial anxiety of the individuals were also looked into through this study. Most of the respondents (58.33%) credited parents.
- Agents which highly influence the financial socialization of young adults were also surveyed. The parents were viewed by 53.33% of the respondents as the most influential agent in their financial socialization.
- Majority of the respondents have observed their parent's saving, investment and spending habits and they also agreed that parents discussed family financial matters with them.
- Majority of the respondents agreed that discussed at some point of time they have discussed financial matters with their friends.
- Financial education among people is also a strong reason for financial socialization of a person.
- It is found that financial socialization helped the young adults to attain their financial goal, to stick on their financial plan when some unexpected expenses occur, and to Figuring out solutions for tackling financial challenge.

## **Conclusion**

It can be concluded that the more financial socialization received by young adults from financial socialization agents, the more financial self-efficacy or belief in one's capability in managing their

finance they are going to achieve. From the study we can infer that most of the respondents had some level of awareness about financial socialization with only a small portion of the respondents being not at all aware about the same. Financial socialization has also helped them to achieve financial self-efficacy in managing their personal finances like to make progress towards financial goal, not to use credit when unexpected expenses arises and to reduce financial anxiety. The self-efficacy gained from the financial socialization also helped to instill confidence in their ability to manage their own personal finance.

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## **Impact of MGNREGA on Agricultural Labour Scarcity- A Study with Reference to Kattappana Municipality**

**Shereena. K. B, Harikrishnan. K.M**

*Department of commerce (sf), Kuriakose Elias College Mannanam-686561*

*E. mail: shereenakbasheer@gmail.com*

### **Abstract**

*In Kerala, agricultural land is put to intensive use. The cropping pattern and the intensity of cultivation necessitate the carrying out of farm operations in time. Labour is therefore a major input of agriculture. However, cultivators feel that the cost of labour is high and that despite the high wage rates farm hands are not available in time to carry out the operations. Side by side with non-availability of farm labour, there exist high rates of unemployment and under-employment. There are also indications that rural labour is shifting to non-agricultural work and moving out to urban centers in search of works. The reason for shortage of farm labour is also faced by the introduction of MGNREGA. So, these reasons for labour shortage and shift in the structure of rural labour force are examined in this study.*

**Key words:** labour scarcity, MGNREGA

### **1.1 Introduction of the Study**

A country without sound agricultural system may not be capable of producing adequate food materials and other crops. Agriculture is the backbone for the survival of any community. As in the case elsewhere, the people of Kerala also had been depending on agriculture for their livelihood and continue, to be a predominantly

agricultural State. Kerala was known in the past for her agricultural produces like pepper, cardamom, and other spices. These produces had enticed many foreigners to this land which led to many historical events culminating in the colonization of the country and thereafter decade's long struggle for freedom. Having yoked the country under colonialism, the foreign forces plundered the natural resources including the much-wanted agricultural produces.

Kerala is an Agrarian economy. Cash crops like coconuts, rubber, tea and coffee, pepper and cardamom, cashew, areca nut, nutmeg, ginger, cinnamon, cloves, and the like, give the agriculture of Kerala a distinct flavor. It is coconuts which bring the people their principal source of earning in agriculture. Nearly 70% of Indian output of coconuts is provided by Kerala. Cashew is an important cash crop of the state. The state has facilities for converting raw cashew into the dried fruit, salted or plain. Cardamom is another cash crop which gives Kerala a distinctive place in Indian export.

Labour shortage in plantations has put the state of Kerala in a piquant situation. Reduced supply and reluctance of state citizens to work in the harsh and inhospitable terrain of the high ranges, has made the life of innumerable small holders who cultivate cash crops like pepper, cardamom, coffee, vanilla and areca nut miserable. From a state that prided on strong trade union movements in the plantation sector, Kerala has become an economy that sustains on migrant labourers from the neighboring states. Adding to the woes of the small holders are the implementation of the centrally sponsored National Rural Employment Guarantee Programme, which further reduces the



supply of labourers in the harvest period. It is estimated that nearly 14 lakh families are dependent on the plantation sector for livelihood.

Earlier the strength of economic development was agriculture sector because during that time major contributor to economy was agriculture output. Survival of every society is basically depended on agricultural activity of that society. Majority of people in different part of India especially in Kerala had taken agriculture sector as livelihood. In 1960s a large number of migrants shifted to higher range area of Kerala mainly to the districts like Wayanadu and Idukki for cultivation.

At that time, the migrants have sufficient land for cultivation. They were more co-operative, and they collectively cultivated a large area of higher range. During this time sufficient labour force were available in agriculture sector at adequate wage rate, which was helpful to increase production and decrease production cost. But last few years, various reports indicate that higher range is facing labour scarcity and this leads reduction in cultivation and productivity and increase production cost. One of the major reasons reported against this labour shortage is MGNREGA under government's employment guarantee Act.

## **1.2 Review of literature**

**Abymon A, Asish Cherian Sunny, Jibin Oommen Babu** (2018) in their study evaluated the socio-economic impact of MGNREGA specifically on its women workers and the effectiveness with which it is being implemented in Kerala. The study showed how the MGNREGA had an impact on employment, income and savings of

the workers and the result stated an increased percentage of the implementation of the program whereby increasing income in the agricultural sector. In the research study the role of MGNREGA in providing employment opportunities and how it could help in allocating the fund and how these funds can be spent in different in rural communities to generate employment and thereby attain rural development is studied. The study conducted has evaluated the differentiating impact of basic entitlements fulfilments with the extent of coverage of social groups like dalits, adivasis, women and poverty alleviation and has come up with the result that there was a steep increase in agricultural wage of women and a decline in female-male wage gap.

**Misbah jahan, Dr. Mamta mohan (2015)** conducted a study and revealed that to assess the awareness of the beneficiaries of MGNREGA regarding the scheme in district Kupwara of J&K. The study was conducted among 150 beneficiaries of the scheme. A survey questionnaire was used to elicit response from the beneficiaries. Sampling was done using multi- stage random sampling. The study provided an insight into the awareness of MGNREGA on a micro-level in J&K. The results of the study indicate that the Government needs to step up its efforts to increase awareness as the beneficiaries still lack complete awareness about basic provisions of the Act.

**Thadathil and Mohandas (2012)** found in their studies that MGNREGS had worthy impact on the cultivation of Wayanad when it introduced in the year 2006. During this time District was facing severe crisis in the agricultural sector, many farmers committed suicide due to

loss happened to them, as a result low prices for their products. Workers lost their employment and those who had job were very low paid, nearly Rs.100/day for male workers and Rs.70/day for female workers. This situation has caused for the massive flow of laborers from agricultural sector to MGNREGS when the scheme is introduced. Later when the market wage rate increased to considerable amount male workers started to leave the scheme and shifted back to their earlier occupation.

**Azam (2012)** examines the impact of MGNREGA on labour force participation and on participation public work. This was one of the first papers to use the phase wise roll out of the MGNREGA to identify the causal impacts using a DID estimator. He finds a positive impact of the scheme on labour force participation, and also notes that this was driven mainly through an increase in female participation. He also finds an increase in participation in public works in Phase 1 and 2 districts, but the magnitude is modest. Zimmermann (2013) has conducted a study to examine the impact of MGNREGA on private casual wage employment utilizing unit record data for 2007-08 adopting a regression discontinuity approach. Finding of this study suggest that MGNREGA has a significant impact on public work employment and also finds evidence that suggests that people moved out of private casual employment into self-employment due to the MGNREGA.

**Roopa and Leelavathi (2013)** mentioned in their studies that Indian agricultural sector is often cited as a classic example for disguised unemployment. Labor abundance, low rate of wages, and

need for creation of other employment opportunities for a large number of work force have always been the central issues of debate throughout the planning period. The study reveals that MGNREGA must be implemented in partnership with local farmers in such a way that the local farmers will gain labor supply through MGNREGS, and the state can also share the fiscal burden with the local farmers in season of crops. In the off-season work force should be directed to the development of local infrastructure and other related asset creation.

**Akhil Alha and Bijoyata Yonzon (2011)** opined that the agricultural sector in India has been characterized with high supply of labour than demand, low wages, skewed distribution of land, and limited options of earning livelihood. This sector has undergone a vast change in recent past, mainly due to the increased rural-to-urban migration and partly due to the inception of MGNREGS and other public works. The structural changes in Indian economy in recent past have made male-migration a lucrative phenomenon while schemes like MGNREGS are found to be attractive for females in rural locations. This has caused a shortage of farm labour and consequently, an upward push in agricultural wages.

### **1.3 Objectives**

1. To study the preference and reasons of agricultural sector job over MGNREGA
2. To know the problems faced by MGNREGS workers

#### **1.4 Hypothesis**

Ho: There is no significant relationship between labour scarcity & MGNREGS.

H1: There is significant relationship between labour scarcity & MGNREGS

### **2. Research methodology**

This research work exploits both primary and secondary source of data to come to a conclusion. Data collection was done in phased manner and includes two phases. In the first phase, various related study was reviewed so as to capture a detailed idea on various aspects of the problem to formulate the conceptual framework for the research. In the second phase primary data were collected using a well-structured questionnaire

#### **2.1 Population for the study**

Workers registered under MGNREGA constitute the population or universe for this study. In this study researcher try to analyze impact of MGNRGS on agricultural labour supply of Kattappana Municipality.

#### **2.2 Sample size**

Population under the study is very large, workers registered under MGNREGA in Kattappana Municipality is the universe of this study. Since the population is very large, the required data for the study has been collected from a sample of 120 agriculturists of Kattappana Municipality from Idukki District by using a structured questionnaire specifically designed for the study.

### 3. Analysis and interpretation

#### Preference of agricultural labour over MGNREGA

##### 3.1 Willingness to Accept Agricultural Employment when MGNREGA scheme is not active

Sl no:	willingness	No. of respondents	percentage
1	Yes	76	63
2	No	36	30
3	No opinion	8	7
<b>Total</b>		<b>120</b>	<b>100</b>

63% of sample population responds that they are willing to accept agricultural job during the work holidays of MGNREGA scheme and 30% of them opined that they are not willing to engage agricultural job when the scheme is not active.7% of the sample population have no opinion on this query.

##### 3.2 Preference of Agricultural Labour over MGNREGA

Sl no:	Preference	No. of respondents	percentage
1	Prefer agricultural sector job	51	67
2	Prefer MGNREGA	23	30
3	No opinion	2	3
<b>Total</b>		<b>76</b>	<b>100</b>

Researcher asked the preference of workers of agricultural job over MGNREGA when both opportunities are available at a time. This question was asked only to those employees who are willing to work

agricultural field when MGNREGA scheme is not active. Responses reveals that most of the respondents prefer to work in agricultural field and only 30% of the respondents are sticking on to MGNREGA.

### 3.3 Reasons for Preferring Agricultural Job over MGNREGA

Sl. No	Statements	Level of Agreement		
		Strongly Agree	Agree	Disagree
1	MGNREGA wage is less than agriculture labour	38	12	1
2	Working time is less in case of agricultural labour	29	18	4
3	Effort in agricultural job is high	41	8	2
4	Payment of MGNREGA wages are delayed	47	4	0
5	Agricultural sector offer more work days in a year	46	5	0
6	Agricultural sector offer more work days in a year	37	12	2
7	MGNREGA works can be arranged during off season	24	14	13

Out of the sample population 120 workers 63% of the sample population are willing to accept agricultural job when the scheme is not active and out of these 76 workers 67% prefer agricultural job over MNGREGA. Reasons of preferential treatment are high wage rate, prompt payment, less working time and the help from officials to arrange the MGNREGA work during the off days of agriculture.

Results of the above analysis shows that incase of Kattappana municipality workers who were employed in agriculture field earlier

and who prefer to work in this sector consider agriculture sector prime provider of employment; and they prefer agriculture over MGNREGA. Hence MGNREGS has not created any negative impact on the agricultural sector labour supply of Kattappana municipality and it has not caused any shortage for labour supply in agriculture sector.

**3.4 Problems faced by MGNREGS workers**

Sl. No	Statements	Level of Agreement			Total
		Strongly Agree	Agree	Disagree	
1	MGNREGA wage rate is very low	92	20	8	120
2	Payment of wage is delayed always	96	20	4	120
3	Always not getting guaranteed workdays	48	50	22	120
4	Increase in wage rate will help to reduce migration cities for job	77	25	18	120
5	Asset created are not long lasting	61	31	28	120
6	Procedural delays are there	100	16	4	120
7	Clash between agriculture season and MGNREGS work exist	42	19	59	120
8	Political influence affect the effectiveness of work	55	28	37	120
9	Lacking support from Govt. officials	36	48	36	120
10	Supervision is very poor	6	8	106	120
11	There are delay in issue of job cards	65	36	19	120
12	Lack expertise to perform all the jobs	96	18	6	120
13	Facing shortage of tools	82	24	14	120
14	Work hours are very lengthy	42	46	32	120
15	Work allotted per worker is always less	31	53	36	120



According to the workers of MGNREGA the scheme of has its own merits and limitations. Researcher asked the workers to produce their level of agreement on various issued identified the researcher through observation of MGNREGS activity. Most of the workers in the sample population opined that wage rate of the scheme is very low and it should be increased to the market wage prevailing in each locality. Regarding the guaranteed days of employment, around 80% of the sample population expressed that they are not getting guaranteed 100 days of employment in a financial year. Central Government introduced the program as a flagship program to eradicate poverty and unemployment, but as per the opinion of workers procedural delays are always exist in issue of job card, work allotment and wage payment.

Majority of the respondents said that they are lacking expertise to perform all the scheduled works of the scheme and the scheme has no provision to give training to participants. A major portion of the sample population are working in farming sector when MGNREGA works are not available and they in the opinion that sometimes works under the scheme are scheduled during the period of farming and harvesting. This may badly influence on the annual family income and livelihood expenses of MGNREGS workers. About 75% of the respondents observed that ruling political parties in the local bodies have certain role in scheduling the the working and allotment of work and they also opined that most of the time it reduce the transparency of the scheme.

#### 4. Testing of hypothesis

##### Chi-square test

##### The relationship between labour scarcity & MNREGS

##### Hypothesis

Ho: There is no significant relationship between labour scarcity & MNREGS

H<sub>1</sub>: There is significant relationship between labour scarcity & MNREGS

The following table gives a view of the relationship between labour scarcity & MNREGS. Calculations of chi-square test.

##### MNREGS & Labour scarcity

O	E	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
47	35	12	144	4.8
23	35	-12	144	4.8
70	70	0	288	X <sup>2</sup> =9.6

Source: Primary Data

Chi- square test (X<sup>2</sup>) = (O-E)<sup>2</sup>/E

Degree of freedom = n – r – 1

$$= 2 - 0 - 1$$

$$= 1$$

Table value at 5% level for degree of freedom = 3.84.

The calculated value of Chi- square is 9.6.

Here, the calculated value is greater than the table value. Therefore, the alternative hypothesis ( $H_1$ ) is accepted. It is concluded that labour scarcity have significant relation with MNREGS

## **5. Findings**

- About 45% of the enrolled workers were very active in agricultural employment before implementing the scheme and they are still working in the same sector during the work holidays of the scheme. Some of them prefer agriculture job over MGNREGA even when the scheme is active.
- About 60 % of the sample population is willing to work in the agriculture sector but they prefer a viable environment for work and not willing to travel more for employment. Some of them prefer agricultural sector job over MGNREGA and have specific reasons for that like; high wage rate in agriculture, less working time, prompt payment of wages, it provides more number of work days and they have an opinion that MGNREGA scheme can be opt during offseason.
- MGNREGA guarantees 100 days of employment in a financial year, but the survey data reveals that most of time workers are not getting the guaranteed 100 days of employment. Moreover, wages of 100 days of employment are not enough to meet the increasing cost of living for a family dependent to this scheme. So, the scheme should be revised in such a manner that each worker in the scheme is getting an average 200 days of employment in a year.

- Most of the members of the sample population opined that issue of job cards is always delayed and procedural delays are happening in the case of work assignment and allocation. So, the instructions should be given to officials to strictly follow the provisions of the Act.

## **6. Recommendations**

- MGNREGA guarantees 100 days of employment in a financial year, but the survey data reveals that most of time workers are not getting the guaranteed 100days of employment. Moreover, wages of 100 days of employment are not enough to meet the increasing cost of living for a family dependent to this scheme. So, the scheme should be revised in such a manner that each worker in the scheme is getting an average 200 days of employment in a year.
- Most of the members of the sample population opined that issue of job cards is always delayed and procedural delays are happening in the case of work assignment and allocation. So, the instructions should be given to officials to strictly follow the provisions of the Act.
- Delay in the transfer of wage is the main reason which reduces the attraction of the scheme. This anomaly should be corrected to gain the attraction of the crowd. Most of the workers and their families are dependent to the income from this scheme, so the unexpected delay may create more issues in their families.

- A considerable portion of the sample population are depending on both agriculture and MGNREGA for earning their bread and butter. They have a suggestion to schedule the non-agriculture related work under MGNREGA during the off season of farming. Otherwise, they may loss the work in agriculture field which provides higher wages.

## **7. Conclusion**

The study is carried out to know the impact of MGNREGA on the agricultural sector labour supply of Kattappana Municipality. Many studies of same kind have conducted in various places in India and there are some studies conducted in Kerala also in the related area. Results of the studies conducted in various states of India reveals that MGNREGA has caused for the shift of workers from agricultural sector to other sectors. In case of most of the states in India, MGNREGS has caused for the increase in agricultural wage rate and led to hike in cost of cultivation. Shortage of labour and sudden increase in the wages put the farmers in pressure and in the initial years of MGNREGA this situation has resulted in the decrease in agricultural production of the country. Introducing scientific methods in agriculture sector and by integrating MGNREGS in farming sector will reduces cost and increase production. This will ensure the better wage pattern in farming sector and increase production level.

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## **Role of United Nations in Advocacy of Human Rights**

**Bijo Joseph**

*Research & Post Graduate Department of Economics, K.E. College  
Mannanam, Kerala, India*

*E-mail: bijoanathill@gmail.com*

### **Abstract**

*Moral and rational nature of man entitles him to the enjoyment of certain rights which are called human rights. These rights derive from the inherent dignity of the human person and they should be available to man everywhere and at all times. These rights are necessary condition for the development of human personality and without them man would really not be man. The scope of human rights is ever expanding. These rights set standards for providing and promoting certain civil, political, social and economic rights. For instance, the right to life guaranteed to a citizen of India by the constitution becomes meaningful only when the state set standards for providing good education, healthy living conditions and better opportunities for social and economic advancement. A very comprehensive definition is found in the Protection of Human Right Act, 1993 as amended in 2006.*

**Key words:** Human Rights, United Nations, UDHR, NGOs, Solidarity Rights, Social and Cultural Rights.

## **Introduction**

The term ‘Human Rights’ is defined under the Act as *‘the rights relating to life, liberty, equality and dignity of the individual, guaranteed by the Constitution or embodied in the International Covenants and enforceable by Courts in India. ‘International Covenants’* means the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural rights adopted by the UN General Assembly in 1966, and such other Covenants or Conventions adopted by the General Assembly of the United Nations as the Central Government may, by notification, specify.

## **Objectives of the Study**

1. To understand the concept of human rights.
2. To identify the initiatives taken by United Nations in advocacy of human rights.
3. To study the generations of human rights.

## **Research Methodology**

This study reviews the literature on the basis of secondary data collected from various sources such as articles, journals, research papers, annual reports etc...

## **Concept and Development of Human Rights**

Human rights are primarily part of the moral and political discourse that is used to justify the creation of human rights law and other social institutions. The idea of human rights and fundamental



freedoms are universally accepted and this problem never received so much attention as today. The concept of human rights has come a long way; its history spreading over eight centuries. It is noteworthy that the concept of human rights has been all along a revolutionary one. The discourse of human rights is utilized by a variety of political movements-including many Non-Governmental Organizations (NGOs), such as Amnesty International- and is particularly associated with the United Nations, whose 1948 Universal Declaration of Human Rights (UDHR) constitutes the foundational document of current human rights thinking and practice. This document has led to many conventions and treaties committing participating states to a variety of human rights objectives, such as non-discrimination, children's, and the rights of indigenous peoples.

At the core of the moral and political concept of human rights is the idea that social and political arrangements should be based on the recognition of the equal worth of every human being. This recognition excludes such practice as torture, arbitrary and extreme punishments, and slavery; it requires political mechanisms that ensure membership of a democratic state and guarantees a minimum level of material well-being for all human beings.

### **Three Generation of Human Rights**

Human rights are classified into *civil, political, economic, social and cultural rights*. Karel Vasak, a French jurist developed “Three Generations of Human Rights”, linking these rights to the three normative themes of the French Revolution, namely, *Liberty, Equality and Fraternity*. Thus we get first generation of *Civil and Political*

*right-(Liberty), second generation of Economic, Social and Cultural rights - (Equality), and third generation of the newly emerging group of rights called Solidarity rights-(Fraternity).*

### **First Generation of Civil and Political Rights**

Civil and political rights are rights that protect individuals from Government and private infringement. These rights allow individuals to participate fully in society and political realm without discrimination. Civil rights include the right not be discriminated against based on age, origin, religion, race, gender, etc. These rights also include freedom of speech, press, etc. Broadly speaking, civil rights are all rights that seek to treat individuals equally. Political rights include the right to a fair trial, right to assemble, right to petition, etc. First Generation civil and political rights derive primarily from the 17<sup>th</sup> and 18<sup>th</sup> century reformist theories associated with the English American and French revolutions and the political philosophy of liberal individualism. Another striking feature is that while civil and political rights can be realized immediately, economic, social and cultural rights usually must be realized in a progression.

### **Second Generation of Economic, Social and Cultural Rights**

The second generation of Economic, Social and Cultural Rights have its origin primarily in the revolutionary struggles and welfare movements. Cultural, social and economic rights encompass basic needs and broader necessities. Social rights include the right to housing, food, health, education, etc. Economic rights include the rights to an adequate standard of living, a livable wage, a job,

protection from economic exploitation, etc. Cultural rights include freedom of religion, freedom of one's culture and language, etc.

### **Third Generation of Solidarity Rights**

The third generation of rights are collective rights or group rights. They demand more equitable social order and are called *Solidarity Rights*. All the six rights require the concerned efforts of all social forces. Article 28 of the *Universal Declaration of Human Rights* proclaims that everyone is entitled to a social and international order in which the rights set forth in this declaration can be fully realized. Three of these rights reflect the emergence of the Third World Nationalism and its demand for a global redistribution of power, wealth, and other important values. They are the right to political, economic, social and cultural self-determination; the right to economic and social development; and the right to participate in and benefit from "the common heritage of mankind". The other three third generation rights namely, the *right to peace*, the *right to a healthy and balanced environment* and the *right to humanitarian disaster relief* suggest the importance or inefficiency of the Nation- State in certain critical respects.

### **Universality of Human Rights**

*Universality of human rights* means that human rights must be the same everywhere and for everyone. By virtue of being human, every individual is entitled to inalienable rights and freedoms. These rights ensure the dignity and worth of the human person and guarantee human well-being.

The 1993 World Conference noted that “it is the duty of States, regardless of their political, economic and cultural systems, to promote and protect all human rights.”

Human rights are also indivisible. This means that civil and political rights, on the one hand, and economic, social and cultural rights, on the other, must be treated equally. Neither set has priority over the other. Although every country must set priorities for the use of its resources at any given time, this is not the same as choosing between specific rights. We must not be selective, for these rights are interrelated and interdependent. Freedom from fear and want are inextricably linked to freedom of speech and belief. The right to education is linked to health, and there is a clear connection between a mother’s literacy and the health of her very young children.

Universality is, in fact, the essence of human rights: all people are entitled to them, all governments are bound to observe them, all state and civil actors should defend them. The goal is nothing less than all human rights for all.

### **Value Dimensions of Human Rights**

Along with other components of education, there should be a greater focus on the value system. Effective human rights education must help individuals identify and adopt personal and social values that they can call on to guide their decisions, relationships, work, and life as a whole. It must help them develop a depth of character and a clear sense of their own identity, integrity, and what they believe to be important in life. Given the universality of human values and rights, it follows that education can no longer limit itself, whether by content,

gender bias, or age cut-off, but must transcend these frontiers. Education must become an inclusive, universal, lifelong learning process that embraces the family and community, as well as the classroom, as places of learning. In a world where rights are too often abused, leading to poverty, deprivation, and insecurity of many kinds, the maximization of all inner personal resources is essential. A values-based and rights-based approach to education requires that all within society are engaged in learning, for themselves and others. We must learn, and keep learning, about the rights we have as individuals but also about the responsibilities that go with them. To do so, we must embrace the values that are the building blocks and the very essence of rights and responsibilities. We cannot truly understand rights and responsibilities without first understanding the values on which they are based.

## **Human Rights and United Nations**

### **Human Rights Co-ordination within UN System**

United Nations Organisation is an inter-governmental organization (IGO). UN is the closest thing to a world government that has ever existed, but it is not a world government. Its members are sovereign states unwilling to surrender their sovereignty. UN is a symbol of international order and even of global identity. It is a forum where states promote their views and their disputes and it is a mechanism for conflict resolution in international security affairs. UN promotes and coordinates development assistance and other programmes of social and economic development in less developed countries. UN is also a coordinating system for information and

planning by hundreds of agencies and for the publications of international data.

UN charter came into being on 24 October 1945. Since then October 24 is observed as the UN day. New York is the permanent headquarters of the UNO. The objectives of the UN are to maintain international peace and security, development of friendly relations among nations, international co-operation in solving problems of economic, social, cultural and humanitarian, to re-affirm faith in fundamental human rights and the worth and dignity of human person and equal rights of men, women and nations large and small, to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained, to promote social progress and better standard of life and larger freedom.

### **UNO and Human Right Protection**

The preamble to the UN charter refers to the determination of the UN “*to affirm faith in fundamental human rights, and equal rights of men and women*”. According to Article 1 of UN Charter, to achieve international co-operation in “*promoting and encouraging respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language or religion*” is one of the purpose of the UN. Article 13 entrusts the General Assembly the responsibility to assist in the realization of human rights. The Economic and Social Council (ECOSOC) is to make recommendations for the promotion of and respect for human rights and fundamental freedoms and setup commission for the promotion of human rights (Articles 62, 68). The

UN members are to give their co-operation to the UN in the promotions of human rights and fundamental freedoms (Article 56).

The major organs of the UN as well as its specialized agencies are all concerned with human rights. The *General Assembly* has, from time to time, established ad hoc special committees to assist its functions with respect to human rights. The *Security Council* has taken actions against the violation of human rights. It makes studies and recommendations either on its own initiative or at the request of the General Assembly or the ECOSOC. The Human Rights Commission (HRC) has established many sub-commissions to undertake studies and make recommendations on human rights. The *International Court of Justice* has also played a decisive role in setting questions involving human rights. Within the Secretariat there is a *Division of Human Rights* headed by a director to report to the Secretary General questions concerning human rights.

Promotion of respect for human rights has been the main concern of UNO. Nearly 80 declarations and conventions have been adopted by the UN in the connection, and the first among them is the *Universal Declaration of Human Rights*, UDHR 1948. It covers a wide range of civil, political, social and economic rights that all people are entitled to without discrimination. It inspired the drafting of two legally binding covenants, one is on economic, social and cultural rights, and the other, on civil and political rights. While the former highlights the right to work in just conditions, the right to adequate standard of living and the right to social protection, the latter emphasizes freedom of movement, equality before law, freedom of

religion and protection of minority rights. These two covenants together with the UN Declaration of Human Rights are known as the *International Bill of Human Rights*. The compliance of the signatory states to these covenants is monitored by a special committee on human rights, and the UN is empowered to receive and redress the complaints from individual against the behavior of their respective governments.

The UN has adopted other declarations and covenants and convened periodical conferences from time to time. They aim at stopping the practice of torture and racial discrimination or protecting the weaker sections like children, women and migrant workers. In 1993, the UN organized an *international conference on human rights*, and upon its recommendations appointed the UN High Commissioner for Human Rights with a view to promote more scrupulous respect for human rights all over the world.

The principles proclaimed in the Declaration of Human Rights have been embodied in a number of international conventions. The important conventions adopted by the General Assembly are: *Convention on Genocide* (1948), *Convention on the Political Rights of Women* (1952), *Convention on Slavery* (1956). The General Assembly unanimously approved the Declaration of the Rights of the Child (1959). This declaration contains a number of human rights provided in the UDHR.

### **Contributions**

Since its creation, the UN has often been called upon to prevent disputes from escalating into war, or to help restore peace when armed



conflict does break out, and to promote lasting peace in societies emerging from wars. The Security Council, the General Assembly and the Secretary General all play major, complementary roles in fostering peace and security.

Over the decades, the UN has played to end numerous conflicts related to human rights. In some cases, the Council itself undertakes investigation. It may appoint special representatives or request the Secretary General to do so or to use his good offices.

Conflict prevention remains one of the highest objectives of the UN. In today's world, preventive action extends well beyond traditional preventive diplomacy to involve a broad constellation of UN entities working across a wide range of disciplines- poverty eradication and development, human rights and the rule of law, election and the building of democratic institutions and the control of small arms, to name just a few.

### **Human Rights Related Organs**

The UN is expected to promote higher standard of living, full employment and conditions of economic and social progress and development of all countries. It is charged with the duty of providing solutions for the international economic, social, health and related problems and promoting universal respect for and observance of human rights and fundamental freedoms for all without any distinction of race, sex, language and religion. In this effort, the UN is assisted by a number of specialized agencies.

The organs which are concerned human rights include agencies like International Labour Organisation (ILO), United Nations Educational Scientific and Cultural Organisation (UNESCO), United Nations International Children's Emergency Fund (UNICEF) and World Health Organisation (WHO).

### **The Economic and Social Council**

The Economic and Social Council (ECOSOC) is one of the six main organs of the United Nation (Art. 7, Charter of the UN). The main task of the ECOSOC is to promote economic and social development. The promotion of human rights is of significant importance in this. According to Article 62 of the UN Charter, the mandate encompasses:

- Investigations into international affairs in the field of economics, social affairs, culture, health and related topics as well as the drafting or initiation of reports; the ECOSOC can deliver recommendations on any of these issues to the General Assembly, member states of the UN or specialized agencies of the UN;
- Recommendations that aim at promoting human rights and basic freedoms for all;
- The possibility to convene international conferences.

The ECOSOC is composed of 54 members that are elected according to the General Assembly's regional key (14 representatives from African countries, 11 from Asian countries, 6 from Eastern European countries, 10 from Latin American and Caribbean countries and 13 from Western European and other states). Every year 18

members are appointed for a three-year period. Re-elections are possible. The ECOSOC meets once a year in July, alternating between New York and Geneva. It has committees, panels and commissions to assist its work.

### **The United Nations Commission on Human Rights**

The United Nations Commission on Human Rights (UNCHR) was a functional commission within the overall framework of the United Nations from 1946 until it was replaced by the United Nations Human Rights Council in 2006. It was a subsidiary body of the UN Economic and Social Council (ECOSOC), and was also assisted in its work by the Office of the United Nations High Commissioner for Human Rights (UNOHCHR). It was the UN's principal mechanism and international forum concerned with the promotion and protection of human rights.

### **The Security Council and Human Rights**

The UN Security Council deals with grave human rights violations, often in conflict areas. The UN Charter gives the Security Council the authority to investigate and mediate, dispatch a mission, appoint special envoys, or request the Secretary-General to use his good offices. The Security Council may issue a ceasefire directive, dispatch military observers or a peacekeeping force. If this does not work, the Security Council can opt for enforcement measures, such as economic sanctions, arms embargos, financial penalties and restrictions, travel bans, the severance of diplomatic relations, a blockade, or even collective military action.

### **The Committee on the Elimination of Racial Discrimination**

The Committee on the Elimination of Racial Discrimination (CERD) is the body of independent experts that monitors implementation of the Convention on the Elimination of All Forms of Racial Discrimination by its State parties.

All States parties are obliged to submit regular reports to the Committee on how the rights are being implemented. States must report initially one year after acceding to the Convention and then every two years. The Committee examines each report and addresses its concerns and recommendations to the State party in the form of “concluding observations”.

### **The Committee on the Elimination of Discrimination against Women**

The Committee on the Elimination of Discrimination against Women (CEDAW) is the body of independent experts that monitors implementation of the Convention on the Elimination of All Forms of Discrimination against Women. CEDAW Committee consists of 23 experts on women’s rights from around the world.

Countries who have become party to the treaty (States parties) are obliged to submit regular reports to the Committee on how the rights of the Convention are implemented. During its sessions the Committee considers each State party report and addresses its concerns and recommendations to the State party in the form of concluding observations.

### **The Committee on Economic, Social and Cultural Rights**

The Committee on Economic, Social and Cultural Rights (CESCR) is the body of independent experts that monitors implementation of the International Covenant on Economic, Social and Cultural Rights by its States parties. The Committee was established to carry out the monitoring functions assigned to the United Nations Economic and Social Council (ECOSOC) in Part IV of the Covenant.

All States parties are obliged to submit regular reports to the Committee on how the rights are being implemented. States must report initially within two years of accepting the Covenant and thereafter every five years. The Committee examines each report and addresses its concerns and recommendations to the State party in the form of “concluding observations”.

In addition to the reporting procedure, the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights, which entered into force on 5th May 2013, provides the Committee competence to receive and consider communications from individuals claiming that their rights under the Covenant have been violated. The Committee may also, under certain circumstances, undertake inquiries on grave or systematic violations of any of the economic, social and cultural rights set forth in the Covenant, and consider inter-state complaints.

## **The Human Rights Committee**

The Human Rights Committee is the body of independent experts that monitors implementation of the International Covenant on Civil and Political Rights by its State parties.

All States parties are obliged to submit regular reports to the Committee on how the rights are being implemented. States must report initially one year after acceding to the Covenant and then whenever the Committee requests (usually every four years). The Committee examines each report and addresses its concerns and recommendations to the State party in the form of "concluding observations".

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## **Perspective of Local People and Tourists: Case Study on Malarickal Village Tourism**

**George Sebastian**

*B. Ed Trainee, Mangalam College of Education*

E-mail: georgesebastian671995@gmail.com

### **Abstract**

*Malarickal village has evolved as a popular rural tourism destination during the last few years. The growth of tourism has resulted in development of social and economic aspects of people living there. Resident as well as foreign tourists visit the village for pleasure and refreshment. The study covers the impact of growth of village tourism on local people and level of satisfaction of tourists visiting Malarickal Village. It is evident from the study that local people have various benefits with growth of tourism and tourists are mostly satisfied with various elements of Malarickal village tourism.*

**Keywords:** Village tourism, ecotourism, eco-friendly, satisfaction, infrastructure

### **Introduction**

Tourism is one of the fastest growing industries in the world and it boosts revenues of economies, creates job opportunities and develops infrastructure. Tourism is a significant revenue for our country too. About 19 million foreign tourists arrived in India in 2019 with a growth of 3% from previous year. Government of India has passed several laws and announced various policies to foster tourism



and revenue from time to time. Tourism with conservation of nature, that is what majority of Government policies are aiming at. In India, there are several eco-tourism spots intended to offer tourists an insight into the impact of human beings on the environment and to foster a greater appreciation of our natural habitats.

Ecotourism is an improvised structure of tourism, that is visiting eco-friendly, natural, immaculate and relatively undisturbed spots as an alternative to typical commercial structure of tourism. It means travelling to eco-friendly spots, conserving nature, taking into consideration the well-being of the people living there and developing quality tourism. Village tourism is strong variant of ecotourism as villagers are hospitable and they strongly welcome tourists. The tensity and job stress in urban life induce the urbanites to frequently visit rural locations as an ideal place to be re-engaged in an unembellished living.

### **Malarickal Village Tourism**

Malarickal is a popular village tourism destination located near Kottayam (8 kilometers), in Kerala, India. The village provides the visitors, a soothing experience of village life in the midst of endless paddy field and livestock. Malarickal has a moderate climate throughout the year. Its innate natural beauty and waterbodies are attracting tourists who need to switch from their own busy urban living. Rice cultivation and paddy fields cover almost half of the total area of the village.

The factor that made Malarickal the most desirable spot for tourists is its breathtaking shades of pink. The water lilies (*Nymphaea Stellata*), “ambal” in local language enrich the paddy fields during the

end of the monsoon rains, which usually occurs annually between September and October. They spread out over 650 acres of land, and the best time to witness this occult scenery is early in the morning. The immense flora, fauna, and cultural heritage are the rich attractions of Malarickal Village. The District Tourism Promotion Council (DTPC), Kottayam is planning to add more rural tourism options like boating, fishing, bio-farming and food festivals to Malarickal and these will undoubtedly further enhance the visitor experience.

### **Statement of Problem**

Village tourism and rural development are two sides of a coin having inseparable relation with each other. Tourism is a means of revenue for many undeveloped villages, but it should be promoted with utmost care. Tourism without harming the nature and without disturbing livelihood of local people is the most important feature of village tourism. Malarickal village tourism has become flourished during the last 3 years and tourists from all over India and abroad visit here to enjoy the beauty of the village. Here the study proposes to analyze the impact of growth of village tourism on local people and satisfaction level of tourists visiting Malarickal Village, hence the problem is titled as “Perspective of local people and tourists: Case study on Malarickal village tourism”.

### **Review of literature**

**Dino Leonandri, Maskarto Lucky Nara Rosmadi (2018)**, The study strives to evaluate the role of tourism at villages and how far it has contributed to local people's income. A qualitative method is used for the study. There has been notable disagreement between the

local people, ruling government, and others. Results of the study proved that tourism projects at villages could bring improvement in living standards, upraise village culture and leads to welfare and upliftment of the people.

**Tanmay Sharma (2017)**, The study reveals that the tourism policy development and implementation has not been well documented and understood. The level of performance of tourism is low in India other than its rich culture, natural diversity and historic monuments. This paper focus on the role of Central and State governments in tourism policy development and its implementation and helps in highlighting the key factors behind low international tourist arrivals in India. The study in descriptive in nature.

**Yashobanta Parida, Parul Bhardwaj, Joyita Roy Chowdhury (2017)**, The purpose of this study is to empirically examine the determinants of foreign and domestic tourist arrivals in India. The results finds that factors such as the presence of world-class monuments, natural landscapes and cultural heritage has encouraged both international and domestic visitors. Crime activities adversely affected tourism. The study has also been extended to evaluate the revenue receipts from tourism in 25 Indian states. There has been growth in revenue receipts for all states through responsible tourism.

**Kuldeep Singh, Arnab Gantait, Goldi Puri, G. Anjaneya Swamy (2016)**, In India, there has been a thrust to promote village tourism as the primary tourism product over the last few years. In this connection, there is a need to analyze the social, economic, political and environmental background of the particular spot. There is need for

an effective plan that will involve the rural people in tourism that can enhance their economic condition towards a positive direction and improve their standard of living.

**Sedef Altun, Gülin Beyhan, Recep Esengil (2007)**, they establish a framework for diversifying tourism in Antalya, a small village in Turkey. It is done through the evaluation of a village in terms of sustainable rural tourism. The goal of the project is to provide maximum efficiency in the economic, social, political and environmental dimensions of tourism with sustainable development practices in order to facilitate development.

### **Objectives**

1. To understand the significance of Village tourism in our society and economy.
2. To analyze the growth of Village tourism at Malarickal, Kottayam.
3. To enquire into how growth of village tourism in Malarickal affected local people.
4. To evaluate the satisfaction of tourists reaching Malarickal Village tourism.

### **Hypotheses**

1. H<sub>0</sub> – There is no significant difference between satisfaction level of Foreign and Resident tourists.  
H<sub>1</sub> - There is significant difference between satisfaction level of Foreign and Resident tourists.

## **Methodology**

All the local people, government officials and tourists reaching Malarickal village tourism constitute the universe of the study and data was collected during September to February 2020 from over 1500 respondents. A detailed interview scheduled was used to collect responses. Likert scale is used to evaluate the impact of tourism on local people and satisfaction of tourists visiting Malarickal. Mann-Whitney U test is used for testing the hypothesis.

## **Analysis and Interpretation**

### **Impact of growth of village tourism in Malarickal on local people**

Growth of village tourism in Malarickal has significant impact on local people and it was evaluated on a Five-point Likert scale. Impact was evaluated at five levels ie., strongly agree, agree, can't say, disagree and strongly disagree. The scores assigned are 5 for strongly agree, 4 for agree, 3 for can't say, 2 for disagree and 1 for strongly disagree. It is clear from table 1, that majority of respondents strongly agree that growth of tourism has led to growth of infrastructure with mean score of 4.27. Local people agree that it has increased their income and raised job opportunities with a mean score of 3.80 and 3.49. Regarding improvement in living conditions, people can't really say with a mean score of 3. For survey results see Table.

**Table 1**

**Impact of growth of village tourism in Malarickal on local people**

	Strongly Agree	Weighted Value	Agree	Weighted Value	Can't Say	Weighted Value	Disagree	Weighted Value	Strongly Disagree	Weighted Value	Total	Weighted Total	Mean Score
<b>Growth of Infra-structure</b>	311	1555	244	976	95	285	43	172	7	7	700	2995	4.27
<b>Improved living conditions</b>	9	45	199	796	328	984	111	222	53	53	700	2100	3
<b>Increase in Income</b>	188	940	312	1248	104	312	66	132	30	30	700	2662	3.80
<b>Better Job opportunities</b>	157	785	243	972	150	450	86	172	64	64	700	2443	3.49

**Satisfaction level of tourists visiting Malarickal Village**

Satisfaction level of tourists visiting Malarickal village was evaluated on a Five-point Likert scale. Impact was evaluated at five levels ie., highly satisfied, satisfied, neutral, dissatisfied and highly dissatisfied. The scores assigned are 5 for highly satisfied, 4 for satisfied, 3 for neutral, 2 for dissatisfied and 1 for highly dissatisfied. It is clear from table 2, that majority of tourists are satisfied with security and safety, attitude of local people, hygiene and cleanliness and food and accommodation at Malarickal village with mean score of 3.73, 3.40, 3.40 and 3.35. Regarding transportation facilities and guide and

information, people have neutral opinion with a mean score of 3 and 2.55. For survey results see Table.

**Table 2**  
**Satisfaction level of tourists visiting Malarickal Village**

	Highly Satisfied	Weighted Value	Satisfied	Weighted Value	Neutral	Weighted Value	Dis-satisfied	Weighted Value	Highly Dissatisfied	Weighted Value	Total	Weighted Total	Mean Score
<b>Security and safety</b>	151	755	454	1816	227	681	39	78	29	29	900	3359	3.73
<b>Attitude of local people</b>	76	380	399	1596	281	843	99	198	45	45	900	3062	3.40
<b>Food and Accommodation</b>	139	695	261	1044	336	1008	101	202	63	63	900	3012	3.35
<b>Transportation facilities</b>	17	85	312	1248	271	813	254	508	46	46	900	2700	3
<b>Hygiene and cleanliness</b>	93	465	408	1632	180	540	204	408	15	15	900	3060	3.4
<b>Guide and Information</b>	14	70	166	664	325	975	196	392	199	199	900	2300	2.55

**Testing of Hypotheses**

Hypothesis I

H0 - There is no significant difference between satisfaction level of Foreign and Resident tourists.

H1 - There is significant difference between satisfaction level of Foreign and Resident tourists.

**Table 3**

**Calculation of Ranks based on satisfaction level of Foreign and Resident tourists.**

Satisfaction	Rank	Foreign Tourist	Total Rank	Resident Tourist	Total Rank
4.25	1	2	2	1	1
4.00	2	34	68	8	16
3.75	3	17	51	47	141
3.50	4	3	12	117	468
3.25	5	20	100	221	1105
3.00	6	41	246	389	2334
		n <sub>1</sub> =117	R <sub>1</sub> =479	n <sub>2</sub> = 783	R <sub>2</sub> =4065

n<sub>1</sub> =117      R<sub>1</sub>=479      n<sub>2</sub>=783      R<sub>2</sub>=4065

Using Mann – Whitney – Wilcoxon U – test

$$\mu = (n_1 \times n_2) / 2 \qquad \mu = (117 \times 783) / 2$$

$$\qquad \qquad \qquad = 91611 / 2 \qquad \qquad \qquad = \underline{\underline{45805.5}}$$



$$U = n_1 \times n_2 + \frac{n_1(n_1+1)}{2} - R_1 \quad U = 117 \times 783 + \frac{117(117+1)}{2} - 479$$

$$= \underline{98035}$$

$$\text{Standard Error} = \sqrt{\frac{n_1 \times n_2 (n_1 + n_2 + 1)}{12}}$$

$$= \sqrt{\frac{117 \times 783 (117 + 783 + 1)}{12}}$$

$$\text{Standard Error} = 2622.7$$

$$\text{Test Statistic} = \frac{\mu - U}{S.E} = \frac{45805.5 - 98035}{2622.7}$$

$$= \underline{19.91}$$

Level of significance – 5%, Degree of Freedom – infinity

Table value = 1.960

Calculated value of the test statistic is greater than table value and we reject the null hypothesis ( $H_0$ ). There is significant difference between satisfaction level of Foreign and Resident tourists.

### **Findings**

Malarickal village tourism project has made great progress during the last few years both socially and economically. The following are evident from the study,

1. Majority of respondents strongly agree that growth of tourism has led to growth of infrastructure in the village.
2. Local people agree that growth of tourism in the village has increased their income and raised job opportunities.

3. Majority of tourists are satisfied with security and safety, attitude of local people, hygiene and cleanliness and food and accommodation at Malarickal village.
4. There is significant difference between satisfaction level of Foreign and Resident tourists.

### **Conclusions**

Since tourism is a recognized mode of income for our nation, both central and state governments initiate new policies for strengthening the sector. On analyzing that mass commercial tourism has lost prominence, Governments started concentrating on rural or village tourism emphasizing nature and living of local people. It is undoubtedly concluded that growth of tourism has brought social and economic development in our villages. The rural outskirts in our country need to be utilized well to provide peaceful atmosphere to people having a busy urban living. Foreign tourists should also be attracted to our rural environments so that they can experience what true India is.

Malarickal village tourism project is a budding flower. Local people and their opinions should be carefully considered at each level of progression of the project. Natural habitats, farming and living occupations of the local people should never be disturbed by growth of tourism. Instead, there should be new and new opportunities that foster lives of local people.

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## **The Agent of Anomie: Reading Joker as the Birth of a Maverick**

**Kevin George**

*Department of English, Kuriakose Elias College, Mannanam,  
Kottayam, Kerala 686561*

*E-mail: kevingeorge3407@gmail.com*

### **Abstract**

*Alienation, in social theory signifies a state of estrangement or separation from one's milieu, work, products of work, or self. The idea of alienation remains equivocal and nebulous despite its popularity in contemporary life. The elusive nature of the word is in a way its quintessence. Alienation is also characterised by powerlessness, the feeling that one's destiny is beyond one's control and is determined by external agents, luck or fate. It also signifies meaninglessness, the inability to comprehend certain actions, circumstances or a generalized sense of purposelessness in life. Alienation could, at times, masquerade as anomie or normlessness, the lack of trust in or commitment to established norms and conventions, the naturalised and irrefragable status quo of the society. Alienation, in this sense, may give rise to deviant behaviour and immoderate competition. Alienation is also a kind of social isolation or a kind of self-imposed estrangement, perhaps the most ineffable and impenetrable of its myriad facets.*

**Keywords:** Alienation, Anomie, Joker, Nihilism, Durkheim, Altruism

Todd Phillips' *Joker* could be considered as the quintessential alienated hero of the 20<sup>th</sup> century. The eponymous protagonist of the movie *Joker* (2019) is a failed stand-up comedian and a clown who turns to a life of crime and chaos in the fictional Gotham city. In Arthur Fleck, (the real name of our hero) we find an amalgam of many, if not all the characteristics of alienation. Fleck seems at a loss when it comes to identifying a purpose in life. He doesn't seem to comprehend the tortuous world and the part he is expected to play in it. In real life and in his life as a clown, his roles are way beyond his ken. One wouldn't say that his alienation is a Marxian alienation, but that doesn't mean that we should rule out the rubric completely. Fleck's alienation, towards the end of the movie, transmogrifies into a kind of anomie, a word which derives from the Greek word *anomia* meaning lawlessness and which has now come to mean, in the Durkheimian sense, a state of social instability resulting from a breakdown of values/standards.

Apart from alienation, *Joker* also deals with the themes of mental illness and its consequences. In a way, Fleck's insanity is an outcome of the alienation that he had suffered throughout his life. The film could also be interpreted as a reminder or rather a cautionary tale. When society ostracizes individuals like Fleck, it must also be prepared to face the backlash spearheaded by mavericks who have undergone a complete transformation under these circumstances. Nihilists would be a more appropriate term but I would refrain from using this term as parallels are likely to be drawn between people like Anders Behring Breivik, the notorious perpetrator of the 2011 Oslo attacks and Fleck. Breivik came under the influence of the nefarious

logic of ethnocentrism and bigotry which is evident from the fact that he was a member of the anti-immigration/right-wing party with fascist predilections. Fleck's case, on the other hand, is entirely different. His entire life was built on a lie and we can't help but sympathize with his position for whatever befell him wasn't an outcome of his actions or karma but rather the ramification of the very same lie which festered into a putrefying canker. In one poignant scene, Arthur painfully comes to terms with the truth after he is confronted by the celebrated billionaire and philanthropist Thomas Wayne, who tells him that Penny is delusional and not his biological mother. After having misgivings about the same, Arthur visits the Arkham State Hospital and steals Penny's case file. A shocking revelation leaves him speechless (and also indignant) and this is when things begin to fall apart for Fleck. Arthur in a fit of madness goes to the hospital and asphyxiates his mother for allowing her boyfriend to abuse him as a child. A Freudian interpretation would regard this unfortunate/unknown past as the locus of Fleck's maladies (which include his uncontrollable laughter, insomnia and sporadic bouts of depression). Fleck also comes to terms with the truth that his affair with Sophie had also been one of his many delusions.

One of the myriad definitions for the word 'alien' includes 'too different from something to be acceptable or suitable' or 'exotic' or 'differing in nature or character typically to the point of incompatibility'. But, what piqued my curiosity was its etymology which harks back to the Latin *alienus*, which derives from *alius* meaning other. Arthur Fleck could, in a way, be regarded as the *Other*-the ostracized figure who is constantly vying to find a space in a world

that is loath to accept original artists or mavens. Take for instance, Murray's show which invites Fleck with the nefarious intent of making a fool out of the eponymous Joker. He is invited to appear on Murray's show due to the unexpected popularity of his antics which is deemed by the likes of celebrated hosts like Murray Franklin (played by *The Taxi Driver* star Robert Di Niro) substandard or otiose. Fleck's disorientation reaches a new level when he is visited by ex-colleagues Gary and Randall. Arthur murders Randall who deceived him earlier, but leaves Gary unharmed for treating him well in the past. Gary, who is a midget, is also a victim of alienation (an estranged other), though a different one. But, things take a turn for the worse (or for the better in Fleck's case) when one of the detectives investigating the murder of his mother accidentally shoots a protester, inciting a riot, allowing Arthur to escape. This is the most riveting part of the film. We find Arthur rising to the position of a cult leader, who unwittingly precipitates anomie in Gotham city. Arthur Fleck becomes an agent of anomie whose actions have transcended the personal into becoming something truly altruistic (more Nietzschean than Levinasian). I have my reasons for choosing the adjective (altruistic). It might come as no surprise if we go to the root of the word/matter (etymologically/literally). The word comes from the French *autre* (*from* autrui) or other in English. The definitions for the word altruism, according to The Merriam-Webster Dictionary include not just an unselfish regard for the welfare of others, but also, 'behaviour that is not beneficial to or may be harmful to it but that benefits others of its species'.

In the scenes that follow, we find a disoriented Arthur requesting the host to be introduced as 'The Joker', a reference to

Murray's (the host of the show) previous mockery. Arthur walks out to applause but the mood quickly changes when he starts making sardonic comments verging on the morbid. He confesses to the murders he had committed and launches a tirade against the callous mentality of the society. He disturbs Murray to the point he is speechless and shoots him in the temple. He is arrested and riots break out across the city of Gotham. The Wayne family is besieged by the rioters and the rest is history. The rioters free Arthur/The Joker, who finally embraces his dark side and dances to the cheers of the crowd. He is not an alienated hero anymore, but, rather a messianic figure for a mob bent on eroding/subverting the accepted norms and values that had relegated them to the margins as freaks, deviants and criminals. We witness the birth of a nihilist-messiah in Arthur.

Until the 1930s, the concept of alienation had little recognition in Western thought, especially in the field of the human sciences. An entry from Britannica encyclopaedia sheds light on this fact, which is often neglected by many scholars.

“However, the concept (of alienation) had existed implicitly or explicitly in classical sociological works of the 19<sup>th</sup> and early 20<sup>th</sup> centuries written by Karl Marx, Emile Durkheim, Max Weber, Georg Simmel and Ferdinand Tonnies. Marxism, for example, represents only one stream of thought concerning alienation in modern society. Durkheim, for example and eventually Weber documented the passing of traditional society and the consequent loss of the sense of community. Modern man was isolated as he had never been before-



anonymous and impersonal in an urbanizing mass, uprooted from old values, yet without faith in the new rational and bureaucratic order.”

I would like to conclude this article by evoking the title. Joker or Arthur Fleck, as I mentioned earlier is an estranged subject, a product of a disintegrating society driven by circumstances to embrace the role of an agent provocateur. In a way, he is the maverick clown of the circus (society) wherein we perform roles we've been conditioned to perform. As Shakespeare once said, “All the world's a stage, and all the men and women merely players”. The Joker is an alienated hero in this thespian world; an agent of anomie uprooted from old values; a nihilist in the Nietzschean sense who is loath to place trust in the new rational/bureaucratic order.

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## **മലയാള നാടകചരിത്രത്തിൽ മറിയാമ്മ നാടകത്തിന്റെ പ്രാധാന്യം**

**ഡോ. പൊന്നി ദേവസ്യ**

*പൈഡിയ ഇൻസ്റ്റിറ്റ്യൂട്ട്, കൊച്ചി*

*ponnynd@gmail.com*

മലയാള സാഹിത്യചരിത്രങ്ങളിൽ ആദ്യത്തെ നാടകമായി അടയാളപ്പെടുത്തുന്നത് കേരളവർമ്മ-വലിയകോയി തമ്പുരാന്റെ ശാകുന്തളം തർജ്ജമയാണ് (1882). ഇതിനെത്തുടർന്ന് ചാത്തുക്കുട്ടി മനാടിയാരുടെ ജാനകീപരിണയം, കൊട്ടാരത്തിൽ ശങ്കുണ്ണിയുടെ വിക്രമോർവശീയം, കൊടുങ്ങല്ലൂർ കുഞ്ഞിക്കുട്ടൻ തമ്പുരാന്റെ ആശ്ചര്യചൂഡാമണി എന്നിങ്ങനെ പല സംസ്കൃത നാടകപരിഭാഷകളും പ്രസിദ്ധീകരിക്കപ്പെട്ടു. സ്ത്രീവിരചിത നാടകങ്ങളായ അജ്ഞാതവാസവും (കുട്ടിക്കുഞ്ഞു തങ്കച്ചി, 1890), സുഭാദ്രജ്ജനവും (തോട്ടയ്ക്കാവ് ഇക്കാവമ്മ, 1891) പുരാണകഥകളെ ഉപജീവിച്ചുകൊണ്ട് രചിക്കപ്പെട്ടവയായിരുന്നു.

പുരാണകഥകൾക്കു പകരം ആദ്യമായി ഒരു കല്പിതകഥ പ്രമേയമായി സ്വീകരിച്ചത് കൊച്ചുണ്ണിത്തമ്പുരാന്റെ കല്യാണി നാടകമാണ് (1889). മലയാളത്തിലെ ആദ്യത്തെ സ്വതന്ത്രനാടകമെന്ന് വിശേഷിപ്പിക്കാമെങ്കിലും ആദിമദ്ധ്യാന്തപൊരുത്തമില്ലാത്ത കഥയും അശ്ലീലം കലർന്ന സംഭാഷണങ്ങളും കല്യാണി നാടകത്തെ ദുർബലമാക്കി. ‘ഇതു വായിക്കുന്നവർക്ക് വ്യഭിചാരകർമ്മം നിന്ദ്യമാണെന്നോ ഭൂഷണമല്ലെന്നോ ധരിക്കുന്നതിന് ഒരു വഴിയുമില്ല. മലയാളികളുടെ ഇടയിൽ ഈ ദുർനടപ്പു സ്വതവതന്നെ പ്രബലമായിരിക്കുമ്പോൾ ഈ കാര്യത്തിൽ കവി പ്രത്യേകം മനസു വയ്ക്കേണ്ടതായിരുന്നു’<sup>1</sup> എന്ന് സി. പി. അച്യുതമേനോൻ അക്കാലത്തു തന്നെ കല്യാണി നാടകത്തെക്കുറിച്ച് തുറന്നെഴുതി. ഇങ്ങനെ സാമൂഹ്യ പ്രസക്തിയില്ലാത്തതും ആവർത്തനവിരസവുമായ പ്രമേയങ്ങൾ മൂലം മലയാള നാടകപ്രസ്ഥാനം വിമർശനവിധേയമായിരുന്ന കാലത്താണ് 1903ൽ പോളച്ചിറയ്ക്കൽ കൊച്ചിപ്പൻ തരകൻ എഴുതിയ മറിയാമ്മ എന്ന നാടകം പ്രസിദ്ധീകരിക്കപ്പെടുന്നത്.

1903ൽ പ്രസിദ്ധീകരിച്ചുവെങ്കിലും അതിനും 25 വർഷങ്ങൾക്കു മുമ്പ് നാടകം രചിക്കപ്പെട്ടിരുന്നുവെന്ന് മുഖവുരയിൽ കൊച്ചിപ്പൻ തരകൻ രേഖപ്പെടുത്തിയിരിക്കുന്നു. “ഇരുപത്തഞ്ചു കൊല്ലങ്ങൾക്കു മുമ്പ് അന്നിവിടെ നടപ്പുള്ള നാടകസമ്പ്രദായം വിട്ട് ഒരു പുതിയ രീതിയിൽ ഈ മറിയാമ്മനാടകം ഞാനെഴുതിത്തീർത്തു. എന്റെ ഈ പ്രഹസനരീതിയും വിടുവാചകത്വവും വായനക്കാർക്കു രസിക്കുമോ എന്ന് സംശയിച്ച് അച്ചടിപ്പിക്കാതെ ഞാൻ വളരെ നാൾ വച്ചുകൊണ്ടിരുന്നു. ഇതിനു മുമ്പ് ആരെങ്കിലും ഇപ്രകാരം ഒന്നെഴുതി ഞാൻ കണ്ടിട്ടില്ലെന്നു മാത്രമല്ല, കേട്ടിട്ടുകൂടിയില്ല”<sup>2</sup> എന്ന് അദ്ദേഹം സാക്ഷ്യപ്പെടുത്തിയിരിക്കുന്നു.

നവീനവിദ്യാഭ്യാസരീതികളിൽ സംഭവിച്ച കാലോചിതമായ മാറ്റങ്ങൾ ഉൾക്കൊണ്ടുകൊണ്ട് സോദേശനാടകങ്ങൾ എഴുതാൻ പ്രോത്സാഹിപ്പിക്കുന്ന ഒരു പ്രബന്ധം അക്കാലത്ത് ഭാഷാപോഷിണിയിൽ സി. അന്തപ്പായി എഴുതുകയുണ്ടായി. അദ്ദേഹത്തിന്റെ ലേഖനങ്ങൾ തുടർച്ചയായി വായിച്ച കൊച്ചിപ്പൻ തരകന് താൻ എഴുതിയ നാടകം അദ്ദേഹത്തിന്റെ അഭിപ്രായങ്ങളോട് യോജിക്കുന്നുണ്ടെന്ന് ബോധ്യമാവുകയും മറിയാമ്മനാടകം സി. അന്തപ്പായിക്ക് വായനയ്ക്കായി നൽകുകയും ചെയ്തു. ഈ കൃതി വായിച്ച സി. അന്തപ്പായി രചയിതാവിനെ മുക്തകണ്ഠം പ്രശംസിച്ചു. കൊച്ചിപ്പൻ തരകന്റെ മാതൃലനായ കണ്ടത്തിൽ വറുഗീസ് മാപ്പിളയുടെ പ്രോത്സാഹനം വഴി ഈ നാടകം അരങ്ങിൽ അവതരിപ്പിക്കപ്പെടുകയും അച്ചടിക്കപ്പെടുകയും ചെയ്തു.

നിലവിലിരുന്ന നാടകസമ്പ്രദായങ്ങളിൽ നിന്നും വ്യത്യസ്ഥത പുലർത്തിയ രചന എന്ന നിലയിൽ മറിയാമ്മനാടകത്തിന്റെ പ്രസക്തി ചർച്ച ചെയ്യപ്പെടേണ്ടതുണ്ട്. കഥാപാത്രരചന, ഭാഷാരീതി, രസാവിഷ്കരണം എന്നിവയിലൊക്കെ അക്കാലത്തെ നാടകങ്ങളെ അതിശയിപ്പിക്കത്തക്ക വിധത്തിലായിരുന്നു മറിയാമ്മ നാടകത്തിന്റെ രചന. ആവർത്തനവിരസത മാത്രം സമ്മാനിച്ച നാടകാവതരണങ്ങൾ അക്കാലത്ത് പല വിമർശകരെയും ശൂണ്ഠി പിടിപ്പിച്ചിരുന്നു. മുൻഷി രാമക്കുറുപ്പിന്റെ ചക്രീചങ്കരം എന്ന നാടകം ഇത്തരം നാടകങ്ങളെ പരിഹസിച്ചുകൊണ്ട് എഴുതപ്പെട്ടതാണ്. നാടകവിമർശനപരമായി സി. അന്തപ്പായി ‘നാലുപെരിലൊരുത്തൻ’ എന്ന നോവലും എഴുതുകയുണ്ടായി. ഇത്തരം പരിഹാസക

വനങ്ങളുടെ ആദ്യഫലം എന്നവിധം പുറത്തുവന്ന കൃതിയാണ് മറിയാമ്മ നാടകം.

കൃത്യമായ ഒരു പ്ലോട്ട് ഇല്ല എന്നതായിരുന്നു അക്കാലത്തെ ഭാഷാനാടകങ്ങളുടെ പ്രധാന ന്യൂനത. എന്നാൽ നാടകങ്ങളുടെ പ്രധാന ലക്ഷണം പ്ലോട്ട് അഥവാ കഥാബന്ധം ആണെന്ന് കൊച്ചിപ്പൻ തരകൻ തിരിച്ചറിഞ്ഞിരുന്നു. മറിയാമ്മ നാടകത്തിലെ ഓരോ ഭാഗങ്ങളും ഉപകഥകളും പരസ്പരബന്ധിതമാണ്. ഒരു ഉപകഥ മറ്റൊന്നിനെയും അതു വേറൊന്നിനെയും ആശ്രയിച്ച് ഒരുമിച്ചുചേർന്ന് ഒരേ ഉദ്ദേശ്യത്തിൽ ചെന്നെത്തുന്നു. കഥ വായിക്കുന്നതോറും വായനക്കാരൻ ആകാംഷാഭരിതനാവുകയും കഥയുടെ പരിണാമവികാസങ്ങളിലൂടെ അവസാനത്തിൽ എത്തിച്ചേർന്ന് നിർവൃതി നേടുകയും ചെയ്യുന്നു.

നാട്ടിലെ സാമൂഹികജീവിതത്തിൽ നിന്നുമുള്ള ഒരേടാണ് ഈ നാടകം കൈകാര്യം ചെയ്യുന്നത്. ക്രിസ്ത്യൻ സാമൂഹികപ്രശ്നം കൈകാര്യം ചെയ്ത ആദ്യനാടകമായിരുന്നു മറിയാമ്മ നാടകം. ഈ നാടകം എഴുതപ്പെട്ടതിനു ശേഷവും വളരെ കാലത്തോളം അത്തരമൊരു വിഷയം കൈകാര്യം ചെയ്യുവാൻ മറ്റാരും ധൈര്യപ്പെട്ടില്ല.

**പ്രമേയം**

കൃതി രചിക്കപ്പെട്ട കാലത്ത് കേരളത്തിലെ കൃസ്തീയ ഭവനങ്ങളിൽ നിലനിന്നിരുന്ന അമ്മായിയമ്മപ്പോർ വിഷയമാക്കി സാമൂഹിക പരിഷ്കരണമെന്ന ലക്ഷ്യം മുൻനിർത്തി രചിക്കപ്പെട്ട നാടകമാണ് മറിയാമ്മ നാടകം. ചെമ്പകശ്ശേരി തറവാട്ടിലാണ് കഥ നടക്കുന്നത്. മാത്തച്ചൻ, മാത്തച്ചന്റെ ഭാര്യ, മകൾ ഏലിയാമ്മ, മകൻ ഔസേപ്പച്ചൻ, അദ്ദേഹത്തിന്റെ ഭാര്യ മറിയാമ്മ, മറിയാമ്മയുടെ സഹോദരൻ സ്റ്റീഫൻ, അയാളുടെ ഭാര്യ സാരാമ്മ, മാത്തച്ചന്റെ സഹോദരപുത്രൻ ചെറിയാൻകുഞ്ഞ് എന്നിവരാണ് പ്രധാന കഥാപാത്രങ്ങൾ. മറിയാമ്മ എന്ന കഥാപാത്രം തന്റെ അമ്മായിയമ്മയിൽ നിന്നും, നാത്തുന്നായ ഏലിയാമ്മയിൽ നിന്നും ക്രൂരമായ പീഡനങ്ങൾ ഏറ്റുവാങ്ങുന്നു. പഠനത്തിനായി ദൂരസ്ഥലത്തേക്ക് പോയ ഔസേപ്പച്ചൻ, മറിയാമ്മ വസൂരി ബാധിതയായ കാര്യം അറിയുന്നില്ല. വസൂരി ചികിത്സിക്കാനെത്തിയ മന്ത്രവാദികൾ മറിയാമ്മയെ വധിക്കുവാൻ

ആലോചിക്കുന്നു. തത്സമയം അവിടെയെത്തിയ മറിയാമ്മയുടെ സഹോദരനായ സ്റ്റീഫൻ അവരുടെ സംഘത്തിൽ ചേരുകയും അവരിലൊരാളായി നിന്നുകൊണ്ട് തന്ത്രപൂർവ്വം മറിയാമ്മയെ രക്ഷിക്കുകയും ചെയ്യുന്നു. ബി. എ. പരീക്ഷ കഴിഞ്ഞെത്തിയ ഔസേപ്പച്ചൻ മറിയാമ്മയുടെ മരണവാർത്തയാണ് അറിയുന്നത്. കേസന്വേഷണത്തിനായെത്തുന്ന ഇൻസ്പെക്ടർ കൊലപാതകികളെ കണ്ടെത്തുന്നു. അവരെ ചോദ്യം ചെയ്യുന്നതിനിടയിൽ മറിയാമ്മ രംഗപ്രവേശം ചെയ്യുന്നത് നാടകീയത വർദ്ധിപ്പിക്കുന്നു. അനുതാപചിത്തയായിത്തീർന്ന അമ്മായിയമ്മ അവളോടു മാപ്പുപേക്ഷിക്കുന്നു. തന്റെ കൊലപാതകികളെ ശിക്ഷിക്കരുതെന്ന് മറിയാമ്മ ഇൻസ്പെക്ടറോട് അപേക്ഷിക്കുന്നിടത്ത് നാടകം അവസാനിക്കുന്നു.

**സാമൂഹികാചാരങ്ങളും സ്ത്രീയവസ്ഥയും**

കേരളത്തിൽ മരുമക്കത്തായ സമ്പ്രദായം നിലവിലിരുന്ന പതിനെട്ടാം നൂറ്റാണ്ടിൽ ഇതരസമുദായങ്ങളെ അപേക്ഷിച്ച് ഹൈന്ദവ കുടുംബങ്ങളിൽ സ്ത്രീയ്ക്ക് അഭിപ്രായസ്വാതന്ത്ര്യവും സാമ്പത്തിക സ്വാശ്രയത്വവും ഉണ്ടായിരുന്നു. എന്നാൽ മക്കത്തായം നിലനിന്നിരുന്ന ക്രിസ്ത്യൻ തറവാടുകളിലാവട്ടെ വിവാഹം കഴിച്ചുവരുന്ന പെൺകുട്ടിയുടെ സ്ഥിതി അതീവദയനീയമായിരുന്നു. ക്രിസ്ത്യൻ സമുദായത്തിലെ ക്രൂരമായ ഒരു അനാചാരമായിരുന്നു അമ്മായിയമ്മപ്പോര്. ആ സാമൂഹിക പ്രശ്നമാണ് കൊച്ചിപ്പൻ തരകൻ മറിയാമ്മ നാടകത്തിന്റെ പ്രമേയമായി സ്വീകരിച്ചത്.

അഭ്യസ്തവിദ്യയായ കഥാപാത്രമാണ് ഈ നാടകത്തിലെ നായികയായ മറിയാമ്മ. വിനയം, ത്യാഗം, സ്നേഹം, സഹിഷ്ണുത എന്നിങ്ങനെയുള്ള സ്ത്രീസഹജഭാവങ്ങളെല്ലാം ചേർത്തിണക്കി ഒരു ഉത്തമനായികയായിട്ടാണ് മറിയാമ്മയെ അവതരിപ്പിച്ചിരിക്കുന്നത്. ഇംഗ്ലീഷ് വിദ്യാഭ്യാസം നേടിയ, സംസ്കാരസമ്പന്നയായ മറിയാമ്മയെ മുൻതല മുറക്കാരിയായ അമ്മായിയമ്മയ്ക്ക് ഉൾക്കൊള്ളാനാവുന്നില്ല. ചൂല് കൊണ്ടടിക്കുക, തൊഴിക്കുക, തീക്കൊള്ളിയെടുത്ത് കുത്തുക, മുറിവിൽ മുളകുരച്ചു തേക്കുക, പട്ടിണിക്കിടുക എന്നിങ്ങനെയുള്ള മർദ്ദനമുറകൾ അമ്മായിയമ്മയിൽ നിന്നും മറിയാമ്മയ്ക്ക് നേരിടേണ്ടി വരുന്നു. അത്

അക്കാലത്തെ സ്ത്രീവസ്ഥകളുടെ നേർചേരമാണെന്ന് വിശ്വസിക്കുവാനെ വഴിയുള്ളൂ.

“മറിയാമ്മ നാടകം തിരുവതാംകൂർ പ്രദേശത്ത് പരക്കെ അഭിനയിക്കപ്പെടുകയുണ്ടായി. എന്റെ കുട്ടിക്കാലത്ത് എന്റെ നാട്ടിലും അഭിനയിച്ചതായി ഓർക്കുന്നു. കുറെയേറെക്കാലം അങ്ങനെ അഭിനയിക്കപ്പെട്ടതിനാൽ, ക്രിസ്ത്യാനികൾക്കിടയിൽ അമ്മായിയമ്മപ്പോരിനല്പം ശമനമുണ്ടായി”<sup>3</sup> എന്ന് മറിയാമ്മനാടകത്തിന്റെ അവതാരികയിൽ ജോസഫ് മുണ്ടശ്ശേരി സാക്ഷ്യപ്പെടുത്തിയിട്ടുണ്ട്.

ഈ നാടകത്തിന്റെ അവതരണം വഴി അമ്മായിയമ്മപ്പോര് എന്ന സാമൂഹിക അനാചാരത്തെ നിർമ്മാർജ്ജനം ചെയ്യുവാൻ ഒരുപരിധി വരെ കഴിഞ്ഞിട്ടുണ്ടെന്ന് രചയിതാവ് തന്നെയും സാക്ഷ്യപ്പെടുത്തുന്നു. “സാമുദായികമായി എന്തു ഗുണത്തെയും പുസ്തകപ്രസിദ്ധീകരണം കൊണ്ടു ഞാൻ നിർദ്ദേശിച്ചിരുന്നുവോ അതു പ്രതീക്ഷയെ അതിലംഘിച്ചു സിദ്ധിച്ചിട്ടുണ്ടെന്നു പറവാൻ എനിക്കു ധൈര്യവും അതുമൂലം സന്തോഷവും അനല്പമായ ചാരിതാർത്ഥ്യവും ഉണ്ട്.”<sup>4</sup>

**പുരുഷമനോഭാവവും സ്ത്രീനിലപാടുകളും**

ചെമ്പകശ്ശേരിൽ മാത്തച്ചന്റെ ഭാര്യ - മറിയാമ്മ എന്ന നായികാ കഥാപാത്രത്തിന്റെ അമ്മായിയമ്മ - നാടകത്തിലെ പ്രധാന സ്ത്രീകഥാപാത്രങ്ങളിലൊന്നാണ്. കഥയിലെ പ്രതിനായികയാണെങ്കിലും തികഞ്ഞ ആത്മവിശ്വാസവും അധികാരസ്വരവും ആ കഥാപാത്രത്തിൽ കാണാം. ഭർത്താവിനെ ചൊല്പടിക്കു നിർത്തുവാനും, കുടുംബത്തിൽ തന്റെ നിലനില്പ് ഭദ്രമാക്കുവാനും കഴിഞ്ഞ കഥാപാത്രമാണവർ. നാടകത്തിന്റെ മൂന്നാം രംഗത്തിൽ പരിഹാസവാക്കുകളുമായി രംഗപ്രവേശം ചെയ്യുന്ന ഭാര്യയോട് ‘നിന്നെ വല്ലോരും ഇങ്ങോട്ടു വിളിച്ചോ?’ എന്ന് മാത്തച്ചൻ ചോദിക്കുന്നു. “എന്നെ വിളിക്കാതെ ഇങ്ങോട്ടൊന്നു വന്നാലോ. എന്താ മൂക്കു നുള്ളി പക്ഷിച്ചുകളേമോ?”<sup>5</sup> എന്നാണു മറുചോദ്യം. പത്തൊൻപതാം നൂറ്റാണ്ടിൽ എഴുതപ്പെട്ട കൃതിയിൽ ഇത്തരമൊരു മറുപടി തന്നെ ആശ്ചര്യകരമാണ്. നാടകത്തിൽ രണ്ടു രംഗങ്ങളിൽ മകനെ അടിക്കുന്ന

അധികാരശർവ്വം തികഞ്ഞ കഥാപാത്രമായും അവരെ അവതരിപ്പിച്ചിരിക്കുന്നു.

നാടകത്തിലെ പ്രധാന കഥാപാത്രമായ സാരാമ്മ, മറിയാമ്മയുടെ ജ്യേഷ്ഠഭാര്യയാണ്. ആധുനിക നാടകങ്ങളിൽ മാത്രം കണ്ടുശീലിച്ച ഒരു സ്ത്രീകഥാപാത്രത്തിന്റെ ഊടും പാവുമാണ് ഈ കഥാപാത്രത്തിന് കൊച്ചിപ്പൻ തരകൻ കൽപ്പിച്ചിരിക്കുന്നത്. സ്വത്വബോധം, സ്വാതന്ത്ര്യബോധം എന്നിവ ഈ കഥാപാത്രത്തെ വ്യത്യസ്തതയാക്കുന്നു. അക്കാലത്ത് നിലനിന്നിരുന്ന ആചാരങ്ങളോടും അധീശഭാവങ്ങളോടും നേർക്കുനേർ നിന്ന് പോരാടാൻ അസാധാരണ മനഃസ്ഥര്യം നേടിയ കഥാപാത്രമാണ് സാരാമ്മ. ചില വ്യവസ്ഥിതികളോടും സാരാമ്മ കലഹിക്കുന്നുണ്ട്. “അമ്മായിയമ്മ എന്നു കേൾക്കുമ്പോൾ തന്നെ ചില പെൺകുട്ടികളുടെ ജീവനങ്ങു പോകയല്ലേ! ഇതെന്തൊരു ഭയങ്കര മുർത്തിയാണു ദൈവമേ! ഇത്തരം പിശാചുക്കളെ മുന്വിലേക്കു എട്ടുംപൊട്ടും തിരിയാത്ത പാവപ്പെട്ട പെൺകുട്ടികളെ പിടിച്ചു വിട്ടുകൊടുത്താലുള്ള ഫലം ഇങ്ങനെയല്ലാതെ എങ്ങനെയാണു വന്നു കലാശിക്കുക?”<sup>6</sup>

നൂറ്റാണ്ടുകൾക്കിപ്പുറം പലർക്കും ഇന്നും പ്രാവർത്തികമാക്കാൻ പറ്റാത്ത ചില ചിന്തകൾ കൂടി സാരാമ്മ എന്ന കഥാപാത്രത്തിലൂടെ കൊച്ചിപ്പൻ തരകൻ അവതരിപ്പിച്ചിരിക്കുന്നു. “സ്വന്തവീടിനെയും ബന്ധു വർഗത്തെയും ഉപേക്ഷിച്ചു വന്നാലുടനെ ഈ പിള്ളതിന്നിക്കാളികളെ അടിമയിൽ സാധുക്കളായ പെൺകുട്ടികളെ ഇങ്ങനെയിട്ടു കഷ്ടപ്പെടുത്താതെ വേറെ പാർപ്പിച്ചു അവർക്കു സന്തോഷത്തേയും സ്വാതന്ത്ര്യത്തേയും പ്രദാനം ചെയ്തിരുന്നെങ്കിൽ എത്രപേർക്കു മനസ്സിനു സമാധാനമുണ്ടായിരുന്നു.”<sup>7</sup> “സ്വതവേ അമ്മയും മകളുമല്ലാത്തവരങ്ങനെയൊക്കെ ഭാവിച്ചാലത്ര പന്തിയാവില്ല കൂഞ്ഞേ. ചേർച്ചയില്ലെന്നു കണ്ടുകഴിഞ്ഞാലുടനെ അവരെ പിരിച്ചു വേറെ താമസിപ്പിച്ചുകളഞ്ഞാൽ രണ്ടുകുട്ടർക്കും എത്രകണ്ടു സമാധാനമായി.”<sup>8</sup> സാമൂഹിക പരിവർത്തനത്തിനുതക്കുന്ന ഇത്തരം കാഴ്ചപ്പാടുകൾ കൊണ്ടും സമ്പൂഷ്ടമാണ് മറിയാമ്മ നാടകം.

**സ്വത്വനിരാസവും അതിജീവനവും**

ക്രൂരമായ ആചാരങ്ങൾക്ക് കീഴ്പ്പെടുകയും അതിജീവിക്കുവാൻ ആഗ്രഹിക്കുകയും ചെയ്യുന്ന കഥാപാത്രമാണ് മറിയാമ്മ. മലയാള നാടകസാഹിത്യചരിത്രത്തിലെ തന്നെ ഉത്തമനായികയായി അവരോധിക്കപ്പെടുവാൻ സാധ്യതയുള്ള കഥാപാത്രമായാണ് മറിയാമ്മയുടെ പാത്രസൃഷ്ടി. അക്കാലത്ത് സ്ത്രീസഹജമായി വിലയിരുത്തപ്പെട്ടിരുന്ന പരമ്പരാഗത സദ്ഗുണങ്ങളെല്ലാം ഈ കഥാപാത്രത്തിന് കൽപ്പിച്ചുനൽകിയിരിക്കുന്നു. അമ്മായിയമ്മയിൽ നിന്നും ഏൽക്കേണ്ടിവരുന്ന പീഡനങ്ങൾ നിശബ്ദമായി സഹിക്കുകയും തന്നെ ഭർതൃഗൃഹത്തിൽ തനിച്ചാക്കി പോകുന്ന ഔസേപ്പച്ചൻ എന്ന ഭർതൃകഥാപാത്രത്തെ ആപാദിച്ചുഡം സ്നേഹിക്കുകയും ചെയ്യുന്ന ഉത്തമസ്ത്രീകഥാപാത്രം. എന്നാൽ വസൂരിബാധിതയായി ഏകാന്തവാസം അനുഷ്ഠിക്കുമ്പോൾ തന്റെ പ്രിയതമന്റെ ഒരു കത്തുപോലും ലഭിക്കാതെ വരുന്ന സമയത്ത് തന്റെ സഹനം അവൾ പുനർവിചിന്തനം ചെയ്യുന്നുണ്ട്. പ്രിയതമനോടൊത്തുള്ള മനോഹരമായൊരു ജീവിതത്തിന് താൻ ഈ നരകയാതനയിലൂടെ കടന്നുപോവേണ്ടതുണ്ടെന്ന ധർമ്മിക ചിന്തയാണ് മറിയാമ്മയെ അവിടെയും നിഷ്ക്രിയയാക്കുന്നത്. ജ്യേഷ്ഠഭാര്യയായ സാരാമ്മ സദ്ബുദ്ധി ഉപദേശിക്കുമ്പോളും വ്യവസ്ഥിതികളെയും ആചാരങ്ങളെയും അവൾ പൂർണ്ണമായി ന്യായീകരിക്കുകയും അംഗീകരിക്കുകയും ചെയ്യുന്നു. നാടകത്തിനൊടുവിൽ ഭർത്താവിനൊപ്പം ദൂരദേശത്തേക്കു പോകുവാനുള്ള തീരുമാനം മറിയാമ്മ സന്തോഷത്തോടെ സ്വീകരിക്കുന്നു.

**ഭാഷ**

നാടകം കാവ്യാത്മകമായിരിക്കണം എന്ന ആശയം ഏറെ ചർച്ച ചെയ്യപ്പെട്ട കാലഘട്ടമായിരുന്നു ഇരുപതാം നൂറ്റാണ്ടിന്റെ തുടക്കം. അന്നത്തെ പ്രശസ്ത നാടകനിരൂപകർ നാടകത്തെ കാവ്യപരിധിയിൽ പെടുത്തിയിരുന്നു. കവിതാനുഭവം വായനക്കാരിൽ ജനിപ്പിക്കുവാനുള്ള കഴിവില്ലാതിരുന്നതാണ് ഭാഷാനാടകങ്ങളുടെ പരാജയഹേതു. കൊച്ചിപ്പൻ തരകന് വായനക്കാരിൽ രസം ജനിപ്പിക്കുവാൻ തക്കവണ്ണം വാക്യങ്ങൾ രചിക്കുവാനുള്ള സാമർത്ഥ്യം ഉണ്ടായിരുന്നു. ശബ്ദഭംഗിയേക്കാൾ അർത്ഥഭംഗിയ്ക്ക് അദ്ദേഹം പ്രാധാന്യം കൊടുത്തു. മറിയാമ്മ നാടകത്തിൽ



ശ്ലോകങ്ങൾ ഉൾപ്പെടുത്തിയിട്ടുണ്ടെങ്കിലും അത് നാടകത്തിന്റെ ഘടനയോടു ചേർന്നുപോകുന്ന തരത്തിൽ മാത്രമേ കാണപ്പെടുന്നുള്ളൂ. പദപുരണത്തിനും പ്രാസത്തിനും വേണ്ടി അനാവശ്യപദങ്ങളെ കൂട്ടിച്ചേർത്ത് ശ്ലോകങ്ങൾ ഉണ്ടാക്കി നാടകാവതരണം നടത്തിയിരുന്ന അക്കാലത്ത് ഈ നാടകം ഭാഷയുടെ കാര്യത്തിലും വ്യത്യസ്ഥത പുലർത്തി.

ഔസേപ്പച്ചനും മറിയാമ്മയും തമ്മിലുള്ള പ്രണയത്തിന്റെ തീവ്രത കാണികളിലേയ്ക്കെത്തിക്കുവാൻ ചില ശ്ലോകങ്ങൾ ഉപകരിച്ചിട്ടുണ്ട്. അവ ഒരിക്കലും അനുചിതമായ ശൃംഗാരപദങ്ങൾ ആയിരുന്നില്ല എന്നു കാണാം.

“ബാലേ ബാലികമാർ തൊഴും ഗുണമെഴും

ശീലേ മടിക്കാതെയി-

ക്കാലേ മാലിതശേഷമിന്നു വിമലേ

ചൊന്നാലുമെന്നോമലേ

താലോലിപ്പവനാണു ഞാൻ തടയുവാൻ

മേലേങ്കിലും മേലിതൊ-

ന്നാലോചിക്കിലുരയ്ക്കുവാനിവനൊഴി-

ച്ചാരുണ്ടതോരേണ്ടയോ?”<sup>9</sup>

അക്കാലത്തെ ഭാഷാനാടകങ്ങളിൽ നിന്നും വ്യത്യസ്തമായി നാടകം എഴുതപ്പെട്ട കാലത്തെ വ്യവഹാരഭാഷ ഈ നാടകത്തിൽ ഉടനീളം ഉപയോഗിച്ചിരിക്കുന്നു. താൻ ഇതിൽ വീട്ടുവാചകങ്ങൾ ആണ് ഉപയോഗിച്ചിരിക്കുന്നത് എന്ന് കൊച്ചിപ്പൻ തരകൻ മുഖവുരയിൽ സൂചിപ്പിക്കുന്നുണ്ട്. ‘പാത്രങ്ങളുടെ ഭാഷാരീതി അവരവരുടെ അവസ്ഥകളെ ശരിയായി അനുകരിച്ചിരിക്കുന്നു’ എന്ന് അവതാരികയിൽ സി. അന്തപ്പായി അഭിപ്രായപ്പെടുന്നു. കഥാപാത്രങ്ങളുടെ സ്വഭാവം വെളിപ്പെടുത്തുന്ന സംഭാഷണങ്ങളിലൂടെ നാടകം ആസ്വാദകന് ബോധ്യപ്പെടുത്താൻ കൊച്ചിപ്പൻ തരകന് കഴിഞ്ഞു. താൻ ജീവിച്ചുവന്ന ചുറ്റുപാടിൽ നിന്നും സ്വീകരിച്ച കഥാപാത്രങ്ങളായതിനാലാവാം അതിൽ ജീവിതാനുഭവങ്ങളുടെ ചുടും ചുരും ഉൾച്ചേർന്നിരുന്നു.

**നർമ്മബോധം**

ഭാഷാനാടകങ്ങളിൽ പൊതുവേ വിദൂഷകൻ എന്ന കഥാപാത്രത്തെ ഹാസ്യം അവതരിപ്പിക്കുന്നതിന് വേണ്ടി മാത്രം സൃഷ്ടിച്ചിരുന്നു. എന്നാൽ ആ രീതിയിൽ നിന്നും വ്യത്യസ്തമായി ഈ നാടകത്തിൽ കഥയ്ക്കിണങ്ങുന്ന രീതിയിൽ കഥാപാത്രങ്ങൾ തന്നെ ഫലിതം ഫലപ്രദമായി ഉപയോഗിച്ചിരിക്കുന്നു. ചെമ്പകശ്ശേരി തറവാട്ടിലേയ്ക്ക് വന്ന സുപ്രണ്ടിന്റെയും ഇൻസ്പെക്ടറുടെയും മുന്നിൽ ഇളിഭ്യരായി നിൽക്കുന്ന മാത്തച്ചന്റെയും ഭാര്യയുടെയും അവസ്ഥയും മറിയാമ്മയുടെ വസൂരിക്കുരുവിന് ‘കടവികുരു’വെന്ന് പേരിടുന്ന വർക്കിയുടെ ഹാസ്യവും, അവസാന രംഗങ്ങളിലെ നാടകീയതയ്ക്ക് അയവു വരുത്തുവാനെന്നോണം പ്രത്യക്ഷപ്പെടുന്ന ചാക്കോയും ഒക്കെ ചേർന്ന് ഹാസ്യരസത്തെ കൃത്യമായി നാടകത്തിൽ ഉൾക്കൊള്ളിച്ചിരിക്കുന്നു. മറിയാമ്മനാടകത്തിലെ ഹാസ്യാവതരണരീതി പിന്നീടുണ്ടായ മലയാള നാടകങ്ങൾക്ക് വഴികാട്ടിയായിത്തീരുന്നു.

മാതൃകകളൊന്നും ഇല്ലാതിരുന്ന ഒരു കാലത്ത് നാടകത്തിന്റെ ജീവനൂൾക്കൊണ്ടു കൊണ്ട് എഴുതപ്പെട്ട നാടകമാണ് മറിയാമ്മ നാടകം എന്നതാണ് ആ നാടകത്തിന്റെ ഏറ്റവും വലിയ സവിശേഷത. നാടകത്തിലെ ഓരോ കഥാപാത്രവും സവിശേഷമായ വ്യക്തിത്വം പുലർത്തുന്നു. ഇന്ദുലേഖയ്ക്കും മുൻപെഴുതപ്പെട്ട കൃതിയെന്ന നിലയിൽ, ഇംഗ്ലീഷ് വിദ്യാഭ്യാസം നേടിയവളും സ്വത്വബോധം ആർജ്ജിച്ചവളുമായ സാരാമ്മ എന്ന കഥാപാത്രം ശ്രദ്ധയർഹിക്കുന്നു. ആധിപത്യങ്ങളെയും വ്യവസ്ഥിതികളെയും ചോദ്യം ചെയ്ത മലയാള സാഹിത്യത്തിലെ ആദ്യസ്ത്രീകഥാപാത്രം സാരാമ്മ ആയിരിക്കാം.

ഒരു ചരിത്രസൂചിയായി ഉപയോഗപ്രദമായേക്കാവുന്ന കൃതി കൂടിയാണ് ഈ നാടകം. അക്കാലത്തെ സാമൂഹ്യവ്യവസ്ഥിതി, ഉദ്യോഗസ്ഥന്മാർക്കുണ്ടായിരുന്ന സ്വാധീനം, ഇംഗ്ലീഷ് വിദ്യാഭ്യാസത്തോടുള്ള സാധാരണക്കാരായ ജനങ്ങളുടെ മനോഭാവം, അന്നത്തെ സ്ത്രീവസ്ഥകൾ, വിവാഹസമ്പ്രദായം, പ്രചാരത്തിലിരുന്ന ആടയാഭരണങ്ങൾ, വസൂരി എന്ന മഹാരോഗം, പ്രാകൃതമായ ചികിത്സാരീതികൾ ഇവയെക്കുറിച്ചെല്ലാമുള്ള വ്യക്തമായ ചിത്രം ഈ കൃതിയിലുണ്ട്.

റിയലിസം മലയാളത്തിലവതരിപ്പിക്കപ്പെടുന്നതിനും ദശാബ്ദങ്ങൾക്കു മുൻപ് എഴുതപ്പെട്ട ഈ നാടകം മധ്യതിരുവതാംകൂറിലെ ഒരു ക്രൈസ്തവകുടുംബത്തിന്റെ കഥ അവരുടെ ഗാർഹികഭാഷയിലുള്ള സംഭാഷങ്ങൾ ഉൾപ്പെടുത്തി ജീവാംശം ചോർന്നുപോവാതെ അവതരിപ്പിച്ചിരിക്കുന്നു.

ആദ്യമായി സാമൂഹികവിഷയം കൈകാര്യം ചെയ്ത നാടകം, പത്തൊമ്പതാം നൂറ്റാണ്ടിലെ വ്യവഹാരഭാഷയിൽ എഴുതപ്പെട്ട നാടകം, സ്വത്വബോധാമാർജ്ജിച്ച സ്ത്രീകഥാപാത്രങ്ങളെ അവതരിപ്പിച്ച ആദ്യ സ്ത്രീപക്ഷനാടകം, വിദൂഷകനിലൂടെയല്ലാതെ ഹാസ്യം അനായാസം കൈകാര്യം ചെയ്ത ആദ്യകാല മലയാളനാടകം എന്നിങ്ങനെ പല കാരണങ്ങൾ കൊണ്ടും മലയാള നാടകസാഹിത്യചരിത്രത്തിലെ നാഴികക്കല്ലാണ് കൊച്ചിപ്പൻ തരകന്റെ മറിയാമ്മ നാടകം.

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